“Hong Kong capital flight: determinants and features”

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Hong Kong capital flight: determinants and features

Abstract

This study uses the hot money, the World Bank and trade mis-invoicing methods to measure capital flights in Hong Kong. The study uses the OLS model to test the determinant of capital flights in Hong Kong and the round-tripping foreign direct investment model to estimate the round-tripping capital flight between Hong Kong and China. The result suggests that all three methods used in this study shows there is capital flight in Hong Kong. The determinants of Hong Kong capital flight are currency overvaluation, current account deficit and China's announcement of Open Door Policy in 1979. The round-tripping phenomenon between Hong Kong and China takes about one-third of China's total recorded foreign direct investment (FDI) from Hong Kong and more than half of Hong Kong reported FDI to China.

Keywords: Hong Kong, capital flight, determinants, round-tripping, features.
JEL Classification: F30, F32.

Introduction

Capital flows across countries has expanded widely in the last 25 years, especially between developed and developing countries. For example, private capital flows to less developed countries increased from $174 billion in 1980s to $1.3 trillion in 1990s and more than $2 trillion a year today. China attracted more than $55 billion of foreign capital inflows in 2004 (Knoop, 2008).

The motivations behind capital flight include portfolio diversification, escape from economic or political instability, avoid taxation, inflation or confiscation, better treatment or higher return elsewhere (Epstein, 2005). Regardless of the motivations, capital flight adversely affects the home country's economy. This is especially true for developing countries, where large amount of capital flight could disrupt the country's development process, may increase foreign debt and distort the base for taxes and real capital outflow (Khan and Haque, 1985).

The growth of the Asian economy has attracted foreign capitals flow into those fast growing developing countries. For example, Thailand's real capital inflow was about $1 billion in 1980 and reached a peak of $25 billion in 1995, while its real capital flight was about the same in 1980 but reached a peak of $40 billion in 1995 (Beja, Junvith and Ragusett, 2005). According to Global Financial Integrity (GFI) 2008 study, developing countries lost an estimated $858.6 billion to $ 1.06 trillion to illicit financial outflows during the period of 2002-2006, whereby Asia contributed about half of the illicit capital flight with China exhibiting an outstanding $233.5 billion illicit capital flight, followed by India ($22.7 billion) and Malaysia ($19 billion) (Kar and Cartwright-Smith, 2008).

Previous studies on capital flight focus on Asian emerging economies such as mainland China and the ASEAN Four nations of Indonesia, Malaysia, the Philippines and Thailand. Beja (2005) investigates the capital flight phenomenon in ASEAN Four and concludes that external debt fuels and drives capital flight. However, there is a lack of studies on capital flight in the Hong Kong market and previous studies did not consider Hong Kong as a conduit channel for capitals from other nations.

Hong Kong is considered as the financial hub for most Asian countries and the trading entrepot for China (Gunter, 2003), where millions of goods and capitals pass through Hong Kong daily. Although Hong Kong has been reunified with China, it still has its own governance structure. The fully established financial service and channel in Hong Kong provides a convenient conduit for capitals to pass through, where it is difficult to track capitals that flow through a third country. It is difficult to measure the capital flight from another country that uses Hong Kong as conduit, as there will be no data revealing how much of the third country's capital flow into Hong Kong and out of Hong Kong as capital flight.

This study uses the hot money, the World Bank and trade mis-invoicing methods to measure capital flights in Hong Kong. The study uses the OLS model to test the determinant of capital flights in Hong Kong and the round-tripping foreign direct investment model to estimate the round-tripping capital flight between Hong Kong and China. The remainder of the paper is organized as follows. Section 1 reviews the literatures on Hong Kong capital flight. Section 2 discusses the research methods and data collection. Section 3 discusses the results and the concluding remarks are presented in the final section.

1. Hong Kong capital flight

The close linkages between mainland China and Hong Kong include geographical, historical, politi-

cal, trade and capital markets. The close linkages especially on trade and capital market provide good channels for capital to flow out of China into Hong Kong. Globally, Hong Kong plays the role of connecting between western countries and Asian countries. As one of the Asian financial and trading centres and the hub of Asian financial center, every day millions of goods and funds pass via Hong Kong. The well established financial service center provides a perfect place for capital to flow in and out of Hong Kong.

Yang and Chen (2000) conclude that during 1992 to 1998, China trade mis-invoicing errors were almost completely offset by Hong Kong's trade mis-invoicing errors. As a result, they consider Hong Kong mis-invoicing as an offset to China's mis-invoicing with other countries. However, Gunter (2003) disagrees with Yang and Chen's argument, who further estimates capital flight for Hong Kong for the period from 1998 to 2001. Gunter points out that trade between Hong Kong and China, unlike the period before Hong Kong reunion with China, Hong Kong's mis-invoice trade statistics failed to offset China's trade mis-invoice figure. There are more capital flights from China flowing to other country or converting into dollars or gold through Hong Kong.

Gunter (1996) studies capital flight round-tripping phenomenon between Hong Kong and China, and argues that the main purpose for Chinese investors to smuggle funds out of China to Hong Kong then reinvest openly in Chinese market is to capture the benefits as a foreign investor. Harrold and Lall (1993) claim that round-tripping is one of the two reasons for short-term capital outflows in 1992. The authors believe as the linkage between Hong Kong and China financial market become stronger, it is more volatile for Chinese short-term capital to flee in and out of China which makes the balance of payment more vulnerable to deficit. Sicular (1998) points out the special provisions that been adopted by central and local government to attract more foreign investment lead to a higher return of foreign capitals, which encourages Chinese investors to move capital out of China and then bring it back as foreign capitals to capture those higher returns.

Similarly, Xiao (2004) estimates China's round-tripping FDI scale, and reviews the causes and implications of China's round-tripping FDI. The author reports that the ratio for China's round-tripping FDI is about 40% of its total capital flight. It is higher than the previous estimations in the literature and a high level of round tripping FDI means China's FDI inflows has been exaggerated. The author concludes that China capital flight is much larger than the capital inflow. Furthermore, the round-trip of the capital flow is only a quarter of the capital flight from China. The reasons why China suffered both large amount of capital flight and round-tripping capital are due to China's strong ability in creating new capital and the weakness in protecting property rights.

2. Methodology and data

In this section, we first present three methods to measure capital flight. Following this, we present our specification to estimate the determinants of capital flight and the calculation of round-tripping of Hong Kong capital flight.

The first measure of capital flight is the "hot" money measurement from Cuddington (1986) which is a narrow measurement for capital flight. There is no official record for Hong Kong's Balance of Payment report before Hong Kong and China's reunification in 1997. As a result, we use another baseline measurement for Hong Kong capital flight before 1997. This study chooses the trade mis-invoice method as the baseline measurement for Hong Kong's capital flight for the whole study period.

2.1. Hot money measurement. Cuddington (1986) defines capital flight using short-term capital and includes errors and omissions, which represents the unrecorded short-term capital outflows. The equation is given as follows:

$$KF_{CU} = SK + EO, \quad (1)$$

where KF_{CU} is the total capital flight calculated using Cuddington's method; SK is the total short-term capital; EO are the errors and omissions.

The hot money definition of capital flight refers to funds that quickly response to changes in the level of risk and returns in the investment. Compare with other capitals, short-term capital is more sensitive to unfavorable news or information that could have huge impact on capital values. The huge and sudden short-term capital outflows are considered as capital flight in the literature. Our study uses Cuddington (1986)'s model which consider the total short-term capital and errors and omission in the balance of payment table. However, we use total capital to replace total short-term capital[1]. Data is obtained from Balance of Payment (BOP) report of Hong Kong. The earliest Hong Kong BOP report can only be traced back to 1998, and it is believed that before Hong Kong reunion with China, there is no formal record of BOP in Hong Kong. According to Goodstadt (2006) prior to the end of colonial rule in 1997, there is no release of Hong Kong's official balance of payment statistics. The author points out that the

[1] The short-term capital in HK is not available for the full sample period.

reason for few statistics collected by Hong Kong's government is the laisser-faire policy used in Hong Kong. The statistics were considered as a freedom threaten from London's control.

2.1.1. The World Bank measurement. The World Bank (1985) estimates the capital flight as the difference between the sources of funds and uses of funds. The sources of funds include the changes in public and private external debts (including long-term and short-term debts) as well as the net foreign investments; uses of funds include the current account deficits and the accumulation of international reserves. In our study, the World Bank (1985) method is used as the broader estimation of capital flight, which is also used in Beja's (2005) study. The equation is given as follows:

$$KF_{WB} = CDET + NFI - CAD - CRES, \quad (2)$$

where KF_{WB} is the capital flight according to World Bank's measurement; *CDET* are the changes in both public and private external debts (including both long-term and short-term debt); *NFI* is the net foreign direct investment; *CAD* is the current account deficit; *CRES* is the accumulation of international reserves.

The changes in public and private external debts (including both long-term and short-term external debt) are derived from three sources, namely the BOP report, the IMF report and the World Bank's world debt tables. The changes in external debt are equal to the total external debt plus the debt differences between the World Bank and IMF reported debts. However, our study can only use the total external debt reported in Hong Kong's BOP, as there is no recorded debt for Hong Kong on the World Bank website. Furthermore, previous studies measuring capital flight in the four Asian countries of China, India, the Philippine and Thailand documented the difference in external debt between the World Bank and the IMF is very small, on average the difference is $0.03 million for the four Asian countries (see Beja, 2005) and the external debt is at least $9000 million. Thus, the difference will not significantly affect the analysis of our study.

The net foreign investment includes the net foreign direct investment and the net portfolio investment. Both figures can be found in Hong Kong BOP report in the Capital and Financial Account section. In addition, the earliest record for Hong Kong's gross external debt is from 2002 and the earliest record for Hong Kong's Net Foreign Investment is from 1998. Our study uses the average gross external debt to estimate the missing gross external debt.

The current account is a primary component of the balance of payment. It is the sum of the balance of trade (including both goods and services), other income and current transfers (Beja, 2005). Both the balance of trade and the current transfer information can be obtained from Hong Kong's BOP table. However, only balance of trade was recorded pre 1997, which equals to exports minus imports. Both Hong Kong exports and imports figures were obtained from the IMF International Financial Statistics (IFS) table. As the data for Net Foreign Investment can only be traced to 1998, thus our study uses the trade balance to calculate the current account deficit for the period from 1998 to 2009.

"The accumulation of international reserves refers to the reserve assets including changes in gold holding, special drawing rights, foreign exchange assets, reserve position with the International Monetary Fund and other claims on non-residents" (Beja, 2005, p. 28). Hong Kong's BOP only reports the net changes of Hong Kong's reserve asset. This data can be obtained from the World Bank website covering the period from 1990 to 2009, while the data for Net Foreign Investment can only be traced to 1998, thus we chose the accumulation of international reserves data from 1998 to 2009.

2.1.2. Trade mis-invoicing method. Trade mis-invoicing can be used to measure capital flight. The export under-invoicing and import over-invoicing is a channel to divert funds flowing in and out of a nation. Ajilore (2010) argues that countries that have strong capital flight proclivities, it is reasonable to assume that trade mis-invoicing may be utilized as a channel for capital flight.

There are three steps in trade mis-invoicing method. First, we need to obtain the export and import differences of a country with its trade partners. The data can be obtained from the IMF's direction of trade statistics (DOT). The second step involves obtaining the global export and import discrepancies. The last step summarizes the trade discrepancies in the second step to obtain the total trade mis-invoicing, which is the net capital flight. When the trade mis-invoicing method is used for capital flight adjustment the result from the last step is added to the baseline measurements. The equations are given as follow:

$$DX = PX - CIF \times X, \quad (3a)$$

$$DM = M - CIF \times PM, \quad (3b)$$

$$MISX = DX/\ X\_INDUS, \quad (4a)$$

$$MISM = DM/\ M\_INDUS, \quad (4b)$$

$$MIS = MISX + MISM, \quad (5)$$

where, *DX* are the total export discrepancies with trade partners; *DM* are the total import discrepancies with trade partners; *PX* is the trading partner's import value from Hong Kong; *PM* is the trading partner's export value to Hong Kong; *M* are the reported imports for Hong Kong; *X* are the reported exports for Hong Kong; *CIF* is the cost of freight and insurance adjustment; *X_INDUS* are the industrialized-country trading-partners in the country's total import; *M_INDUS* is the industrialized-country trading-partners in the country's total export; *MISX* is the trade mis-invoicing from the export; *MISM* is the trade mis-invoicing from the import; *MIS* is the total trade mis-invoicing.

Compared to the hot money and World Bank methods, trade mis-invoicing method is the only method which covers the whole study period of 1970 to 2009. The data for trade mis-invoicing method can be obtained from the Direction of Trade (DOT) table on the IMF website and the data can be traced back to 1970. The availability of data provides a longer period to study Hong Kong's capital flight. This is the main reason our study used the trade mis-invoicing method as the major measurement for capital flight in Hong Kong. There are 14 selected major trade partners of Hong Kong: the UK, the USA, Japan, Germany, Canada, Switzerland, the Netherlands, Australia, China, South Korea, India, Thailand, Malaysia and Singapore. The export and import figures between those countries and Hong Kong are individually obtained from the DOT on the IMF website. The cost of freight and insurance adjustment (the cif/fob factor) can be obtained from the DOT.

2.2. Determinants of Hong Kong capital flight. Different conclusions have been reached in the literature on the capital flight determinants. For example, Cuddington (1986) reports that the exchange rate overvaluation and the inflow of foreign debt are the main determinants of capital flight in Argentina, Brazil and Chile. Similarly, Pastor (1990) identifies the US and other currencies' differences, inflation rate changes, net long-term capital inflow, differences in economic growth rate between the US and other countries, and increase in tax rate (per GDP) significantly affect capital flight in eight Latin American countries. Gibson & Tsakalotos (1993) identify three factors in the expected changes in exchange rate particularly the depreciation of currency, the uncertainty of government's policy that affects many investors and the government deficits influencing capital flight in five European countries. Moreover, Mulino (2002) highlights the determinants of Russia's capital flight and concludes that various determinants caused the capital flight in Russia, such as macro-economy instability, arbitrary taxation, weakness in financial institutions, popularity of corruption, and failure to protect property rights.

This study follows Chunghachinda and Sirodom's (2007) method to test the importance and the relationship between the determinants of capital flight and capital flight in Hong Kong. The determinants include inflation, government budget deficit, interest rate difference between US and domestic countries, foreign direct investments, current account deficit, and overvaluation of local currency. There is no official record for Hong Kong's Balance of Payment report before Hong Kong and China's reunification in 1997. As a result, we use the trade mis-invoicing method as the baseline measurement for Hong Kong's capital flight for the whole study period (1970-2009). Empirical evidence from developing countries shows that trade mis-invoicing could be a component in residual measures of capital flight (see, Boyce & Ndikumana, 2001; Epstein, 2005; Ajilore, 2010). The equation is given as follows:

$$\begin{aligned} CF_t &= a + b_1(CHINF)_t + b_2(FINC)_t + \\ &+ b_3(OVAL)_t + b_4(FDI)_t + b_5(GBUD)_t + \\ &+ b_6(CAD)_t + b_7(DUM)_t + \varepsilon_t, \end{aligned} \quad (6)$$

where *CF* is the Hong Kong capital flight measured by trade mis-invoicing method; *t* is the time period; *CHINF* are the changes in inflation and is derived as follows:

$$CHINF = \ln\pi(t) - \ln\pi(t-1),$$

where π is the domestic inflation rate *t* is the time period; *FINC* is the financial incentive that is derived as follows:

$$FINC = \ln(1+iUS) - \ln(1+i) + \ln(e) - \ln(e-1),$$

where *i* is the domestic interest rate; *iUS* = *US* Treasury bill interest rate; *e* is the exchange rate between local currency and US dollar; *OVAL* is the degree of currency overvaluation and is derived as follows:

$$OVAL = P/(e \times P_{US}),$$

where *P* stands for price level of domestic product; P_{US} is price level in US, *e* is the exchange rate between US dollar and local currency; *FDI* is the foreign direct investment; *GBUD* is the government budget deficit; *CAD* is the current account deficit; *DUM* is a dummy variable; 0 for data before 1979 and 1 for the data after 1979; ε is the error term.

The data cover the study period from 1976 to 2009, but there are some missing data for 1970s that can be estimated using the weighted average method[1]. This study uses the mean to replace the missing data. The data for this model are reported in the

[1] FINC data are available from 1975; OVAL data are available from 1981, GUBD data are available from 1979 and CHINF data are available from 1982.

DataStream, PACAP 2006 CD-room, the International Financial Statistical table and Hong Kong BOP report. In the OLS model, the foreign direct investment (FDI) data is obtained from Hong Kong's external debt statistic report. However, this data is recorded only after the reunification of Hong Kong with China, and the earliest data is from 1998. There are only 12 observations for the FDI data compare with the total observation of 40 for other variables. This is small for statistical analysis and, therefore, we excluded the FDI variable in the OLS test.

The capital flight figure used in the trade misinvoicing method to calculate Hong Kong's capital flight starts from 1970. The current account deficit data starts from 1970 but the financial incentive data for this model is available from 1976, the government budget deficit variable from 1979, the changes of inflation from 1982 and the degree of currency overvaluation variable from 1981. To test the whole study period, our study uses the weighted average method to replace the missing data for the financial incentive, the government budget deficit, the changes in inflation and the currency overvaluation variables.

We use Hong Kong and US figures to estimate the determinants of Hong Kong capital flight rather than the figures from Mainland China for several reasons. First, it is reasonable to believe US's data are more accrual reported than Mainland China. Second, most Chinese official data can only be traced back to 1980s compared to the US. Third, Hong Kong and US are both developed economies from 1970s to 1980s and it is reasonable to believe that the US data is more comprehensive and robust than the Mainland China's data.

2.3. Round-tripping capital flight model. Round-tripping capital flight in this paper refers to capital flowing out of a nation first, then for some reason the same (or a portion of the same capital) capital flow back to the nation. In the literature, the studies of capital flow round-tripping between China and Hong Kong include Yang and Chen (2000), Gunter (1996) and Xiao (2004).

The round-tripping capital flight from China includes capital flows that initially flow out of China but return back to China as FDI). The data is obtained from the Statistic Year Book of China and the External Direct Investment Statistics of Hong Kong. However, the study period is from 1998 to 2009 since there is no data available for Hong Kong before 1997. External direct investment statistics of Hong Kong is obtained from Hong Kong Census and Statistics Department website (http://www.censtatd.gov.hk/home/index.jsp).

China's statistic yearbook can be traced back to 1981 on the Chinese website (http://epub.cnki.net/grid2008/index.htm), which is a useful digital on-line library for both Chinese and international researches. However, there is no foreign direct investment recorded in Chinese statistic yearbook before 1987. In early years from 1987 to 1991, Hong Kong FDI inflow was combined with Macau's figure. China combined the FDI inflow from Hong Kong and other investments from Hong Kong together and reported as one whole figure from 1992 to 1996. We use the average percentage (the mean) to estimate China reported Hong Kong's FDI inflow.

We use Xiao's (2004) model to calculate the round-trip FDI and use the result from Hong Kong capital flight estimation to interpret the round trip capital flight between Hong Kong and China. The steps in conducting this test are documented in Table 1.

Table 1. Round-tripping FDI from Hong Kong to China in China Recorded FDI inflow

A1	Hong Kong reported FDI from Hong Kong to China
A2 = A1 – A4	Hong Kong reported FDI to China without the communications sector
A3 = A1 – A4 + B2	Hong Kong reported FDI to China correcting for over-reporting in communication sector
A4	Hong Kong reported FDI to China in the communication sector
B1	China reported FDI from Hong Kong to China
B2	China's total FDI inflow in the transportation, storage, post and telecommunication services
C1 = B1 – A1	Type 1 unverifiable FDI from Hong Kong
C2 = B1 – A2	Type 2 unverifiable FDI from Hong Kong
C3 = B1 – A3	Type 3 unverifiable FDI from Hong Kong
D1 = C1/B1	Ratio of Type 1 unverifiable FDI from Hong Kong to China
D2 = C2/ B1	Ratio of Type 2 unverifiable FDI from Hong Kong to China
D3 = C3/ B1	D3 is the upper range estimation for round-trip FDI from Hong Kong to China in China's recorded FDI inflow

Following the calculation of the standard deviation, we use one half of the standard deviation as proxy for the systematically biased statistics reporting errors, which is similar to Xiao's (2004) method. This includes using the calculated upper bound estimation of the round-tripping FDI ratio minus one-half of the standard deviation to obtain the mean estimation for round-tripping FDI. Following this, we use the mean estimation minus one-half of the standard deviation to obtain the lower bound estimation for round tripping FDI ratio from Hong Kong to China (Xiao, 2004).

We use the Hong Kong record of FDI outflow to China as the base to measure the upper range of round-tripping FDI in Hong Kong total recorded FDI to China. By using a half of the standard deviation as the proxy for the systematically biased statistics reporting errors, we estimate the middle and lower range for the total round tripping FDI in Hong Kong recorded FDI outflow to China. Table 2 shows the round-tripping FDI in Hong Kong recorded total FDI to China. We follow Xiao (2004) method which assumes that the percentage of total round-tripping capital flight is the same percentage for the total round-tripping FDI.

Table 2. Round-tripping FDI from Hong Kong to China in Hong Kong recorded FDI outflow

A1	Hong Kong reported FDI from Hong Kong to China
A2 = A1 – A4	Hong Kong reported FDI to China without the communications sector
A3 = A1 – A4 + B2	Hong Kong reported FDI to China correcting for over-reporting in communication sector
A4	Hong Kong reported FDI to China in the communication sector
B1	China reported FDI from Hong Kong to China
B2	China's total FDI inflow in the transportation, storage, post and telecommunication services
C3 = B1 – A3	Type 3 unverifiable FDI from Hong Kong
D4 = C3/ A1	D4 is the upper range estimation for round-trip FDI from Hong Kong to China in Hong Kong's total recorded FDI outflow to China

2.4. Data. The study period is from 1970 to 2009. We have discussed the specific data description on each subsection earlier. In this section, we provide a general summary on the data we used. The data are obtained from Hong Kong balance of payment report, IMF statistic tables from IMF website, DataStream, the PACAP 2006 CD-room, statistic yearbook of China and the external direct investment statistic of Hong Kong. However, some of Hong Kong's data are not reported before 1997. For example, two of the capital flight measurement methods only cover the period from 1998 to 2009, while the trade mis-invoicing method covers the whole study period. The OLS model covers the whole study period of 40 years while the round-tripping model only covers 12 years due to the limited data.

Data for capital flight measurement includes total short-term capital, total errors and omissions, reported import and export figures from Hong Kong, trading partners (export and import) of Hong Kong, cost of freight and insurance adjustment. These data are obtained from Hong Kong's balance of payment, the International Financial Statistic table on the IMF website.

Data for the estimation of determinants of capital flight includes Hong Kong's inflation rate, interest rate, price level, government budget deficit, current account deficit, foreign direct investment, US Treasury bill rate, US products price level, Hong Kong and US exchange rate. Hong Kong's inflation rate, interest rate, price level, and US Treasury bill rate and price level are obtained from Datastream. Hong Kong government budget deficit data and part of the exchange rate between Hong Kong and US are derived from the PACAP 2006 CD-room data set. The current account deficit is derived from the International Financial Statistic table on IMF website. Foreign direct investment is obtained from Hong Kong Balance of Payment report.

Data for calculating round-tripping of Hong Kong capital flight includes both Hong Kong and China reported FDI figures which is available from the Statistical Yearbook of China. For Hong Kong FDI statistics, the data ares obtained from the external direct investment statistics of Hong Kong.

3. Empirical results

The results show that capital flight existed in Hong Kong from 1998 to 2009. However, the results differ within the three methods used in the study. The results show that Hong Kong capital flight ranges between $2 million measured by the trade mis-invoicing method to over $500,000 million with the World Bank method. The highest capital flight in Hong Kong was $574,152 million in 2007 measured by the World Bank method.

3.1. Measurement of capital flight by the three methods. Table 3 shows Hong Kong's capital flight measured by the three methods. The minus sign shows there is an outflow of capital flight from Hong Kong. As for the result of World Bank method the result reported capital flight outflow from Hong Kong and the reason is that we use the current account deficit as the base to calculate the capital flight.

The results of the capital flight in Hong Kong using the three different methods show that there are capital flight movements in Hong Kong regardless of which estimation method is used. The result from the three measurement methods differ substantially. For example, the result from the World Bank method exhibits the biggest absolute value, followed by the hot money method and the smallest absolute value from the trade mis-invoicing method.

The three measurement methods results exhibit a stable increase trend of Hong Kong capital flight from 1998 to 2009. However, the result from the trade mis-invoicing method shows an overall of decreasing trend in Figure 1 when the study period begins from 1970. There were periods of fluctuation as well, for example, Hong Kong capital flight ex-

perienced a sharp increase in 1980 and a sharp decrease in 1986. The sharp increase could be caused by the announcement of China's Open Door Policy, which encouraged trade between Hong Kong and China, and further promoted capital flight through trade linkages. However, as time passed, more and more Chinese cities started to open to the world, there was less demand for China to use Hong Kong as the transfer trading port with the world which eventually caused a sharp decrease of Hong Kong capital flight in 1986.

In terms of the Hot Money method, there is a dramatic increased of capital flight from $2,507.4 million to over $10,000 million from 1998 to 1999. The dramatic increase in capital flight could be attributed to the sharp fall of 7.1% GDP in the third quarter of 1998. In addition, the dramatic increase in capital flight between 1997 and 1998 could be explained by the sudden and huge amount of withdrawal of hedge funds from Hong Kong in October 1997 in response to the investment environment or political condition changes. The 1997 Asian financial crisis had a severe impact on Hong Kong economy which resulted in a prolong period of the high unemployment rate and low economic recovery rate. Furthermore the outbreak of health problems such as the Bird Flu pandemic in late 1990s and SARS in 2003 caused uncertainty in the economy and financial market, which further encouraged investors to constantly move capitals out of Hong Kong.

Table 3. Hong Kong capital flight measured by the hot money, World Bank and mis-invoicing methods (In USD millions)

Year	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Hot money method												
Capital flight	-2507.4	-10252	-6992.9	-9785.2	-12412	-16466	-15722	-20293	-22976	-25605	-29245	-18281
World Bank method												
Capital flight	198226	225883	230127	195209	199754	235399	266351	316456	375682	574152	473661	398409
Mis-invoicing method												
Capital flight	-1.67	-2.19	-2.22	-2.29	-2.23	-2.19	-2.33	-2.34	-2.48	-2.59	-3.04	-2.71

With regard to the results from the World Bank method (also known as the board measurement), Table 3 shows Hong Kong's capital flight dropped to $195,209 million and reached the lowest peak in 2001 then reached $235,399 million in 2003 and incresases thereafter. From 2006, Hong Kong's capital flight increased dramatically and reached a peak of $574,152 million in 2007 mainly caused by the high level of external debt which reached over $700,000 million.

The data generated from trade mis-inovicing method in Table 3 shows a raising trend in Hong Kong capital flight reaching a peak of $3.04 million in 2008[1]. Hong Kong capital flight was about $2 million between 1998 and 2009, increased to $2.19 million in 1999, and remained stable round $2.2 million between 1999 and 2003. From 2004, Hong Kong capital flight started to increase again, and reached the peak of $3.04 million in 2008 and dropped to $2.71 million in 2009.

The trade mis-invoicing method is based on the differences between Hong Kong and its 14 major trade partners export and import data. Hong Kong economy started to recover from the 1997 Asian financial crisis in 2004. According to Hong Kong 2008 annual report, Hong Kong total value of visible trade (comprising of re-exports, domestic exports and imports of goods) reached $5.868 billion which is equivalent to 350% of Hong Kong's GDP in 2008 (http://www.yearbook.gov.hk/2008/en/pdf/E03.pdf), Hong Kong expedition in trade could be the reason that caused its capital flight in trade mis-invoicing to reach a peak of $3.04 million in 2008. The decrease in capital flight in 2009 could be the result of Hong Kong suffering from the global financial crisis (http://www.yearbook.gov.hk/2009/en/index.html).

Figure 1 shows Hong Kong capital flight measured by the trade mis-invoicing method for the years 1970 to 2009. The figure shows Hong Kong capital flight increased from 1970 to 1984, and started to decrease thereafter. In 1970s capital flight in Hong Kong was about $7 million increased to about $11 million in 1980s. The increase in the capital flight could be caused by the 1978 announcement of China's Open Door Policy, which marked a new era for its economy. The policy encourages trade between Hong Kong and mainland China, where on average the trade between Hong Kong and mainland China grew at 28% per annum (http://eh.net/encyclopedia/article/schenk.HongKong). The increase in trade encourages increases in capital flight in Hong Kong through the export and import channel.

However, with the increase of openness of mainland China, there is less opportunity for businesses from mainland China to use Hong Kong as the middle transfer port for exports and imports with other

[1] Trade mis-inovicing measures Hong Kong's capital flight from 1970. We list only the capital flight of Hong Kong between 1998 and 2009 in Table 3 for comparison purpose. The full results of trade mis-invoicing method are reported in Figure 1.

countries which to some extent affected Hong Kong's re-export and re-import trade, and further affect the capital flight through trade. The opening of Shanghai and 13 other cities in 1984 further accelerated mainland China's trade with the world which indirectly affected Hong Kong capital flight through the export and import channel. For example, Figure 1 shows Hong Kongs capital flight dramatically dropped to about $6 million from 1986 to 1988 and reached $4 million in 1988.

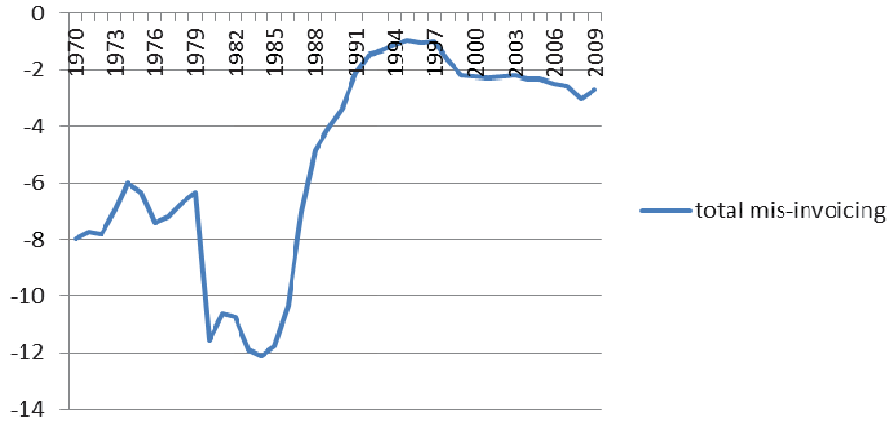

Fig. 1. Hong Kong capital flight result from trade mis-invoicing method (1970-2009)

3.2. Determinants of capital flight. The study uses the OLS to test the determining factors for Hong Kong's capital flight. We use the trade mis-invoicing method as the dependent variable and current account deficit, government budget deficit, financial incentives, currency overvaluation, inflation and the announcement of China's Open Door Policy at the end of 1978 (a dummy variable) as the independent variables. We dropped the FDI variable since there are only 12 observations. The missing data of the financial incentive, the government budget deficit, the changes in inflation and the currency overvaluation variables for the study period are replaced by the weighted average method.

Table 4 shows the overall model can explain the problem quite well as the F statistic for the whole model is 5.6E-07 and is significant. The CHINF and GBUD coefficients are not significant as their P-values are greater than 0.05 at 95% significance level. The P-values for FINC, OVAL, CAD and the dummy variables' coefficients are significant at the 5% level of significance. The results show that the determining factors for Hong Kong capital flight are financial incentive, currency overvaluation, current account deficit and the announcement of China's Open Door Policy at the end of 1978. However, changes in inflation and government budget deficit do not significantly affect Hong Kong capital flight. It is important to check if the OLS assumptions hold in our study model. We use two tests to test for the heteroskedasticity and autocorrelation in the model.

3.2.1. White test. To test if the model is heteroscedastic or homoscedastic we used the White test where $\chi^2 = N \times R^2$, with the following hypothesis:

H_0: $b_1 = b_2 = ... = b_{11} = 0$

H_1: H_0 does not hold.

From the E-view result, R^2 is 0.242471 and the number of observation is 40, so:

$$\chi^2 = 40 \times 0.242471 = 9.69884 .$$

The 5% critical value is $\chi^2_{(0.05,11)} = 19.6751$ is less than the critical value where H_1 does not hold. We can conclude that heteroscedasticity does not exist.

3.2.2. Durbin-Watson test. We used time series data in our study and it is important to test if there is any autocorrelation between the independent variables The Durbin-Watson value is 0.80 (see Table 5) indicating there is autocorrelation in model.

Table 4. Results of the OLS model (determinants of capital flight)

R-squared		0.679244	
Adjusted R-squared		0.620925	
F-statistic		11.64701	
Prob(F-statistic)		5.6E-07	
	Coefficient	Standard error	t-statistic
Intercept	-29.5689	3.847796	-7.68463
CHINF	18.71803	12.10356	1.54649
FINC	-3.26244	1.096106	-2.97639
OVAL	155.2114	25.98499	5.973118
GBUD	0.00018	9.49E-05	1.899157
CAD	0.000202	7.99E-05	2.522982
DUMMY	2.265816	0.869483	2.605936

Notes: ** Significant at 5% level; * significant at 10% level.

Since autocorrelation is found in the model, it is necessary to seek remedial measures. According to Gujarati (2006, p. 440), we transform equation (6) into the following form:

$$Y_t^* = B_1^* + B_2 X_t^* + v_t,$$

where $Y_t^* = (Y_t - \rho Y_{t-1}^*)$, $B_t^* = B_1(1-\rho)$,

$X_t^* = (X_t - \rho X_{t-1}^*)$.

Table 5. Durbin-Watson test result

R-squared	0.679244	Mean dependent variable	-5.011107
Adjusted R-squared	0.620925	S.D. dependent variable	3.584932
S.E. of regression	2.207208	Akaike info criterion	4.578962
Sum squared residual	160.7684	Schwarz criterion	4.874516
Log likelihood	-84.5793	Hannan-Quinn criterion	4.685825
F-statistic	11.64701	Durbin-Watson statistic	0.80018
Probability (F-statistic)	0.000001		

The Durbin Watson statistic value is 1.388518 (see Table 6), hence there is no evidence to prove the model has autocorrelation, nor there is no evidence to show the model does not have autocorrelation (see Gujarati, 2006). However, the Durbin Watson value does improve significantly from 0.800 to 1.388. Therefore, the original coefficient in the model is replaced with adjusted coefficient. According to Gujarati (2006, p. 438):

$$\hat{\rho} = \frac{\sum_{t=2}^{n} e_t e_{t-1}}{\sum_{t=1}^{n} e_t^2}.$$

We obtain the $\hat{\rho} = 0.594626$.

The new coefficient is shown in Table 7.

Table 6. Remedial measures Durbin-Watson test result

R-squared	0.4221	Mean dependent variable	-1.9246
Adjusted R-squared	0.31374	S.D. dependent variable	1.71838
S.E. of regression	1.42352	Akaike info criterion	3.70529
Sum squared residual	64.8447	Schwarz criterion	4.00387
Log likelihood	-65.253	Hannan-Quinn criterion	3.81242
F-statistic	3.89547	Durbin-Watson statistic	1.38852
Probability (F-statistic)	0.00495		

Table 7. Results of the OLS model (determinants of capital flight)

R-squared 0.4221 Adjusted R-squared 0.31374 F-statistic 3.89547 Prob (F-statistic) 0.00495			
	Coefficient	Standard error	t- statistic
Intercept	-4.26685	0.790149	-5.40006
CHINF	1.54498	4.235932	0.364732
FINC	-0.21474	0.368753	-0.58235
OVAL	58.29234	13.7684	4.233779**
GBUD	2.07E-05	2.36E-05	0.876289
CAD	3.75E-05	1.93E-05	1.937107*
DUMMY	0.415892	0.240272	1.730925*

Notes: ** Significant at 5% level; * significant at 10% level.

The currency overvaluation coefficient is significant at the 5% level. At 10% significant level, current account deficit and the dummy variable of China Open Door policy in 1979 are significant. The three factors showed positive relationships with the capital flight in Hong Kong. For example, the coefficient for the currency overvaluation factor is 58.29, which means for every one unit change in Hong Kong capital flight, there will be about 58 unit change in the currency overvaluation. The current account deficit coefficient is 0.0000375, which means a unit increase in Hong Kong's capital flight there will be 0.0000375. Similarly, for every 0.4159 increase in the dummy variable there will be a unit increase in Hong Kong capital flight.

The result of our study shows that currency overvaluation, current account deficit and the dummy variable have significant impact on Hong Kong capital flight. Our result is similar to previous studies in the literature. Chunghachinda & Sirodom (2007) investigate the important determinants for capital flight in Thailand, the Philippine, Malaysia, Indonesia and South Korea and identified the increase in inflation rate, interest rate differences between US and local country, overvaluation of local currency, foreign direct investment and current account deficit, and government budget deficit have significant impact on capital flight. Compare to our study, the currency overvaluation and current account deficit are two common determinants of capital flight. On the other hand, our study does not have evidences to show that the inflation rate, the interest rate differences between the U.S. and Thailand, the Philippine, Malaysia, Indonesia and South Korea (in our study it is the financial incentive variable), foreign direct investment and government budget deficit have significant impact on Hong Kong's capital flight.

3.3. Round-tripping FDI. Table 8 shows the result for Hong Kong round-tripping FDI to China based on Xiao's (2004) method. The results provide three versions of FDI flows from Hong Kong to China. The first is the unadjusted FDI (A1), the second is the adjusted FDI excluding the communications sector (A2) and the last is the adjusted Hong Kong FDI, which includes the regular FDI from the communication sector but excludes the over-reporting in the communication sector (A3). In the last category of the FDI (A3) the difference between the FDI flow from Hong Kong to China in the communication sector (A4) and China's FDI inflow in the transportation, storage, post, and telecommunications services sectors (B2) were excluded from the unadjusted FDI from Hong Kong to China (A3 = A1 − (A4 − B2)). Therefore, A3 does not include the difference between A4 and B2 because of the over-reporting in the communication sector.

The result shows the round-tripping FDI from Hong Kong to China is about 32% of China's total FDI inflow from Hong Kong. From Hong Kong's point of view, the round-tripping FDI is about 63% of Hong Kong reported total FDI to China. Following Xiao's (2004) assumption, the percentage of round-tripping capital flight between Hong Kong and China is similar to the percentage of the round-tripping FDI between Hong Kong and China. The round-tripping result implies that China's successful policy of different tax treatment for domestic and foreign capital and the special treatment for foreign investment policy used in China. The result further shows the immaturity of China's capital control system.

Hong Kong FDI outflow to China and the adjusted FDI are compared with China reported FDI from Hong Kong to China. For example, row C3 (C3 = = B1 − A3) in Table 8 shows the unverifiable part of FDI from Hong Kong to China. In addition, row D3 shows the ratio of unverifiable FDI from Hong Kong to China in Hong Kong's total FDI inflow reported by China (D3 = C3/B1). The weighted average of row D3 can be used as the estimated round-tripping FDI from Hong Kong to China's upper range. Table 8 shows D3 fluctuates between about 70% in 1998, to about -30% in 2005. The standard deviation for row D3 is 34.6%[1]. We used the upper range estimation for round-tripping FDI from Hong Kong to China minus half of D3's standard deviation of 17.3%, and obtained the middle estimated round-tripping FDI from Hong Kong to China which is 15.5%. Following this, we used the middle range of the estimated figure of 15.5% minus half of the standard deviation to obtain the lower range estimation for round-tripping FDI from Hong Kong to China which is -1.8%. In another word, the round-tripping FDI from Hong Kong to China over the study period (1998 to 2009) ranged from -1.8% to 32.8%.

The lower range of the estimated round-tripping FDI from Hong Kong to China is negative, which shows that Hong Kong reported FDI flow to China is greater than China reported FDI inflow from Hong Kong. This means that there are some FDI reported in Hong Kong as outflow of FDI to China, but for some reason did not report as inflow of FDI from Hong Kong to China. Those FDI either flow into China but have not been reported or flow out from Hong Kong to other places.

To estimate how much Hong Kong FDI actually represents a round trip FDI flow back to China from Hong Kong's perspective, it is necessary to make some changes to the measuring method. Instead of comparing the unverifiable part of FDI from Hong Kong to China (C3) with China reported total FDI inflow from Hong Kong (B1), we compare the unverifiable part of FDI from Hong Kong to China (C3) with Hong Kong reported FDI to China (A1) (see Table 9). For example, row D4 shows the percentage of round-tripping FDI from Hong Kong to China in Hong Kong's reported FDI outflow to China. The table shows that the round-tripping FDI is about 63% of the total FDI outflow from Hong Kong to China. The calculated standard deviation for row D4 is 0.6761. Based on Xiao's (2004) method, we obtained the middle range of 29.2% and the lower range of -4.7%. The result from Hong Kong's point of view is much larger than the previous findings of both Lardy (1995) and Harrold and Lal (1993) who conclude that the round-tripping FDI is about a quarter of total FDI. The high percentage of round-tripping FDI in Hong Kong total FDI to China in our study could be caused by the larger differences between China reported FDI inflow from Hong Kong and Hong Kong reported FDI outflow to China. Another reason could be the low level of Hong Kong's reported FDI outflow to China.

In 1998, 2001 and 2003, the percentage of Hong Kong's round-tripping FDI flow to China in terms of total FDI to China is over 100%. This means Hong Kong round-tripping FDI is actually larger than its total FDI to China. This implies there are some FDI flows into China from a third party as the round-tripping FDI between Hong Kong and China. This can be attributed to China's special policy providing advantages to foreign investment. For example, some foreign investment companies do not need to pay import tariff on certain goods, and the Chinese local government also provides low fees for foreign investment company to use the land for commercial purpose. Such policy advantages encouraged local investors to move capital out and then round-tripping back as "foreign investment". Hong Kong is regarded as the best place for such maneuver. For example, in 1998 the round-tripping FDI is almost twice as Hong Kong reported FDI outflow to China.

Using the measured percentage of round-tripping FDI in place of Hong Kong's total FDI to China, we can use the same percentage for Hong Kong's round-tripping capital flight. We assume that the percentage for round-tripping FDI in Hong Kong total FDI to China is same as the percentage of Hong Kong round-tripping capital in its total capital flight to China. About 63% of Hong Kong total capital flight to China round-trip back to China (see Table 9).

[1] We follow Xiao's (2004) method who used half of the standard deviation as the proxy for the systematically biased statistics reporting errors.

Table 8. Hong Kong's round-tripping FDI flows into China from China's point of view: 1998-2009 (in USD million)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Standard deviation	Weighted average 98-09
A1	6900	10131.22	46350.48	8501.09	15937.94	7690.93	18582.21	16849.43	21484.58	36498.98	27588.33	27107.23		20301.87
A2	4200	7785.311	13140.33	3859.469	4551.866	4994.607	11575.38	13435.58	13992.06	27371.02	16947.85	15676		11460.79
A3	5900	9336.451	14152.21	4768.369	5465.326	5861.977	15969.65	23171.68	22215.7	30863.02	22573.95	20450.22		15060.71
A4	2700	2345.905	33210.14	4641.621	11386.08	2696.318	7006.827	3413.852	7492.52	9127.959	10640.48	11431.23		8841.077
B1	18508.36	16363.05	15499.98	16717.3	17860.93	17700.1	18998.3	17948.79	20232.92	27703.42	41036.4	46075.47		16768.16
B2	1645.13	1551.14	1011.88	908.9	913.46	867.37	4394.27	9736.1	8223.64	3492	5626.1	4774.22		3206.365
C1	11608.36	6231.834	-30850.5	8216.21	1922.989	10009.18	416.0917	1099.362	-1251.66	-8795.56	13448.07	18968.24		2585.219
C2	14308.36	8577.739	2359.645	12857.83	13309.06	12705.49	7422.919	4513.214	6240.864	332.4006	24088.55	30399.47		11426.3
C3	12608.36	7026.599	1347.765	11948.93	12395.6	11838.12	3028.649	-5222.89	-1982.78	-3159.6	18462.45	25625.25		7826.372
D1	0.627195	0.380848	-1.99036	0.491479	0.107665	0.565487	0.021902	0.06125	-0.06186	-0.31749	0.327711	0.411678		0.052125
D2	0.773076	0.524214	0.152235	0.769133	0.74515	0.71782	0.390715	0.251449	0.308451	0.011999	0.587004	0.659776		0.490918
D3	0.681225	0.429419	0.086953	0.714764	0.694007	0.668817	0.159417	-0.29099	-0.098	-0.11405	0.449904	0.556158	0.346036	0.328136
D4	1.827299	0.693559	0.029078	1.405576	0.777742	1.539231	0.162986	-0.30997	-0.09229	-0.08657	0.669212	0.945329	0.676173	0.630099
High estimation														0.328136
Middle estimation														0.155117
Low estimation														-0.0179

Table 9. Hong Kong's round-tripping FDI flows into China from Hong Kong point of view: 1998 to 2009 (in USD million)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Standard deviation	Weighted average 98-09
A1	6900	10131.22	46350.48	8501.09	15937.94	7690.93	18582.21	16849.43	21484.58	36498.98	27588.33	27107.23		20301.87
A2	4200	7785.311	13140.33	3859.469	4551.866	4994.607	11575.38	13435.58	13992.06	27371.02	16947.85	15676		11460.79
A3	5900	9336.451	14152.21	4768.369	5465.326	5861.977	15969.65	23171.68	22215.7	30863.02	22573.95	20450.22		15060.71
A4	2700	2345.905	33210.14	4641.621	11386.08	2696.318	7006.827	3413.852	7492.52	9127.959	10640.48	11431.23		8841.077
B1	18508.36	16363.05	15499.98	16717.3	17860.93	17700.1	18998.3	17948.79	20232.92	27703.42	41036.4	46075.47		16768.16
B2	1645.13	1551.14	1011.88	908.9	913.46	867.37	4394.27	9736.1	8223.64	3492	5626.1	4774.22		3206.365
C1	11608.36	6231.834	-30850.5	8216.21	1922.989	10009.18	416.0917	1099.362	-1251.66	-8795.56	13448.07	18968.24		2585.219
C2	14308.36	8577.739	2359.645	12857.83	13309.06	12705.49	7422.919	4513.214	6240.864	332.4006	24088.55	30399.47		11426.3
C3	12608.36	7026.599	1347.765	11948.93	12395.6	11838.12	3028.649	-5222.89	-1982.78	-3159.6	18462.45	25625.25		7826.372
D1	0.627195	0.380848	-1.99036	0.491479	0.107665	0.565487	0.021902	0.06125	-0.06186	-0.31749	0.327711	0.411678		0.052125
D2	0.773076	0.524214	0.152235	0.769133	0.74515	0.71782	0.390715	0.251449	0.308451	0.011999	0.587004	0.659776		0.490918
D3	1.827299	0.693559	0.029078	1.405576	0.777742	1.539231	0.162986	-0.30997	-0.09229	-0.08657	0.669212	0.945329	0.676173	0.630099
D4														0.630099
High estimation														0.292012
Middle estimation														-0.04607
Low estimation														

Discussion and conclusion

The results of the capital flight in Hong Kong using the three different measurement methods show that there are capital flight movements in Hong Kong regardless of which estimation method is used. However, the result from the World Bank method exhibits the biggest absolute value, followed by the hot money method and the smallest absolute value from the trade mis-invoicing method.

The three measurement methods results exhibit a stable increase trend of Hong Kong capital flight from 1998 to 2009. The growth rates of capital flight generated from the three measurement methods exhibited similar trend as documented in Figure 2. Before 1998, the trade mis-invoicing method shows an overall of decreasing trend as documented in Figure 1. There were periods of fluctuation as well, for example, Hong Kong capital flight experienced a sharp increase in 1980 and a sharp decrease in 1986. The sharp increase could be caused by the announcement of China's Open Door Policy, which encouraged trade between Hong Kong and China, and further encouraged capital flight through trade linkages. However, as more and more Chinese cities opened up to the world, there was less and less demand for Hong Kong to be the transfer trading port. This eventually caused a sharp decrease in Hong Kong capital flight in 1986.

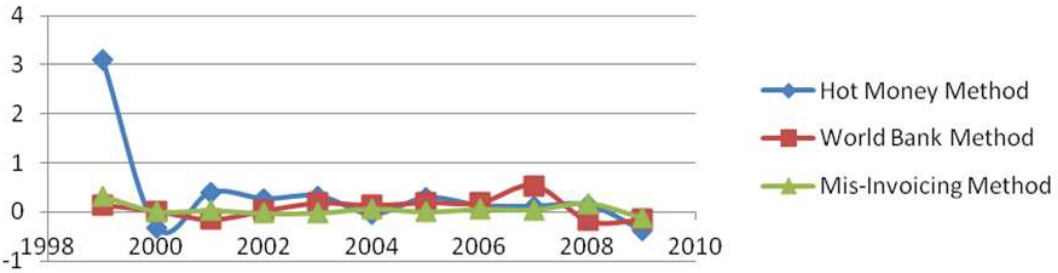

Fig. 2. Hong Kong Capital Flight Result from the Three Measurement Methods (1970-2009)

Hong Kong's capital flight measured by hot money method exhibits a dramatic increase of capital flight between 1998 and 1999 for about $8,000 million reaching a peak of $29,245 million. This could be explained by the reunification of Hong Kong with China in 1997. In addition, Hong Kong also suffered from the Asian financial crisis in July 1997. The changes in political and economic conditions caused uncertainty for both domestic and foreign investors, as investors are uncertain if the investment environment in Hong Kong will change significantly with the unification with China and the outbreak of the financial crisis. Under such uncertainty, the rational actions for investors are to withdraw their investments from the Hong Kong market, and hold on to see if major changes will take place. Short-term capitals and easily convertible capitals are quite sensitive to any changes in investment environment, though there is no data or evidence to show the dramatic decrease before 1997. It is reasonable to believe that investors did not reinvest back into Hong Kong until the handover to China has been completed and the investment environment become stable and favorable.

Table 3 shows Hong Kong's capital flight increased dramatically from 2006 to 2007 reaching a peak of $574,152 million in 2007. On average Hong Kong capital flight for the same period was about $200 billion. Our result is nearly 10 times more than the Gunter's (2003) result. The difference between our result and Gunter's (2003) study could be caused by the different instrument variables used in the model. For example, in our study, we use the differences between Hong Kong recorded export and import figures to obtain the current account deficit, but Gunter (2003) uses current account balance in Hong Kong's Balance of Payment which leads to a narrower result. In addition, we use Hong Kong gross external debt instead of the debt changes since there is no record for Hong Kong's external debt changes from the World Bank website. The gross external debt can lead to a larger estimation of capital flight in Hong Kong.

The results of the Hong Kong capital flight measured by trade mis-invoicing method also differ from Gunter's (2003) finding. The difference between our study and Gunter (2003) could be explained by the measuring method. Gunter (2003) indirectly obtained Hong Kong capital flight from China's trade mis-invoicing figure as well as China and Hong Kong combined trade mis-invoicing figure. Gunter also used 24 major trade partners for China and Hong Kong. Our study used the difference between Hong Kong and its 14 major trade partners' export and import figures to obtain Hong Kong capital flight. Comparing with Gunter (2003), our study limits the amount of capital flight to only 14 major trade partners and only measures Hong Kong's capital flight through the trade mechanism.

The result for the round-tripping FDI from Hong Kong to China in our study is similar to previous

studies. For example, World Bank (2002) documents that Hong Kong FDI to China takes more than a quarter of China's total FDI capital inflow. The report showed Hong Kong's FDI to China was the half size of China's total FDI inflow in 1996, and took in as high as 42% of China' total FDI inflow in 1999. The annual FDI of Hong Kong provides a guideline for China's capital flight round-tripping back to China in the form of Hong Kong's FDI to China.

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