HONG KONG MONETARY AUTHORITY

Working Paper 16/2009

9 September 2009

A FRAMEWORK FOR MONITORING CAPITAL FLOWS IN HONG KONG

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Abstract

In this paper we attempt to delineate conceptual issues relating to the definition of capital flows, and introduce a framework that organises survey data and accounting information at different time horizons to form a judgment on the nature and scale of fund flows in Hong Kong. Given the complexity of international financial transactions in Hong Kong, cross-border capital flows may not correspond closely to fund flows into and out of the Hong Kong dollar. A comprehensive view on the scale and nature of capital flows in Hong Kong requires the joint analysis of both monetary and Balance of Payments statistics, in addition to information gathered through market intelligence. We then apply the monitoring framework to analyse four episodes of large fund flows between 2003 and mid-2009.

JEL Classification: F21; F32

Keywords: Capital flows; Fund flows; Hong Kong; Balance of Payments; External claims and liabilities of banks; Monetary Survey

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Executive Summary:

- *Despite the importance of capital flows to monetary and financial stability in Hong Kong, there is no clear definition and measurement of such flows. This paper attempts to delineate conceptual issues relating to the definition of capital flows, and introduce a framework that organises survey data and accounting information at different time horizons to form a judgment on the nature and scale of fund flows in Hong Kong.*

- *In an international financial centre like Hong Kong, where financial transactions that involve exchange of currencies may not correspond closely to transactions between residents and non-residents, fund flows into and out of the Hong Kong dollar may not correspond closely to cross-border capital flows. We find that net flows into and out of the Hong Kong dollar were much more volatile than cross-border net capital flows.*

- *Ex post, net inflows into the Hong Kong dollar can be defined as a net increase in Hong Kong-dollar deposits in Hong Kong's banking system, or a net increase in the Hong Kong-dollar Monetary Base, induced by a net increase in the foreign currency assets of the Authorized Institutions (AIs) or the Exchange Fund. Conversely, net outflows can be defined as a net reduction in Hong Kong-dollar deposits in Hong Kong's banking system, or a net reduction in the Hong Kong-dollar Monetary Base, induced by a net reduction in the foreign currency assets of the AIs or the Exchange Fund.*

- *Thus, in order to monitor fund flows into or out of the Hong Kong dollar, we need to watch for not only changes in the Monetary Base, but also changes in the net foreign currency positions of the AIs. These movements can be monitored using the monetary survey, of which the analytical accounts of the Exchange Fund are a component.*

- *Increased demand for the Hong Kong dollar can be accommodated by either an increase in the Hong Kong-dollar monetary aggregates, or by an appreciation of the exchange rate, or a combination of both. An appreciating exchange rate of the Hong Kong dollar implies that the private sector and the AIs are not willing to increase their net foreign currency positions indefinitely. If they were, then the strong-side Convertibility Undertaking (CU) would never be triggered. The triggering of the CU and an expanding Monetary Base at the Exchange Fund reflect a desire by the private sector and the AIs to reduce their net foreign currency positions and pass the foreign currency exposures to the Exchange Fund.*

- *Cross-border net inflows can be defined as an increase in the net claims by Hong Kong banks on non-resident banks, or a reduction in the net liabilities by Hong Kong banks owed to non-resident banks. Conversely, net outflows can be defined as a reduction in the net claims by Hong Kong banks on non-resident banks, or an increase in the net liabilities by Hong Kong banks owed to non-resident banks. These movements, together with cross-border interbank placements, are recorded in the Balance of Payments (BoP) accounts.*

- *By design BoP statistics may not capture well financial transactions that involve exchange of currencies, and are of limited use for understanding the implications of capital flows for domestic monetary conditions. Nevertheless, they describe in detail the nature and patterns of cross-border fund flows (i.e. whether they are for direct investment, portfolio investment or placement of deposits). In contrast, the monetary survey is informative for analysing the implications of fund flows for domestic monetary conditions, but it does not provide information on the movement of funds across different types of financial products and markets. To form a comprehensive judgment on the nature and scale of fund flows in Hong Kong requires analysing both the monetary survey and the BoP statistics.*

- *The paper also examines alternative financial statistics that can partially capture activities in the BoP accounts and the monetary survey, but are available with shorter time lags. Specifically, monthly statistics on net external claims of Hong Kong banks can be used to partly measure BoP activities, while daily data on changes in the Aggregate Balance as a result of foreign exchange operations by the HKMA and data on issuance and redemption of Certificates of Indebtedness can be used to gauge overall changes in net foreign currency assets of the Exchange Fund in the monetary survey.*

- *This monitoring framework is then applied to analyse four episodes of large fund flows in Hong Kong. The analyses indicate that:*

  1. *During 2003 Q4 – 2004 Q1, an increase in foreign deposits on expectation of Hong Kong-dollar appreciation alongside the renminbi appeared to be the main source of Hong Kong-dollar inflows, partly contributing to sharp appreciation of the Hong Kong-dollar exchange rate. The stock market was vibrant but inflows associated with equity portfolio investment were not that significant.*

2. *Strong equity-related cross-border inflows occurred during 2005 – October 2007, capitalising on a buoyant equity market and an IPO boom. However, the Hong Kong-dollar exchange rate was relatively stable most of the time due to currency carry trades taking advantages of the persistently negative HIBOR-LIBOR spreads.*

3. *Amid the US sub-prime crisis and the suspension of the "through train" scheme, local stock market adjusted downward during November 2007 – August 2008, resulting in equity-related Hong Kong-dollar outflows and a softening of the Hong Kong-dollar exchange rate. The conversion of Hong Kong dollars into renminbi deposits was popular during the period and the renminbi deposits in Hong Kong increased markedly as a result, but these movements were not an important factor in overall outflows.*

4. *Following a worsening of the global financial crisis, unwinding of carry trades and possibly repatriation of funds by the private sector appeared to be the main sources of very strong Hong Kong-dollar and cross-border inflows in 2008 Q4. While the magnitude of inflows was not large in 2009 Q1, Hong Kong-dollar inflows picked up strongly in 2009 Q2 alongside a sharp rebound in the local stock market. Market intelligence and private-sector survey data suggest that these Hong Kong-dollar inflows arose from equity-related demand, but BoP data for 2009 Q2 are not yet available to confirm the observation.*

I. INTRODUCTION

Capital flows into and out of Hong Kong have typically been perceived as large and volatile. However, there is often confusion about the definition and the measurement of such flows, despite their importance to monetary and financial stability in Hong Kong. In this paper we delineate conceptual issues relating to the definition of capital flows, and introduce a framework that organises survey data and accounting information at different time horizons to form a judgment on the nature and scale of fund flows in Hong Kong.

The paper attempts to answer the following questions: How do we know at a particular period of time whether there has been a net flow into or out of Hong Kong or the Hong Kong dollar? Does the movement of the Hong Kong-dollar exchange rate imply such net inflows or outflows? Is it possible to know whether it is foreigners (non-residents) or Hong Kong residents who are driving the flows? Is it possible to trace the linkages between capital flows and the movement of funds across different types of financial products and markets?

The rest of the paper is organised as follows: Section II discusses the conceptual issues in monitoring fund flows. It discusses the definition of net fund flows, and highlights the importance of distinguishing capital flows based on the concepts of currency conversion and residency. It also analyses how exchange-rate movements of the Hong Kong dollar are related to ex post fund flows between foreign currencies and the Hong Kong dollar.

Section III discusses measurement and statistical issues in monitoring capital flows. It describes the structure of the monetary survey of Hong Kong-dollar M3, and the Balance of Payments (BoP) accounts. It also examines alternative financial statistics that can help keep track of activities in the monetary survey and the BoP accounts, but are available with shorter time lags, including data on changes in the major components of the Monetary Base and statistics on external claims and liabilities of Hong Kong banks.

Section IV applies the framework to analyse selected episodes of large capital inflows and outflows in Hong Kong and illustrates how different statistics can be jointly analysed to come up with meaningful conclusions. The final section concludes.

II. CONCEPTUAL ISSUES

Fund flows into and out of the Hong Kong dollar

From the perspective of the Hong Kong dollar, the world can be analytically divided into three groups: the Hong Kong Monetary Authority (HKMA), the AIs that maintain clearing balances with the HKMA and the private sector, including both Hong Kong and foreign residents keeping Hong Kong-dollar deposits with the AIs. When the private sector as a group reduces its holdings of foreign currencies and increases holdings of Hong Kong dollars, i.e. when there is a net inflow to Hong Kong dollars, Hong Kong-dollar deposits at the AIs will increase, matched on the asset side of the AI's balance sheet by a net increase in foreign currency assets.

Under certain market conditions, the AIs themselves may also wish to reduce their foreign currency positions and increase their Hong Kong-dollar positions. The increased demand for the Hong Kong dollar by the private sector and the AIs can be accommodated by either an increase in the Hong Kong dollar monetary aggregates (i.e., Hong Kong dollar deposits, and/or the Monetary Base), or by an appreciation of the exchange rate, or a combination of both. An appreciating exchange rate of the Hong Kong dollar implies that the private sector and the AIs are not willing to increase their net foreign currency positions indefinitely, either because of prudential limits or because of their own risk management controls and capital constraints. If they were, then the strong-side Convertibility Undertaking (CU) would never be triggered.

The triggering of the CU and an expanding Monetary Base at the Exchange Fund reflect a desire by the private sector and the AIs to reduce their net foreign currency positions and pass the foreign currency exposures to the Exchange Fund. Normally the changes in the foreign currency assets of the Exchange Fund take place when the CU is triggered, at the initiative of the AIs rather than that of the HKMA; but on rare occasions, when it judges appropriate, the HKMA may conduct market operations within the Convertibility Zone in order to counteract disorderly market conditions, and those operations will lead to changes in the foreign currency position of the Exchange Fund, even though the CU is not triggered.

This process will reverse when there is a net outflow from Hong Kong dollars. Thus, *ex post, net inflows into the Hong Kong dollar can be defined as a net increase in Hong Kong dollar deposits in Hong Kong's banking system, or a net increase in the Hong Kong dollar Monetary Base, induced by a net increase in the foreign currency assets of the AIs and/or the Exchange Fund.*

Conversely, net outflows from the Hong Kong dollar can be defined as a net reduction in Hong Kong dollar deposits in Hong Kong's banking system, or a net reduction in the Hong Kong dollar monetary base, induced by a net reduction in the foreign currency assets of the AIs and/or the Exchange Fund. From this definition, it is clear that in order to monitor fund flows into or out of the Hong Kong dollar, we need to watch for not only changes in the Monetary Base, i.e. the Aggregate Balance, Exchange Fund Bills and Notes (EFBNs), and the CIs, but also changes in the net foreign currency positions of the AIs.

Hong Kong-dollar deposits can of course grow as a result of domestic credit creation, i.e., induced by a net increase in domestic assets of the AIs, and Hong Kong-dollar deposits can decline as a result of repayment of domestic loans, but these movements are not considered as net inflows or outflows since they are not induced by changes in net foreign currency assets of the AIs or the Exchange Fund. Hong Kong-dollar deposits can also be created by making Hong Kong-dollar loans to foreign banks; again those are not considered as net inflows.

Fund flows between Hong Kong residents and non-residents (cross-border flows)

Cross-border capital flows can be defined as changes in the claims and liabilities between Hong Kong residents and non-residents. *From the perspective of Hong Kong, net inflows can be defined as an increase in the net claims by Hong Kong banks on non-resident banks, or a reduction in the net liabilities by Hong Kong banks owed to non-resident banks. Conversely, net outflows can be defined as a reduction in the net claims by Hong Kong banks on non-resident banks, or an increase in the net liabilities by Hong Kong banks owed to non-resident banks.*

Cross-border net flows are defined as a relationship between Hong Kong banks and non-resident banks. Although this definition looks restrictive, it can in fact capture changes in the cross-border claims and liabilities between non-bank entities in Hong Kong and non-bank entities outside Hong Kong, as well as those between banks in Hong Kong and non-banks outside Hong Kong, and those between non-bank entities in Hong Kong and banks outside Hong Kong. This is of course based on the premise that all cross-border transactions are effected through the banking systems, which is a reasonable assumption since transactions using cash notes are typically a very small part of total cross-border financial transactions.

The definition can be illustrated with a few examples. Suppose Hong Kong registers a current account surplus. According to the double-entry accounting principle a credit entry is made in the current account, while a debit entry is made in the financial account. On the balance sheet of banks in Hong Kong, the debit entry represents an increase in Hong Kong banks' claims on foreign banks. Meanwhile, there is a matched increase in deposits, assuming Hong Kong exporters place the funds with banks in Hong Kong. Thus according to our definition above, a current account surplus would represent a net inflow of capital to Hong Kong.

Similarly, when there are capital inflows from the rest of the world to Hong Kong in the form of direct investment or portfolio investment, there will be an increase in bank deposits on the liability side of the balance sheet of Hong Kong's banking system, which represent the amount which is owed by banks to the recipient of the funds. This is matched by an increase in the balances due from overseas banks on the asset side (i.e. a rise in external claims).

When BoP statistics are used to analyse financial market variables such as exchange rates and equity prices, it is often implicitly assumed under the concept of residency that (1) such transactions involve a switching between foreign currencies and the local currency (in the case of analysis of exchange rates) and (2) capital inflows/outflows are associated with increased/decreased demand for local assets (in the case of analysis of equities and bonds). These implicit assumptions mostly hold in a relatively closed economy, but are not necessarily valid in a highly open economy like Hong Kong. The following three examples illustrate the difficulties of using the concept of residency to account for the complexity of financial transactions in an international financial centre like Hong Kong:

(1) Capital inflows and outflows recorded in the BoP accounts in Hong Kong may not actually involve the conversion of foreign currencies into and out of the Hong Kong dollar. For example, given Hong Kong's role as an international financial centre, it is common to have foreign currencies flowing into and out of Hong Kong for booking of offshore loans without switching into and out of the Hong Kong dollar. Such transactions have no direct impact on the Hong Kong-dollar exchange rate, but are captured in the BoP statistics.

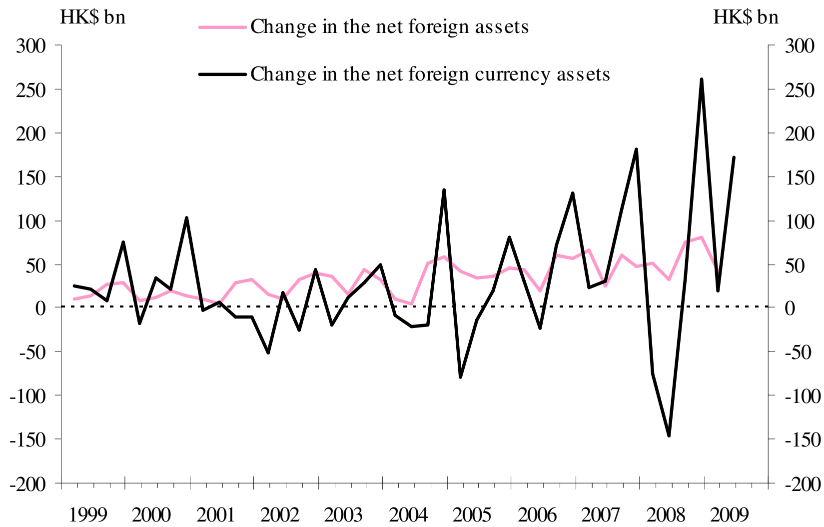
(2) The subscription of H-share IPOs of Mainland companies by local investors, which is common in Hong Kong, is recorded as capital outflows under the BoP framework because it is a transaction between Hong Kong residents and a non-resident Mainland entity. Such transaction normally does not require the conversion of foreign currencies by residents and would have no direct impact on the Hong

Kong-dollar exchange rate. Furthermore, capital outflows in such a case do not represent a decrease in demand for equities, as the conventional interpretation of the BoP accounts suggests. On the other hand, the subscription of H-share IPOs by foreign investors is not reflected in the BoP statistics, because it is a transaction between non-resident entities. However, since the subscription is transacted in Hong Kong dollars, it may have implications for local monetary and financial conditions.

(3) Local residents have sizable foreign currency assets in the banking system in Hong Kong. The switching between foreign currencies and Hong Kong dollars by Hong Kong residents has implications for the Hong Kong-dollar exchange rate, but is not recorded in the BoP statistics because it does not involve any non-resident entity.

Chart 1 shows that net flows into and out of the Hong Kong dollar, as measured by the changes in the net foreign currency assets of the AIs and the Exchange Fund, were much more volatile than cross-border net financial flows as measured by the change in net foreign assets of the Hong Kong residents. During certain time periods, even the directions of the two types of flows were different. For example, during the first two quarters of 2008, while there were net outflows from the Hong Kong dollar, there were net inflows to Hong Kong by non-residents.

Chart 1: Changes in the net foreign currency assets and in the net foreign assets



Sources: HKMA and Census and Statistics Department (C&SD).

III. MEASUREMENT AND STATISTICAL ISSUES

While the BoP statistics may not well capture financial transactions that have implications for local monetary and financial conditions, they describe in detail the nature and patterns of cross-border fund flows (i.e. whether they are for direct investment, portfolio investment or just placement of deposits). In contrast, the monetary survey does not provide any information on the movements of funds across different types of financial products and markets. To form a comprehensive judgment on the nature and scale of fund flows in Hong Kong will require analysing both the monetary survey and the BoP statistics.

The Hong Kong-dollar M3 monetary survey

The foreign currency positions of the AIs and the Exchange Fund can be analysed using the monetary survey. The monetary survey combines the balance sheet of the monetary authority with that of the banking system to arrive at the ex-post determinants of money supply, which are the liabilities of the banking system as a whole. In Hong Kong, the framework of monetary survey differs from the one defined by International Financial Statistics (IFS) of the International Monetary Fund in one important aspect: the monetary survey in Hong Kong is based on currency denomination instead of the concept of residency used in the IFS. This feature makes the monetary survey in Hong Kong well suited for analysing fund flows into and out of the Hong Kong dollar, but also makes it potentially inconsistent with the BoP statistics.

Under the monetary survey, the monetary liabilities of the banking system (Hong Kong-dollar M3) [1] are re-classified into five major categories under the consolidated balance sheet of the Exchange Fund and AIs (with transactions between them cancelling out each other), namely, Hong Kong-dollar credit to the private sector, Hong Kong-dollar net credit to the government, net foreign currency assets, net Hong Kong-dollar claims on banks abroad and net other Hong Kong-dollar assets. The identity of Hong Kong-dollar M3 reads:

HK$ M3 = HK$ credit to private sector + (net) HK$ credit to the government + (net) foreign currency assets + (net) HK$ claims on banks abroad + net other HK$ items

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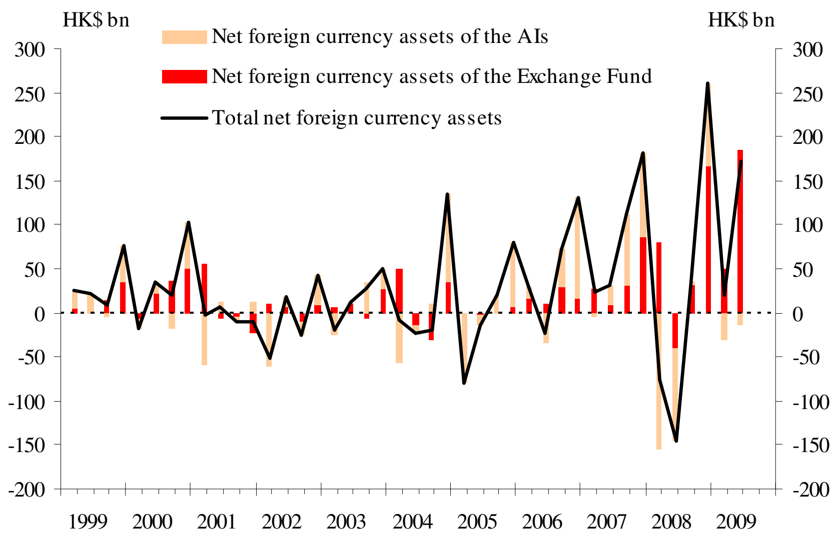
[1] Hong Kong-dollar M3 is defined as the sum of legal tender notes and coins held by the public plus customers' demand deposits, savings, and time deposits placed with banks, restricted licence banks and deposit-taking companies plus negotiable certificates of deposit (NCDs) issued by these institutions held outside the banking sector. In addition, Hong Kong-dollar M3 in the monetary survey is adjusted to include foreign currency swap deposits (from December 1984 onwards) and exclude government deposits and Exchange Fund deposits with licensed banks.

The foreign currency-asset component of the monetary survey measures changes in Hong Kong-dollar M3 that are attributable to conversion of foreign currencies, while other major components measure the effect of credit extension on money supply. As such, changes in the net foreign currency-asset component measure the inflow and outflow of the Hong Kong dollar.[2] Chart 2 below shows the changes in Hong Kong-dollar M3 that were induced by net changes in the foreign currency assets of the AIs and the Exchange Fund. The changes in the net foreign currency asset of the AIs and those of the Exchange Fund did not always move in the same direction. For example, in the face of increasing demand for the Hong Kong dollar by the private sector, the AIs may instead wish to reduce their already large net foreign currency positions, in which case the exchange rate will appreciate quickly, triggering the strong-side CU and an increase in the net foreign currency position of the Exchange Fund. This appeared to be the case in the first two quarters of 2009.

Chart 2: Quarterly changes in Hong Kong-dollar M3 induced by fund flows



Source: HKMA.

While the monetary surveys provide a comprehensive picture of fund flows into and out of the Hong Kong dollar, they are compiled every month and are available with a time lag of about four weeks. Daily data on changes in the Aggregate Balance as a result of foreign exchange operations by the HKMA and data on issuance and redemption of CIs should help the HKMA broadly gauge changes in net foreign currency assets of the Exchange Fund in the monetary survey and form a preliminary judgment on the direction and scale of the fund

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2 Note that changes in the net foreign currency-asset component can be due to valuation effects arising from price and exchange rate changes.

flows into and out of the Hong Kong dollar with relatively short time lags. In addition, the AIs also provide data of their total net spot foreign currency positions, total net forward foreign currency positions, and the aggregate open positions to the HKMA for the purposes of meeting regulatory requirements. Conceptually, the total net spot foreign currency positions are equivalent to the net foreign currency positions of the AIs in the monetary survey. These foreign currency position statistics of banks could provide additional information on the nature of Hong Kong-dollar fund flows.

Balance of Payments statistics

BoP statistics consist of two broad accounts: (1) the current account, which covers transactions involving goods, services, factor income, and current transfers; and (2) the financial and capital account, which covers transactions involving financial claims and liabilities, as well as capital transfers. The financial and capital account is often decomposed into reserve assets and the non-reserve portion, the former reflecting activities of the central bank and the latter private capital flows.

The non-reserve financial and capital account consists of the following key components, as shown in Chart 3 in the case of Hong Kong:

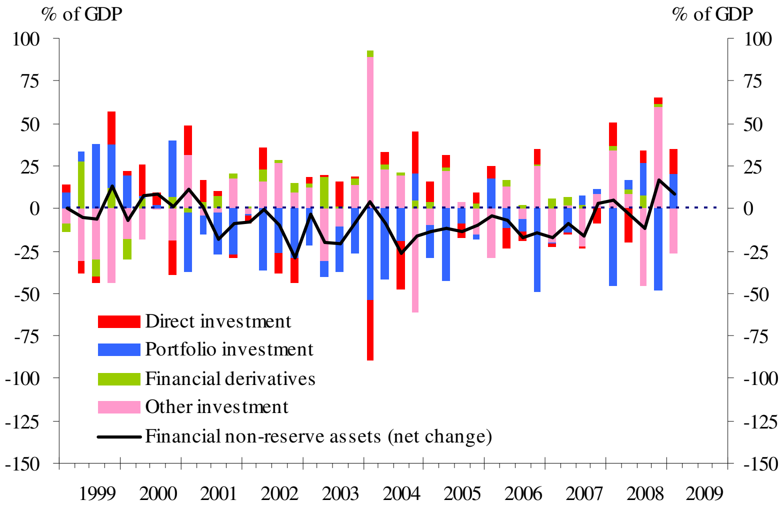
Direct investment: when an entity in one economy obtains a lasting interest in an enterprise unit in another economy, the transaction is defined as direct investment.

Portfolio investment: defined as transactions in financial instruments, including equity securities, debt securities and money market instruments.

Other investment: it mainly comprises trade credits, loans, currency and deposits, as well as other assets and liabilities (such as miscellaneous accounts receivable and payable).

Financial derivatives: they consist of transactions in financial derivatives such as options and warrants.

Chart 3: Non-reserve financial and capital accounts of BoP in Hong Kong



Note: A positive value indicates net capital inflows.
Source: C&SD.

While the BoP accounts provide a comprehensive picture of cross-border capital flows, they are available only with a considerable lapse of time. In Hong Kong, BoP statistics are compiled every quarter and are available with a delay of about 12 weeks. However, statistics on external claims and liabilities of Hong Kong banks can be used to partly gauge activities in the BoP accounts. These statistics are available on a quarterly basis for all counterpart countries with a time lag of about five weeks, or on a monthly basis for five major countries (US, UK, Japan, China and Singapore) and the rest of the world with a time lag of about six weeks. These time lags represent a considerable improvement over the 12-week delay of the quarterly BoP statistics.

Theoretically, net external claims of Hong Kong banks on non-resident banks approximately represent net inflows in the current account and the non-reserve financial and capital account of the BoP. Table 1 shows the relationship between BoP account activities and the external claims and liabilities of Hong Kong banks, under the assumption that all cross-border transactions are effected through the banking system:

Table 1: Relationship between banks' external claims/liabilities and BoP activities

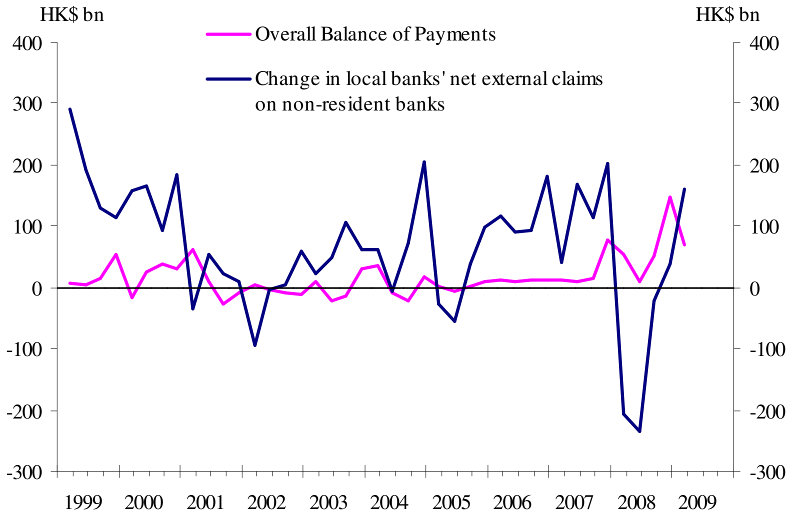
	Claims	Liabilities
Increase	Hong Kong's exports to the rest of the world Foreign direct investment, portfolio investment and inflows of deposits in Hong Kong	Hong Kong's imports from the rest of the world Hong Kong's direct investment, portfolio investment, and outflows of deposits in the rest of the world
Decrease	Hong Kong's imports from the rest of the world Hong Kong's direct investment, portfolio investment, and outflows of deposits in the rest of the world	Hong Kong's exports to the rest of the world Foreign direct investment, portfolio investment, and inflows of deposits in Hong Kong

In short, the net external claims of Hong Kong banks on non-resident banks would usually rise when there is an increase in net receipts arising from current account activities or cross-border capital flows. The only exceptions are interbank placements. Interbank placements are recorded in the other investment account of the BoP, but their impact on the net external claims of Hong Kong banks on non-resident banks is nil. To illustrate, suppose a Hong Kong bank places an interbank deposit in a foreign bank. On the asset side, there is an increase in due from foreign bank, while on the liability side there is an increase in due to foreign bank as a result of nostro account transaction. The net impact of the transaction on the net external claims of Hong Kong banks on non-resident banks as a whole is nil, but the transaction is captured in the BoP statistics.

Overall, changes in the net external claims of the Hong Kong banks on non-resident banks can be used to approximately gauge the overall BoP position.[3] Chart 4 shows a broadly positive relationship between the overall BoP position and changes in net external claims of Hong Kong banks on non-resident banks. However, the volatility in the overall BoP positions was much smaller than changes in the net external claims of the banks. This may be explained by the fact that the latter does not capture the movements in interbank placements, which could be volatile. Chart 5 shows that, after adjusting the overall BoP positions for net movements in other investment flows (which include interbank placement), the co-movement between changes in the net external claims of the banks and the overall BoP position became much stronger.

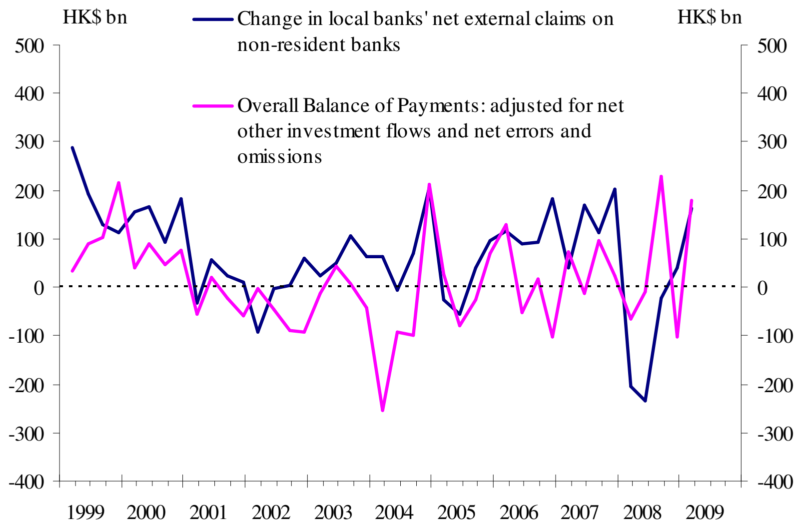
[3] Changes in the net external claims of Hong Kong banks on non-resident banks also include valuation effect arising from price and exchange rate changes.

Chart 4: Relationship between net external claims of Hong Kong banks and the overall BoP position



Sources: HKMA and C&SD.

Chart 5: Relationship between net external claims of Hong Kong banks and the overall BoP position after adjusting for other investment flows



Sources: HKMA and C&SD.

While the net external claims statistics provide a more timely indication of the overall BoP position, partial data on some individual components of the BoP are available for more detailed analysis. Data on merchandise trade balance of the current account are available every month, while survey data on portfolio flows are also available from certain private information agencies (e.g. EPFR Global and State-Street have surveys on equity capital flows). These, coupled with intelligence from conversations with market participants and observations of high-frequency market data such as exchange rates, equity prices and interest rates, should give a rough indication of the nature of capital flows and changes in the overall BoP position.

Overall, our framework for monitoring capital flows in Hong Kong is summarised in Table 2 below:

Table 2: Framework for monitoring capital flows in Hong Kong

Concepts of fund flows	Key official statistics to watch	More frequent but less complete statistics and other supplementary data
Flows of funds across borders	Based on the concept of residency, BoP accounts provide detailed data on different types of capital flows (e.g. direct investment, portfolio flows and cross-border deposits). However, data are infrequent (quarterly) and available with a long time lag of 12 weeks.	More frequent data on net external claims of Hong Kong banks on non-resident banks can be used to have an approximate assessment of the overall BoP position. Partial data are also available on different components of the BoP accounts (e.g. merchandise trade balance, survey on portfolio flows) on a monthly basis for more in depth analysis.
Flows of funds involving switching of foreign currencies	Based on the concept of currency conversion, the net foreign currency assets of the AIs, and of the Exchange Fund, can gauge the flows into and out of the Hong Kong dollar. Data are compiled on a monthly basis with a time lag of about four weeks.	Data on changes in the Aggregate Balance, outstanding amount of CIs, and EFBNs are available daily to gauge currency conversion under the operations of the currency board system. Data on foreign currency positions of the AIs are also available for analysis of inflows and outflows of the Hong Kong dollar in the banking system.

IV. Episodes of large Hong Kong dollar fund flows between 2003 and mid-2009

This section makes use of the monitoring framework discussed above to analyse four episodes of large Hong Kong-dollar fund flows between 2003 and mid-2009. The analysis of each episode follows the same steps and proceeds in a manner similar to real-time application of the framework to analyse the uncertain nature of capital flows. First, high-frequency daily market data and anecdotal market intelligence are examined to form a broad picture on the reported reasons for the capital flows. Secondly, as time goes by and more data are available, monthly data on net external claims of banks are studied to ascertain if the direction and nature of fund flows are consistent with the preliminary story presented in the first part. Finally, after a longer time lag of data release, the monetary survey and BoP statistics are examined in great details to comprehensively analyse the nature of fund flows.

Table 3 summarises for comparison purposes the key nature of the four episodes of large capital flows. Each episode is analysed in more detail below.

Table 3: Summary on the key nature of capital flows

Episodes of large fund flows	Major reported reasons of fund flows	The nature of fund flows based on analysis of the monetary survey and BoP statistics
1. Inflows 2003 Q4 – 2004 Q1	(i) structural weakening of the US dollar (ii) a revival in confidence alongside improved prospects for the economy and buoyant asset markets (iii) the use of the Hong Kong dollar as a proxy for renminbi trading	Inflows of foreign deposits on expectation of Hong Kong-dollar appreciation alongside the renminbi were the key source of inflows into the Hong Kong dollar. Some Hong Kong dollar inflows were also related to equity portfolio investment on improved prospects but they appeared to be less important.

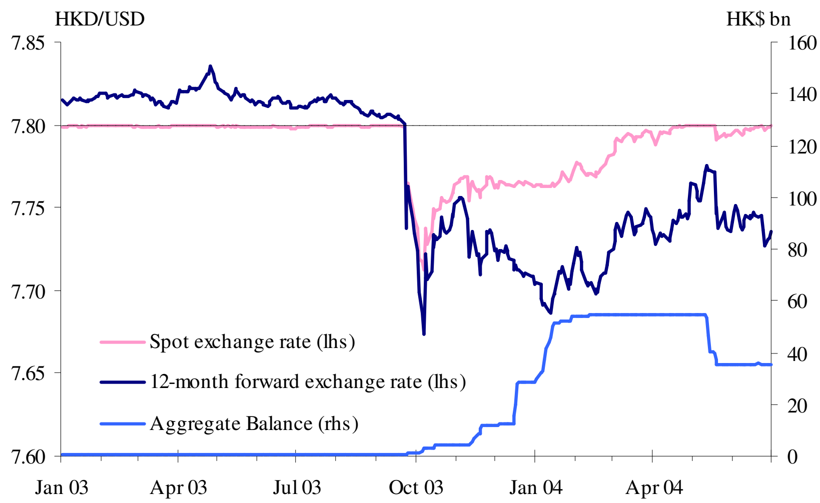
2. Inflows 2005 – 2007	(i) equity IPO boom and increased foreign demand for local stocks including H-shares (ii) announcement of the "through train" scheme allowing Mainland residents to invest in the local stock market (iii) carry trades	Strong equity-related HKD inflows by both Hong Kong residents and non-residents emerged to benefit from the buoyant equity market. But carry trades were prevalent amid persistently negative HIBOR-LIBOR spreads, offsetting the impact of equity-related inflows on the HKD exchange rate.
3. Outflows November 2007 – August 2008	(i) sharp adjustment of the local stock market amid the fallout of the US sub-prime crisis and moratorium of the "through train" scheme (ii) the conversion of Hong Kong-dollar deposits into domestic renminbi deposits	The Hong Kong-dollar outflows were mainly equity-related withdrawals by non-residents, and the impact of conversion of Hong Kong dollars into renminbi deposits by Hong Kong residents was not important.
4. Inflows 2008 Q4 – 2009 Q2	(i) unwinding of carry trades (ii) repatriation of funds by Hong Kong residents (iii) equity-related inflows positioning for better investment opportunities in Hong Kong and Mainland China	In 2008 Q4, unwinding of carry trades, and possibly repatriation of funds by the private sector, were the main sources of Hong Kong-dollar and BoP inflows, and the importance of equity-related inflows was only secondary. Market information and private-sector survey data suggest that the strong Hong Kong-dollar inflows in the first half of 2009 might be driven by equity-related demand, although the second-quarter BoP data are not yet available to confirm the observation.

Episode 1: 2003 Q4 – 2004 Q1

Market data and intelligence

In late September and early October 2003, the Hong Kong-dollar spot exchange rate strengthened markedly against the US dollar and reached 7.7094 on 7 October 2003 (Chart 6). In response, the HKMA sold Hong Kong dollars to banks to meet the increased demand for the currency, leading to subsequent softening of the exchange rate and further easing of interbank interest rates. As a result of the HKMA's foreign exchange operations, the Aggregate Balance climbed from less than $1 billion in early September 2003 to a high of around $55 billion in late January 2004. Along with rapidly rising interbank liquidity, HIBORs eased to near zero levels. The HIBOR-LIBOR differentials also turned negative and widened to around -100 basis points at the end of 2003. Overall, inflows into the Hong Kong dollar appeared to be sizeable during the period.

Chart 6: Exchange rates and the Aggregate Balance



Source: HKMA.

Market intelligence suggested that the rapid strengthening of the Hong Kong-dollar exchange rate reflected (1) a structural weakening of the US dollar against other major currencies; (2) a rebound from pessimism following the onset of Severe Acute Respiratory Syndrome (SARS) outbreak, a rapid revival in confidence caused by improved prospects for the economy and buoyant asset markets; and (3) market speculation about renminbi revaluation and the use of the Hong Kong dollar as a proxy for renminbi trading.

In the absence of more data, it was difficult to distinguish the relative importance of different factors in contributing to capital inflows. News reports appeared to support the story of improved economic prospects and buoyant asset markets, which supported strong portfolio inflows. In particular, the relaxation of travel restrictions on Mainland visitors to Hong Kong and the conclusion of the Closer Economic Partnership Arrangement (CEPA) markedly boosted sentiments in the local economy. In October 2003, Moody's also upgraded Hong Kong's long-term foreign currency rating by two notches. In addition, local stock market was buoyant between May 2003 and February 2004, with the Hang Seng Index rising by about 5,000 points to near the 14,000 level.

On the other hand, market data also provided indirect support to the renminbi revaluation story, which might have supported strong inflows either in the form of portfolio investment, or bank deposits, or both. It was found that the broad movements in the 12-month Hong Kong-dollar forward exchange rate correlated closely with those in the 12-month renminbi non-deliverable forward exchange rate during the period. In addition, the Hong Kong-dollar forward points shifted from small premia to significant discounts during the period with the 12-month tenor widening to -600 pips at the end of 2003, meanwhile the 12-month non-deliverable forward discounts of the renminbi expanded to a high of 5,500 pips on 7 October 2003.

Net external claims of banks

As time went by more data were released. The net external claims of banks increased quarter on quarter in the final four months of 2003. This suggests that there were net capital inflows from non-residents. However, it was not possible to tell what those inflows were for, although monthly data provided by EPFR Global[4] pointed to sharply larger net buying of domestic stocks (excluding H-shares and Red-chips) by portfolio managers between September 2003 and January 2004 than the first eight months of 2003.

[4] EPFR Global provides data tracking portfolio managers' aggregate net buying/selling of stocks by country and region. These data cover over 900 funds in 55 emerging and developed markets. However, the company classifies Shanghai and Shenzhen A and B shares as well as H-shares and Red-chips under "Mainland China". As a result, the data in the class of "Mainland China" contain information about equity investment into the stock market of Hong Kong.

Monetary survey and Balance of Payments statistics

The monetary survey indicates significant Hong Kong-dollar inflows during the period. From September 2003 to January 2004, Hong Kong-dollar M3[5] broadly grew, largely driven by a rise in the net foreign currency assets of the Exchange Fund and AIs. The contribution of the net foreign currency assets of the Exchange Fund to the growth in Hong Kong-dollar M3 more than doubled that of the AIs. During the period, the net foreign currency assets posted an average monthly increase of $23.9 billion.

According to the BoP statistics, non-residents (banks and non-banks) substantially increased their holdings of currency and deposits in Hong Kong's banking system, with an increase in other investment (OI) liabilities amounting to 74.3% of GDP in 2003 Q4 and 79.2% of GDP in 2004 Q1 (Table 4). The capital inflows were strong so that the OI account recorded net inflows in these two quarters and there were overall capital inflows in the non-reserve financial accounts in 2004 Q1.[6] Reflecting US-dollar purchases by the HKMA, reserve assets increased in 2003 Q4 and 2004 Q1. The sharp rise in the OI account provides strong support to the proposition that inflows of foreign deposits on expectation of Hong Kong-dollar appreciation alongside the renminbi were a major source of financial capital inflows into Hong Kong during the period.

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[5] Hong Kong-dollar M3 in the monetary survey is adjusted to include foreign currency swap deposits (from December 1984 onwards) and to exclude government deposits and Exchange Fund deposits with licensed banks.

[6] This compares with the fact that, except for 2004 Q1, Hong Kong registered net capital outflows in the non-reserve financial accounts between 2001 Q3 and 2003 Q4, largely because of its persistent current account surpluses.

Table 4: BoP statistics for 2003 Q4 and 2004 Q1

(% of GDP)	**2003 Q4**	**2004 Q1**
Current account balance	**9.9**	**3.0**
Capital transfers	**-0.7**	**0.0**
Financial non-reserve assets (net change)	**-8.2**	**4.0**
OI assets	-60.5	9.8
OI liabilities	74.3	79.2
PI assets	-31.8	-55.0
PI liabilities	5.3	0.7
DI assets	6.8	-51.6
DI liabilities	-5.8	16.8
FD assets	15.9	13.6
FD liabilities	-12.3	-9.5
Reserve assets (net change)	**-9.5**	**-11.5**
Net errors and omissions	**8.4**	**4.6**

Notes: A positive number indicates BoP inflows (i.e. a decrease in assets or an increase in liabilities). "OI", "PI", "DI" and "FD" denote "other investment", "portfolio investment", "direct investment" and "financial derivatives" respectively.
Source: C&SD.

However, the BoP statistics did not record substantial increases in portfolio investment liabilities in 2003 Q4 and 2004 Q1. In other words, there did not appear to have been large portfolio inflows from non-residents. Instead, the data showed sizable rises in portfolio investment assets, partly reflecting the purchase of Mainland-related shares by Hong Kong residents from non-residents.[7] This reflects that Hong Kong residents might buy more H-shares from non-residents so that the overall equity portfolio position was a net outflow in the BoP accounts. Overall, data suggest that while there could be equity-related inflows into the Hong Kong dollar to take advantage of rising local equity prices, the size of inflow was smaller than deposit inflows in the other investment account.

[7] Another possibility would be the purchase of blue-chip shares that are not domiciled in Hong Kong.

To sum up, BoP statistics provide evidence that inflows of foreign deposits on expectation of Hong Kong dollar appreciation alongside the renminbi were the key source of inflows into Hong Kong during late 2003 – early 2004. The inflows contributed to sharp appreciation of the Hong Kong dollar exchange rate. Some Hong Kong-dollar inflows were also related to equity portfolio investment on improved economic prospects, but they appeared to be less important.

Episode 2: 2005 – 2007

Market data and intelligence

Hong Kong witnessed an equity IPO boom and a buoyant stock market from 2005 to October 2007. During that period, there were reports of Hong Kong dollar inflows associated with foreign demand for local stocks including H-shares and Mainland-related IPOs. However, after strengthening in 2005, the Hong Kong-dollar spot exchange rate generally weakened between January 2006 and July 2007. According to market intelligence, this partly reflected interest rate arbitrage activities taking advantages of negative Hong Kong dollar-US dollar interest rate spreads. Meanwhile, the level of the Aggregate Balance was stable, staying at around \$1.2 – 1.3 billion most of the time.

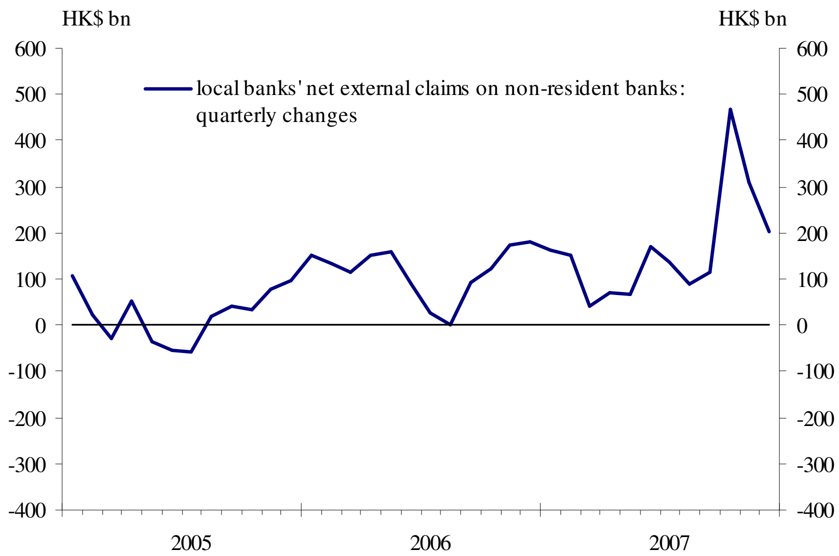
In August 2007, the stock market gained momentum, benefiting from the announcement of the “through train” scheme allowing Mainland residents to invest in the local stock market as well as the extension of the Qualified Domestic Institutional Investor scheme. The Hong Kong dollar quickly strengthened towards the strong-side CU, reportedly due to equity-related demands and an unwinding of carry trades caused by heighted global risk aversion induced by the US sub-prime crisis. On 23 October 2007, the HKMA operated within the Convertibility Zone and the strong-side CU was triggered on 26 and 31 October 2007. These foreign exchange market operations raised the Aggregate Balance to \$10.6 billion at the end of 2007.

Overall, market intelligence suggests strong equity-related Hong Kong-dollar inflows to capitalise on the buoyant equity market during the period, but this was not reflected in the relatively stable Hong Kong dollar exchange rate, as carry trades were reportedly popular amid persistently negative HIBOR-LIBOR spreads, offsetting the impact of equity-related inflows on the exchange rate.

Net external claims of banks

The quarterly changes in the net external claims of banks were generally positive and on an upward trend (Chart 7), consistent with net inflows from non-residents. As evidenced by the data compiled by EPFR Global, portfolio managers invested heavily in domestic and Mainland-related equities during the period. Overall, early evidence does not contradict the story of co-existence of equity inflows and carry trade activities, and provides some indications of strong BoP inflows.

Chart 7: Changes in the net external claims of banks



Source: HKMA.

Monetary survey and Balance of Payments statistics

Monetary survey shows that Hong Kong-dollar M3 increased markedly between 2005 and 2007, and the net foreign currency assets of both the Exchange Fund and AIs contributed significantly to the growth of Hong Kong-dolllar M3 (Table 5). The net foreign currency assets recorded average monthly increases of \$0.6, \$17.4 and \$28.9 billion in 2005, 2006 and 2007 respectively, suggesting growing Hong Kong-dollar inflows over these years.

Table 5: Yearly monetary survey of Hong Kong-dollar M3

	2003	2004	2005	2006	2007	2008
Annual growth rate (%)						
HK$ M3	**5.9**	**4.5**	**5.6**	**19.2**	**17.6**	**-0.9**
Percentage-point contribution (percentage points)						
HK$ credit to the private sector	**-1.4**	**4.5**	**5.5**	**9.3**	**9.0**	**2.1**
HK$ credit to the government (net)	**2.5**	**-1.4**	**-0.8**	**-1.2**	**-5.0**	**-2.1**
Net foreign currency assets	**3.6**	**4.0**	**0.3**	**8.9**	**12.4**	**2.3**
Exchange Fund	1.9	1.9	0.1	3.1	5.6	7.3
AIs	1.7	2.1	0.2	5.8	6.9	-5.0
Net HK$ claims on banks abroad	**2.6**	**0.6**	**0.6**	**4.6**	**2.4**	**-3.1**
Net other HK$ items	**-1.3**	**-3.1**	**0.1**	**-2.4**	**-1.1**	**0.0**

Note: Figures may not add up to total due to rounding.

Despite substantial net Hong Kong-dollar inflows, carry trades appeared to be a sufficient force to offset the strengthening pressures on the exchange rate, working as designed under the Linked Exchange Rate system. There was indirect evidence that activities in carry trades might be growing notably. A three-yearly survey shows that the net turnover for foreign exchange contracts involving US dollar/Hong Kong dollar was US$72.5 billion per day in April 2007, which was 178% higher than in April 2004. The growth in the net turnover for foreign exchange contracts involving the US dollar/Hong Kong dollar may reflect a number of factors including interest-rate arbitrage and more Mainland-related activities through the Hong Kong foreign exchange market.

Besides carry trades, another reason why the Hong Kong-dollar spot exchange rate did not have significant strengthening pressure may be due to lending activities. Foreigners in need of Hong Kong dollars can borrow instead of converting their foreign currencies. In this episode, two observations can be made. First, Hong Kong dollar customer loans to non-residents rose during 2005 – 2007. These loans accounted for 4.2% of total Hong Kong dollar loans at the end of 2007, up from 2.4% at the end of 2004. Secondly, the local banking sector has been a net Hong Kong-dollar lender to banks abroad since 2003 with such lending expanding markedly in 2006 and 2007, and peaked at late 2007 and early 2008, partly reflecting lower costs of borrowing in Hong Kong dollars.

The BoP statistics show increasing capital inflows relating to (equity) portfolio investment liabilities during 2005 – 2007. The capital inflows amounted to 5.2% of GDP in 2005 and rose to 36.3% in 2007 (Table 6). This was in line with the story of increased foreign purchase in the local stock market. In addition, (equity) portfolio investment assets increased from -22.9% of GDP in 2005 to -37.6% of GDP in 2007, which was in line with the story of increased purchase of H shares by Hong Kong residents.

Table 6: BoP statistics for 2005 – 2007

(% of GDP)	**2005**	**2006**	**2007**
Current account balance	**11.4**	**12.1**	**12.3**
Capital transfers	**-0.4**	**-0.2**	**0.6**
Financial non-reserve assets (net change)	**-12.1**	**-10.9**	**-9.6**
OI assets	-10.5	-30.8	-78.7
OI liabilities	10.3	32.2	71.0
PI assets	-22.9	-22.0	-37.6
PI liabilities	5.2	7.9	36.3
DI assets	-15.3	-23.7	-29.5
DI liabilities	18.9	23.7	26.2
FD assets	11.7	10.2	14.4
FD liabilities	-9.5	-8.5	-11.7
Reserve assets (net change)	**-0.8**	**-3.2**	**-7.1**
Net errors and omissions	**1.8**	**2.2**	**3.7**

Notes: A positive number indicates inflows (i.e. a decrease in assets or an increase in liabilities). "OI", "PI", "DI" and "FD" denote "other investment", "portfolio investment", "direct investment" and "financial derivatives" respectively.

Source: C&SD.

There were also substantial increases in both other investment assets and liabilities over the years. The former may reflect increased investment interest in higher-yield foreign currencies and overseas financial markets, consistent with increased carry trade activities. The latter may be due to H-share IPO activities. Mainland companies newly listed on the Hong Kong Stock Exchange may temporarily place their IPO proceeds in Hong Kong's banking system. This was recorded as other investment (OI) inflows (an increase in OI liabilities).[8]

Episode 3: November 2007 to August 2008

Market data and intelligence

Amid the fallout of the US sub-prime crisis and moratorium of the "through train" scheme, the Hong Kong dollar spot exchange rate depreciated towards the central parity rate of 7.80, reportedly due to carry trades amid wider HIBOR-LIBOR differentials, and fluctuated around that level through August 2008. In addition, the stock market adjusted markedly downward from its high in October 2007 and equity IPO activities declined considerably, reportedly contributing to fund flows out of the Hong Kong dollar and BoP capital outflows. Meanwhile, the conversion of Hong Kong dollars into renminbi deposits by the Hong Kong residents in their local bank accounts was reportedly very popular, which was viewed by investors as a safe and capital preserving investment tool amid stock market correction and low interest rates on Hong Kong-dollar deposit rates. Such conversions represented fund flows out of the Hong Kong dollar by residents.

Net external claims of banks

The net external claims of banks generally declined during the period and current-account-adjusted data showed significant non-reserve financial account outflows. Data provided by EPFR Global suggest that there were considerable net selling of domestic and Mainland-related stocks by portfolio managers during the period, with the former recording monthly decline averaging US$600.2 million. Taken together, these statistics support that there were indeed withdrawal of funds from Hong Kong by non-residents, and a significant part of the outflows is equity-related.

External claims statistics also provide indirect confirming evidence on the renminbi conversion story. Monetary statistics show that domestic renminbi deposits rose markedly between October 2007 and May 2008, although its share in the total foreign currency deposits remained small at around 1 – 3% (Chart 8). As renminbi deposits in Hong Kong are deposited with the People's

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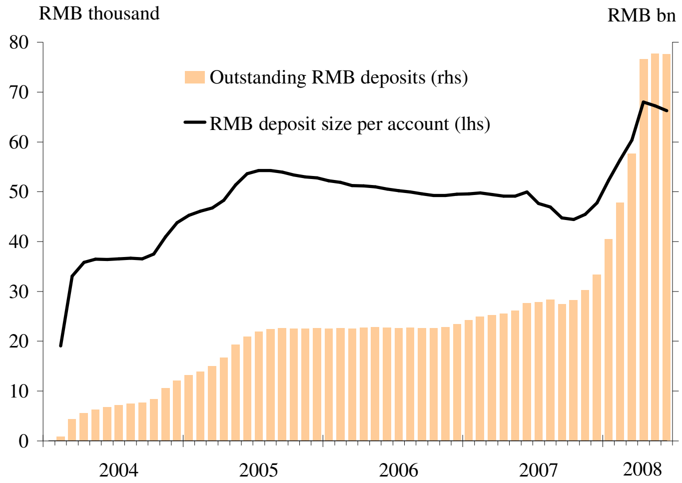
8 On the other hand, a repatriation of IPO funds out of the domestic banking system by Mainland issuers are treated as other investment outflows (a decrease in OI liabilities).

Bank of China, through the renminbi Clearing Bank in Hong Kong, Hong Kong banks' external claims on banks in Mainland China should rise during the period if there was a significant increase in renminbi deposits. Indeed, Hong Kong banks' external foreign currency claims on banks in Mainland China increased from HK$239 billion at the end of September 2007 to a peak of HK$460 billion at the end of July 2008.

Chart 8: Renminbi deposits in Hong Kong



Source: HKMA

Monetary survey and Balance of Payments statistics

The monetary survey shows that Hong Kong-dollar M3 decreased between 2007 Q4 and 2008 Q2, and the net foreign currency assets of the AIs contributed significantly to the decline of Hong Kong-dollar M3 (Table 7). The AI's net foreign currency assets recorded average monthly decreases of $32.0 billion from October 2007 to July 2008. This indicates significant fund flows out of the Hong Kong dollar. Meanwhile, the level of the Aggregate Balance was stable, staying at around $4.6 – 4.7 billion most of the time.

Table 7: Quarterly monetary survey of Hong Kong-dollar M3

	2007 Q4	2008 Q1	2008 Q2	2008 Q3
Quarterly growth rate (%)				
HK$ M3	**-3.8**	**-3.2**	**-3.0**	**2.8**
Percentage-point contribution (percentage point)				
HK$ credit to the private sector	**-4.7**	**1.1**	**1.3**	**0.6**
HK$ credit to the government (net)	**-2.7**	**-1.1**	**0.4**	**1.0**
Net foreign currency assets	**5.3**	**-2.3**	**-4.6**	**1.1**
Exchange Fund	2.5	2.4	-1.2	1.0
AIs	2.8	-4.7	-3.3	0.1
Net HK$ claims on banks abroad	**-1.6**	**0.4**	**-0.4**	**0.0**
Net other HK$ items	**-0.2**	**-1.4**	**0.2**	**0.0**

Note: Figures may not add up to total due to rounding.

According to the BoP statistics, substantial net capital outflows in the portfolio investment account emerged in 2008 Q1 (62.5% of GDP) as non-residents became net sellers of domestic stocks (Table 8). While the conversion of Hong Kong dollars into renminbi deposits by the Hong Kong residents in their local bank accounts was expected to increase the capital outflows by residents (an increase in OI assets), the OI account actually recorded substantial capital inflows by residents due to decreases in OI assets in 2008 Q1 and Q2. This suggests that while the conversion of Hong Kong dollar deposits into renminbi deposits caught media attention and received significant press coverage, the actual impact on the overall capital flows was not material. This was not surprising given that renminbi deposits only represented 1 – 3% of total foreign currency deposits in the banking system.

Table 8: BoP statistics in late 2007 – 2008

(% of GDP)	2007 Q4	2008 Q1	2008 Q2	2008 Q3
Current account balance	**10.6**	**12.3**	**8.1**	**17.4**
Capital transfers	**0.2**	**0.6**	**0.5**	**1.9**
Financial non-reserve assets (net change)	**2.8**	**4.5**	**-3.0**	**-11.4**
OI assets	-101.7	34.4	31.3	-44.8
OI liabilities	109.9	-0.6	-23.2	-0.6
PI assets	-64.3	17.0	-16.6	1.8
PI liabilities	67.4	-62.5	22.5	17.0
DI assets	-40.9	-23.5	-48.7	-12.6
DI liabilities	32.3	37.2	28.8	20.1
FD assets	13.8	18.6	28.3	37.3
FD liabilities	-13.8	-16.0	-25.4	-29.7
Reserve assets (net change)	**-17.5**	**-13.4**	**-2.6**	**-11.9**
Net errors and omissions	**3.9**	**-4.0**	**-2.9**	**4.1**

Notes: A positive number indicates inflows (i.e. a decrease in assets or an increase in liabilities). "OI", "PI", "DI" and "FD" denote "other investment", "portfolio investment", "direct investment" and "financial derivatives" respectively.

Source: C&SD.

Overall, equity-related outflows appeared to be the major driver of the Hong Kong-dollar outflows. Conversion into renminbi deposits was common during the period and the renminbi deposits in Hong Kong increased markedly as a result. However, the aggregate impact of the changes in domestic renminbi deposits on the BoP accounts did not seem to be large, possibly reflecting the small deposit base.

Episode 4: 2008 Q4 and the first half of 2009

Market data and intelligence

In mid-September 2008, the US Government's decision not to rescue the investment bank Lehman Brothers sent shock waves through global financial systems and made currency markets extremely volatile. The Hong Kong-dollar spot exchange rate quickly strengthened towards the strong-side CU in September and October 2008, and stayed near 7.75 thereafter. The strong-side CU was repeatedly triggered between 31 October and 31 December, prompting the HKMA to passively inject liquidity into the banking system. As a result, the Aggregate Balance increased from $4.7 billion in mid-September to a high of $175.5 billion in early January 2009, indicating strong inflows into the Hong Kong dollar. The abrupt changes were reportedly attributable to a number of factors including:

- Earlier Hong Kong dollar-funded carry trade positions were unwound due to risk aversion by banks and their clients.

- Given the large net positive international investment position in Hong Kong, there was repatriation of funds by individuals and corporations, possibly driven by liquidity preference and concerns about tighter credit stance on the part of commercial banks.

- The demand for the Hong Kong dollar increased as some investors reportedly positioned for better investment opportunities given the relatively benign economic environment in Hong Kong and Mainland China.

The Hang Seng Index dropped sharply after the collapse of Lehman Brothers in September 2008 and then rebounded somewhat in late 2008. Market intelligence suggested there were equity-related inflows on expectation of faster pace of economic recovery of Mainland China under the four trillion stimulus package, which benefited H-share companies, but the reported amount was not sizable.

Stepping into the first two months of 2009, local financial markets were relatively quiet: the Hong Kong-dollar exchange rate stayed near 7.75; the strong-side CU was not triggered; and stock market indices hovered at low levels. From late-March to June, however, strong demand for the Hong Kong dollar emerged and licensed banks triggered the strong-side CU frequently. As a result, the Aggregate Balance surged to a high of $257 billion on 18 and 19 May despite additional issuance of Exchange Fund paper.

The strong inflows into the Hong Kong dollar were reportedly associated with equity-related demand, which possibly involved non-residents positioning themselves to benefit from the strong outlook for the Mainland and Hong Kong economies. In fact, the local stock market rebounded markedly, with the Hang Seng Index rising from a bottom of around 12,000 in late March to over 18,000 in June. Equity IPO activities also increased significantly compared with the second half of 2008 and these IPOs were well-received by investors. Overall, anecdotal evidence seems to be consistent with the story of equity-related inflows since March 2009.

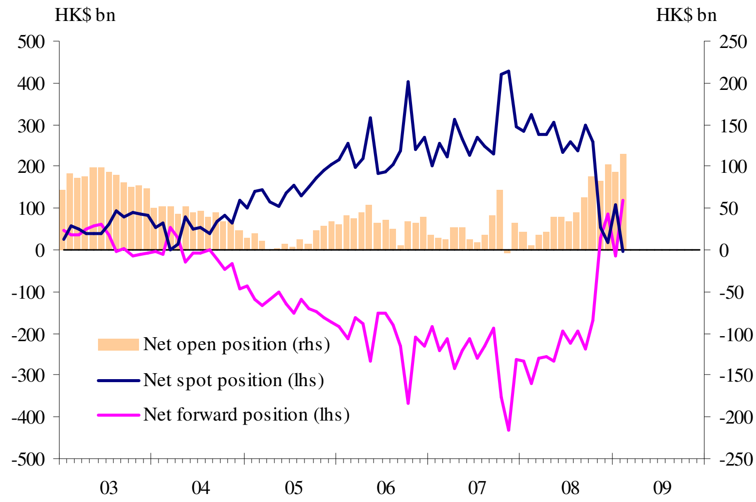
<u>Net external claims of banks and AIs' foreign currency positions</u>

In the final four months of 2008, changes in banks' net external claims were generally positive and current-account-adjusted data reveal strong financial capital inflows. These observations were consistent with stories of capital inflows induced by transactions between residents and non-residents. However, it was difficult to disentangle the relative importance of equity-related inflows, unwinding of carry trades, and repatriation of funds by Hong Kong entities during this period.

While indicators of equity fund flows showed mild net selling of Hong Kong-based stocks in the final quarter of 2008, the Mainland-related stocks (including H-shares and Red-chips listed in Hong Kong) saw persistent net purchases by fund managers, lending some support to the story of equity-related inflows.

However, banks' net US dollar positions indicate that the banking sector registered a sudden and sharp reversal of long-spot-and-short-forward positions (Chart 9), which was more likely due to unwinding of carry trades instead of equity-related capital inflows, as the latter should contribute to a rise in net spot position instead of a decrease. Amid narrowed interest rate differentials between the Hong Kong dollar and the US dollar and heightened global risk aversion, Hong Kong dollar-funded carry trade positions were unwound simultaneously and market players' interest in carry trades, which involved longing the US dollar and shorting the Hong Kong dollar, diminished.

Chart 9: Banks' US dollar position



Source: HKMA.

Stepping into 2009, changes in banks' net external claims showed mixed patterns. However, data on equity fund flows compiled by EPFR Global suggested that the Hong Kong-dollar inflows might be equity-related. There was substantial net buying of Hong Kong and Mainland stocks from March to May, which is in line with reports of Hong Kong-dollar inflows into the local stock market and its upward price movements.

Overall, net external claims of banks in the fourth quarter of 2008 indicate cross-border inflows into Hong Kong. EPFR Global's survey data suggested part of the inflows was related to H-shares equities, while US dollar position data provided indirect evidence of sharp reversal of carry trade activities. However, these data did not provide indications of repatriation of funds by local corporations as an important source of Hong Kong dollar inflows and BoP inflows. On the other hand, indicators of equity fund flows pointed to equity-related inflows into Hong Kong in the first half of 2009, although relatively little was known about other aspects of these inflows.

Monetary survey and Balance of Payments statistics

Analysing the asset-side counterparts of Hong Kong-dollar M3, the increase in the net foreign currency assets of the Exchange Fund and AIs was a main driver of growth in the broad money in 2008 Q4, offsetting the negative impact of shrinking credit (Table 9). During the period, the net foreign currency assets posted an average monthly increase of $87 billion, signifying very strong inflows into the Hong Kong dollar—a magnitude unseen in the previous episodes. While Hong Kong dollar inflows continued in 2009 Q1, their overall magnitude was not large partly because the strong-side CU was only triggered in late March. Strong inflows re-emerged in 2009 Q2, with the net foreign currency assets recording an average monthly increase of $57.2 billion.

In this episode, the rise in foreign currency assets was largely absorbed by the Exchange Fund through the triggering of the strong-side CU, while during the previous two episodes the swing in net foreign currency assets positions of the banking system were the more important drivers of funds flows into and out of the Hong Kong dollar. This might be an indication of the reluctance by the AIs to take on additional foreign currency positions amid the global financial crisis. Indeed, the AIs as a whole reduced their net foreign currency assets in 2009 Q1 and Q2.

Table 9: Quarterly Monetary Survey of Hong Kong-dollar M3

	2008 Q4	2009 Q1	2009 Q2
Quarterly growth rate (%)			
HK$ M3	**2.7**	**1.5**	**6.1**
Percentage-point contribution (percentage point)			
HK$ credit to the private sector	**-0.9**	**-0.7**	**1.9**
HK$ credit to the government (net)	**-2.4**	**0.9**	**0.7**
Net foreign currency assets	**8.3**	**0.6**	**5.2**
Exchange Fund	5.3	1.6	5.6
AIs	3.0	-0.9	-0.4
Net HK$ claims on banks abroad	**-3.3**	**0.2**	**0.6**
Net other HK$ items	**1.1**	**0.4**	**-2.4**

Note: Figures may not add up to total due to rounding.

According to the BoP statistics, there were strong capital inflows in the non-reserve financial account (17.0% of GDP) in 2008 Q4, which reversed the net outflows in the previous two quarters and bringing the whole-year total to a net inflow (1.9% of GDP) (Table 10). The net inflows from other investment exceeded the net outflows from portfolio investment. There were two possible explanations for the strong net inflows from other investment. First, the unwinding of carry trades might have led to a reduction in overseas US dollar deposits by Hong Kong banking system, in part causing net inflows in the other investment account. Secondly, after the global financial crisis intensified in September 2008, Hong Kong residents repatriated funds from overseas, leading to a large reduction in other investment assets (88.3% of GDP) in the form of currency and deposits. There was no further information in the BoP accounts that allowed us to distinguish the relative importance of the two possible factors.

Table 10: BoP statistics in 2008 Q4 and 2009 Q1

(% of GDP)	**2008 Q4**	**2009 Q1**
Current account balance	**18.4**	**10.7**
Capital transfers	**1.0**	**2.0**
Financial non-reserve assets (net change)	**17.0**	**8.2**
OI assets	88.3	17.4
OI liabilities	-28.5	-43.9
PI assets	-36.9	20.0
PI liabilities	-11.4	-0.3
DI assets	-27.6	-9.3
DI liabilities	31.2	24.2
FD assets	48.2	38.2
FD liabilities	-46.2	-38.0
Reserve assets (net change)	**-33.8**	**-18.1**
Net errors and omissions	**-2.6**	**-2.8**

Notes: A positive number indicates inflows (i.e. a decrease in assets or an increase in liabilities). "OI", "PI", "DI" and "FD" denote "other investment", "portfolio investment", "direct investment" and "financial derivatives" respectively.

Source: C&SD.

On the other hand, amid a slump in the stock market, non-residents became net sellers of resident equities in 2008 Q4 (a decrease in PI liabilities). Domestic investors also increased their holdings of foreign debt securities over the same period.

In 2009 Q1, reserve assets rose further and non-reserve financial capital inflows continued, pointing to Hong Kong dollar and cross-border inflows. However, the latest-available BoP data did not provide enough evidence to confirm the importance of equity-related capital inflows partly because the Q1 data only captured the initial stage of the rally in the local stock market and the Hong Kong dollar inflows. Indeed, the size of equity PI inflows by non-residents was very small in 2009 Q1 and the net inflows in PI account were mainly driven by a decline in the holdings of short-term foreign debt securities by domestic investors.

To sum up, the unwinding of carry trades, and possibly the repatriation of funds by the private sector, appear to be the main sources of Hong Kong dollar and BOP inflows in 2008 Q4, and the importance of equity-related inflows was only secondary. The magnitude of the inflows was so large that the Hong Kong-dollar exchange rate sharply strengthened and the strong-side CU was repeatedly triggered, bringing the level of the Aggregate Balance to fresh highs. While Hong Kong-dollar and cross-border inflows continued in 2009 Q1, the magnitude of inflows was not particularly large. Alongside a sharp rebound in the local stock market, Hong Kong-dollar inflows picked up strongly in 2009 Q2. Market intelligence and private-sector survey data suggest that these Hong Kong dollar inflows arose from equity-related demand but BoP data for 2009 Q2 are not yet available to confirm the observation.

V. CONCLUSIONS

We conclude the paper by attempting to answer the questions raised in the introduction section of the paper. First, how do we know at a particular period of time whether there has been a net flow into or out of Hong Kong or the Hong Kong dollar? We can answer this question by primarily analysing the net foreign currency positions of both the AIs and the Exchange Fund. Secondly, does the movement of the Hong Kong-dollar exchange rate imply such net inflows or outflows? The movement of the exchange rate indicates an ex ante desire on the part of the private sector and the AIs to increase or decrease their Hong Kong dollar positions, but not necessarily an ex post net flow into or out of the Hong Kong dollar.

Thirdly, is it possible to know whether it is foreigners (non-residents) or Hong Kong residents who are driving the flows? Yes, some broad picture can be obtained by analysing BoP accounts, with a considerable time lag and without being able to pin down many details. Fourthly, is it possible to trace the linkages between capital flows and the movement of funds across different types of financial products and markets? Again, some broad picture can be formed by using a combination of the BoP statistics and market data and intelligence.

In sum, this paper is a preliminary attempt to come up with a framework for monitoring capital flows in Hong Kong and to answer the questions raised above. Much further work is required to refine the framework and understand the implications of capital flows for domestic monetary and financial stability.

REFERENCES

HKMA (1996) "Banking Survey of Hong Kong 1991 – 1995." *Hong Kong Monetary Authority Quarterly Bulletin*, May 1996.

HKMA (1998) "Monetary survey of Hong Kong 1993 – 1997." *Hong Kong Monetary Authority Quarterly Bulletin*, February 1998.

HKMA (2002), "Hong Kong's External Claims and Liabilities vis-à-vis Mainland China", *Hong Kong Monetary Authority Quarterly Bulletin*, February 2002.

HKMA (2007) "The Foreign Exchange and Derivatives Markets in Hong Kong." *Hong Kong Monetary Authority Quarterly Bulletin*, December 2007.

IMF (1993) *Balance of Payments Manual*, Fifth edition, International Monetary Fund, Washington D.C.

IMF (2000) *Monetary and Financial Statistics Manual*. International Monetary Fund, Washington D.C.

Shi, Joanna and Tsang, Andrew (2006), "Cross-border Fund Flows and Hong Kong Banks' External Transactions vis-à-vis Mainland China", *HKMA Research Memorandum 07/2006*, June 2006.