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OUTWARD PORTFOLIO INVESTMENT FROM MAINLAND CHINA: HOW MUCH DO WE EXPECT AND HOW LARGE A SHARE CAN HONG KONG EXPECT TO CAPTURE?

Key points:

- *This paper aims to provide an analytical framework for an educated guess of the potential volume of outward portfolio investment from Mainland China and how large a share Hong Kong could capture, should the Mainland's capital account be as open as any other developed economies.*

- *Based on our counterfactual scenario for 2005, total outward portfolio investment from Mainland China is expected to increase from the current 5% of GDP to 15%, should its capital account be as liberalised as in an average OECD country. Assumptions based on our projections for the future suggest that the amount could reach 23% to 54% of GDP. Hong Kong could capture around 10% of such investment. These scenarios appear reasonable when compared with outward portfolio investment position of major economies and past liberalisation experience in Japan.*

- *Our findings suggest that while Hong Kong's comparative advantage lies mainly in its proximity and cultural affinity with the Mainland, according to our model estimates, the most important determinant of bilateral portfolio investment is the domestic share of world stock market capitalisation, in which Hong Kong lags behind relative to other major financial markets. Our projections show that an increase in Hong Kong's stock market size to that of Japan could almost double the share captured by Hong Kong.*

- *The potential increase in portfolio investment from the Mainland is expected to benefit the financial services industry in Hong Kong, and increase the contribution from this sector to GDP. It would not only boost securities market activities, but could also foster the wealth-management and custodian services industries in Hong Kong.*

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I. INTRODUCTION

Since the introduction of the reform and opening-up policy, China has made eye-catching progress in developing its economy. China's economic growth has averaged almost 10% per year over the past two decades, with per capita income doubling every 8 years since the late 1980s. China's growth represents one of the most sustained and rapid economic transformations ever seen in the world economy. Great advancements have been made in transforming its foreign exchange control regime into an increasingly market-oriented arrangement. Although foreign exchange controls have been maintained, including restrictions on cross-border capital flows as well as quantitative and regulatory controls on exchange between the renminbi and foreign currencies, a limited and selective capital account liberalisation has been introduced, and the country has recently encouraged outward foreign portfolio investment through the Qualified Domestic Institutional Investors (QDII) scheme.

Nevertheless, while China's gross foreign direct investment (FDI) as a percentage of GDP had caught up to the world average by the early 1990s, foreign portfolio investment flows have continued to lag behind. This might be explained by past liberalisation policies that have strongly favoured FDI over foreign portfolio investment, reflecting the fact that most of the concerns relating to rising capital account convertibility are related to foreign portfolio investment, which together with bank loans, are far more vulnerable than direct investment to serving speculative ends and more subject to abrupt reversal.

As such, foreign portfolio investment flows are likely to have the greatest scope to respond to further capital account liberalisation in the future. While in general, capital account liberalisation helps create an attractive environment for capital inflows, it will also result in capital flowing from countries with high savings to countries that offer more profitable investment opportunities and a greater diversity of financial products. While much literature has been focusing on international capital flows from developed to developing countries, the high savings rate in China is likely to represent enormous potential to the developed economies. Given China's high savings rate of around 50% of GDP, together with the limited channels of investment domestically and the relatively low interest rates offered to domestic investors, an opening up of the capital account could lead to considerable outflows of capital from China to the developed economies where their portfolios could be better diversified, given their more sophisticated financial markets. This is likely to have important implications for the rest of the world.

This paper aims to provide an analytical framework for an educated guess of the potential volume of outward portfolio investment from Mainland China, should its capital account be as open as any other developed economies. Given the close link with the Mainland, question arises as to how large a share Hong Kong could capture from such investment. The next section provides a brief overview of China's capital account liberalisation process. Section III compares where China stands in terms of foreign portfolio investment holdings based on some stylised facts, including international portfolio investment position, Japan's experience in capital account liberalisation and the allocation pattern of international bilateral portfolio investment. The first part of our empirical analysis is provided in Section V, where we attempt to quantify the potential volume of China's outward portfolio investment based on experience in the OECD countries, should China's capital account be as open as in any of these economies. Section VI provides the second part of our empirical analysis by investigating factors that determine the pattern of international cross-border portfolio transactions, and then estimating the potential portfolio investment from the Mainland that would be captured by Hong Kong. The last section concludes by discussing the policy implications and caveats of the analysis.

II. CAPITAL ACCOUNT LIBERALISATION IN CHINA

The Mainland government has adopted a gradual and pragmatic approach to the convertibility of the renminbi and capital account liberalisation. Several patterns regarding the liberalisation sequence are observed: controls on inflows were deregulated before outflows; the current account was opened before the capital account; and within the capital account, long-term direct investment flows were liberalised before short-term portfolio investment flows.[1]

Specifically, during the early stage of reform (from the late 1980s to early 1990s), only FDI – which is believed to facilitate transfer of technology and management know-how from abroad – was encouraged. Since then, restrictions on non-FDI capital inflows have been relaxed. In fact, the government announced in the mid-1990s its intention to implement capital account convertibility by 2000, although the vulnerability of the neighbouring countries to international capital flows during the Asian crisis caused a rethinking among the Mainland policymakers.

[1] The major milestones of the evolution of capital controls in China are given in Appendix II.

With the economy continuing to expand at a rapid pace and financial markets becoming increasingly integrated with the international financial system, especially following the WTO accession in 2001, the government has reiterated publicly that capital account convertibility is a medium-term objective. While the exact time table for full capital account convertibility will depend on the economic conditions, some decisive steps in liberalising capital flows in both directions (inflows and outflows) have recently taken place. In an effort to further open up and attract foreign portfolio investment to the domestic capital market, the government launched the Qualified Foreign Institutional Investors (QFIIs) scheme in late 2002, allowing overseas financial institutions to invest in the renminbi-denominated domestic stock and bond markets. By June 2006, the total investment quota approved for purchase by QFIIs has reached US$7 billion.

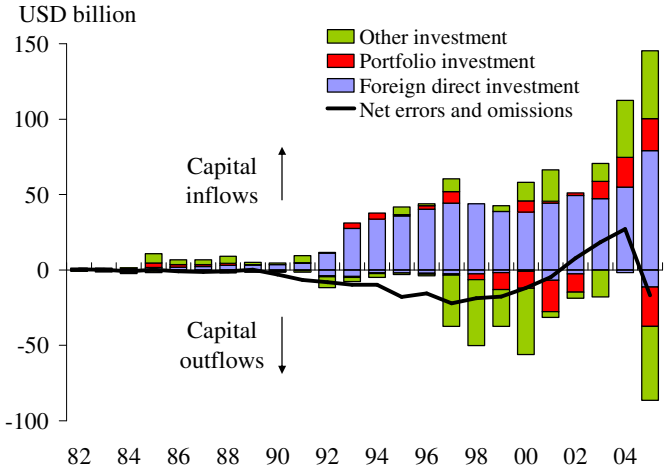
Restrictions on capital outflows have also been eased recently. While the official guidelines used to be "encouraging inflows and restricting outflows" and "holding the foreign currencies by the country", policies have shifted to emphasise "promoting capital outflows" and "allowing the people to hold foreign exchanges", especially against the backdrop of the recent rapid build-up of international reserves. In fact, eligible commercial banks have long been allowed to use their own foreign currency holdings to invest in fixed-income products overseas. But it is not until April 2006 that the government approved the Qualified Domestic Institutional Investors (QDII) scheme, which allows certain qualified banks, insurers and fund management companies to purchase foreign currencies for offshore portfolio investment.[2] Moreover, since July 2006, the government has removed restrictions on the amount of foreign currency allowed to be purchased by domestic investors for qualified foreign direct investment.

III. WHERE CHINA STANDS – AN INTERNATIONAL COMPARISON

Until the early 1990s, China's capital inflows had been negligible. Following gradual deregulation and increasing integration with the global economy through trade, gross capital inflows, predominantly in the form of FDI, rose dramatically in the mid-1990s and reached US$145 billion in 2005 (Chart 1). Excluding other investment, gross capital outflows remained minuscule until 2004, reflecting outward capital controls which were eased only recently.

[2] Specifically, commercial banks are now allowed to invest overseas on behalf of their clients.

Chart 1: Capital flows in China



Source: CEIC.

That said, foreign portfolio flows appear to be growing. In addition, errors and omissions in China's balance of payments have suggested relatively large outflows until recently, further indicating considerable cross-border activity. Up until 2001, there had been large, negative errors and omissions in China's balance of payment, averaging around US$12 billion per year between 1990 and 2001. These "errors and omissions" item may reflect capital flows that were not captured by official statistics, particularly non-FDI flows including portfolio and other investment.[3] The negative errors and omissions imply that there could possibly be large amounts of capital outflows not officially recorded during this period. Although the errors and omissions have switched sign since 2001 reflecting expectations of renminbi appreciation, the cumulative errors and omissions since 1982 still stood at around minus US$114 billion by 2005.[4]

a. An international comparison of foreign investment position

In terms of gross international investment position, FDI as a percentage of GDP in China averaged approximately 30%, which is close to that for East Asia of 36%, though less than the OECD average of 54% (Table 1).[5] However, there is a significant difference between China and other economies in their gross portfolio investment positions. While the figure as a share of GDP was over 100% for the OECD countries and as high as 34% for East Asia, China's gross portfolio investment position was only

[3] Given that changes in foreign reserves, the current account balance and net FDI are deemed more easily accounted for than non-FDI flows.

[4] It is not clear how much of these cumulative errors and omissions are attributed to the discrepancy between the market value and the government's valuation of its international reserves, and how much to actual unofficial outflows.

[5] The data for the OECD and East Asia is averaged over 2001-2005. For China, the position data is only available for 2004 and 2005, we therefore take the average over these two years.

8% of its GDP, with outward portfolio investment position at 5% of GDP. Although China's outward portfolio investment position rose significantly from US$92 billion in 2004 to US$117 billion in 2005, it has continued to lag far behind most other economies.

Table 1: International comparison of investment position, average over 2001-2005

(% of GDP)	*PI Asset*	*PI Liability*	*PI Total*	*FDI Asset*	*FDI Liability*	*FDI Total*
OECD	**46**	**57**	**103**	**30**	**24**	**54**
US	24	46	71	24	22	46
UK	95	102	197	61	36	97
Germany	55	67	123	29	25	54
Japan	38	19	57	8	2	10
China [1]	5	3	8	3	28	30
E. Asia [2]	**12**	**22**	**34**	**14**	**22**	**36**
Indonesia	1	8	10	-0.4	10	9
Korea	3	26	28	4	12	16
Malaysia	2	13	15	11	24	35
Philippines	4	24	28	1	16	17
Singapore	84	61	145	102	157	258
Taiwan [3]	32	27	58	27	12	38
Thailand	1	17	19	2	31	34

Note:
1. Simple average of 2004 to 2005.
2. East Asia includes NIE-3 and ASEAN-4.
3. Accumulated sum of capital flows from March 1981 to December 2005.

Source: CEIC.

The small size of portfolio investment in China reflects the government's restrictions on flows of non-FDI capital in either direction. As such, further capital account liberalisation in China is likely to lead to both larger portfolio investment inflows and outflows. In particular, the latter is likely to be driven by China's huge amount of savings together with a lack of domestic investment opportunities and the desire of domestic investors to diversify their portfolios. First, China has a high savings rate compared with most major economies. This partly reflects precautionary savings due to the lack of a full coverage of the social safety net. At the same time, these savings have limited investment opportunities with unattractive returns. This reflects in part a small and underdeveloped domestic capital market, with total stock market capitalisation of only around US$0.4 trillion and the speculative nature of the stock markets limiting its role as an attractive alternative channel of investment for the general public. As such bank deposits play a predominant role as a channel for investment. By 2005, the corporate and households' total deposits in the banking system have reached approximately US$3.5 trillion.[6] However, these savings earn very

[6] This includes demand, saving, time and foreign currency deposits as reported in the monetary survey published by the People's Bank of China.

low returns, with the three-month time deposits currently earning a nominal return of around 1.8% per annum and one-year time deposits 2.5% per annum. The sheer size of savings and limited investment opportunities in China suggests that the potential amount of funds to be invested overseas could be huge.

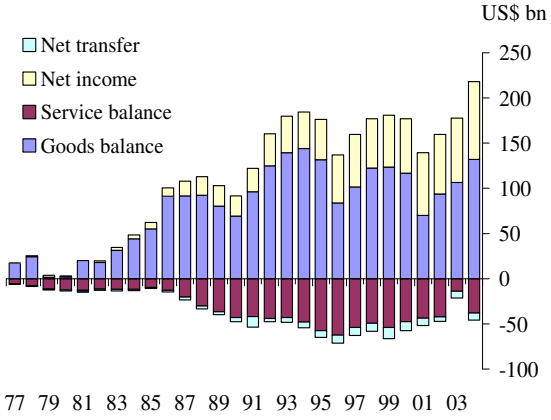
b. Implications of Japan's capital account liberalisation experience for China

A study on the experience of Japan in overseas investment after the opening of the capital account may shed some light on the future path of China's outward portfolio investment. From a historical perspective, there are a number of similarities shared by Japan and China in capital account liberalisation. Governments in both countries have adopted a gradualist approach in opening up their current and capital accounts, and private savings rates are high in both economies.

The high private savings rates relative to investment rates in the two countries is attributable to two main factors. First, both economies have experienced rapid income growth following the liberalisation of current account transactions and foreign direct investment, as increased export earnings and investment by foreign enterprises raised household income significantly. Growth in real per capita income rose to an annualised rate of 3.2% in Japan in the 1980s and 9.4% in China in the 1990s. Given the high propensity to save in both countries, domestic savings also picked up notably during these periods.

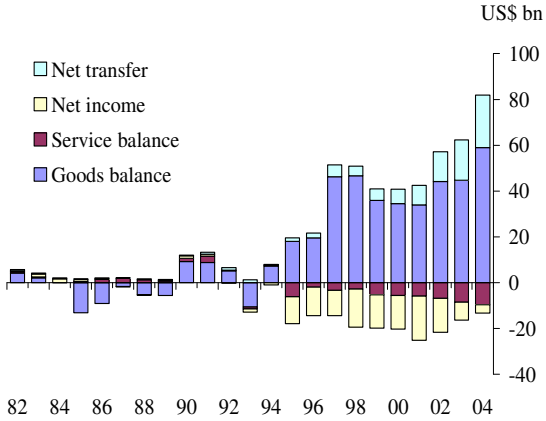
At the same time, both countries have earned sizable current account surplus over the past few decades. Low labour and rental costs at the early stage of development in Japan and China increased their export competitiveness in international markets, while the promotion of trade-oriented policy by the government also helped to boost domestic exports. Both Japan and China have recorded sizable current account surplus starting from the 1980s and 1990s respectively, mainly reflecting increased surplus in the trade account (Charts 2 and 3).

Chart 2: Japan's current account



Source: IMF.

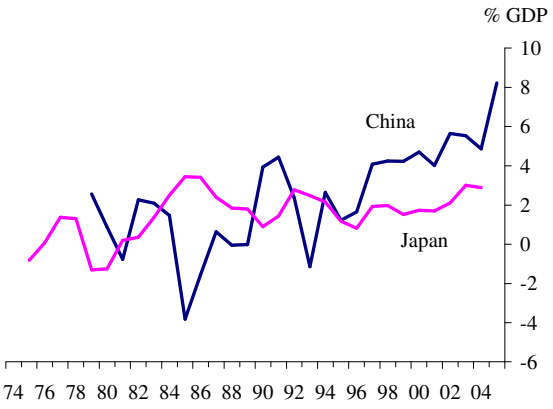
Chart 3: China's current account



Source: IMF.

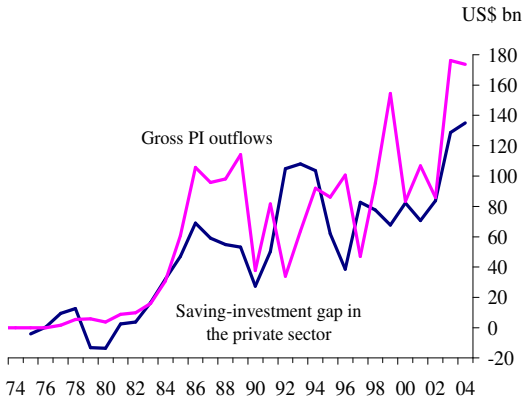
Limited investment opportunity in domestic capital markets also contributed to high excess savings in China and Japan before the capital account was liberalised. With high savings rates and rising current account surplus, savings are accumulated at a much faster pace than domestic investment (Chart 4). Similar to Japan, where the saving-investment gap increased rapidly during the period before the capital account was liberalised in the mid-1980s, the gap in China has increased significantly over the past decade, and is even higher than the level experienced in Japan.

Chart 4: Saving-investment gap in Japan and China



Source: IMF.

Chart 5: Saving-investment gap and gross portfolio investment outflows in Japan



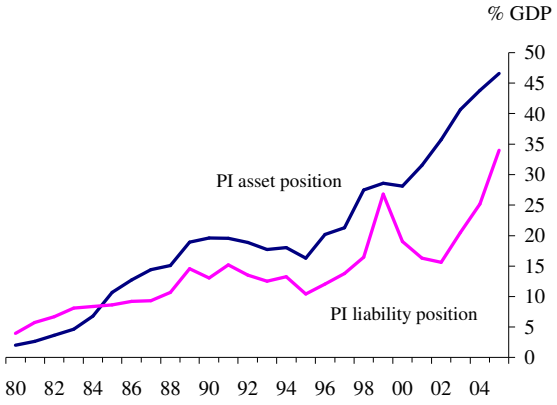
Source: IMF.

The positive saving-investment gap in Japan has been the major driver of outward portfolio investment in the country. Past developments in Japan show that there has been a strong co-movement between the saving-investment gap in the private sector and gross portfolio investment outflows, with the former appearing to be driving the latter (Chart 5). The sheer size of private sector savings accumulated during the period of rapid

income growth and relatively low returns on bank deposits have increased the attractiveness of overseas investment when the capital account was fully liberalised in Japan in the 1980s. During the early stage of liberalisation, the size of outward portfolio investment flows was relatively small as only a limited number of qualified financial institutions were allowed to invest in securities overseas, but such flows have increased along with the liberalisation process. After years of financial sector reforms and deregulations, Japan's gross outward portfolio flows have increased from US$4 billion (0.3% of GDP) in 1980 to US$196 billion (4.3% of GDP) in 2005.

In terms of the share of GDP, outward portfolio investment position in Japan was around 5% before the opening of the capital account in 1984, similar to the current level in China (Chart 6). After the opening, outward portfolio investment position increased to 18% in 10 years' time and further to the current level of over 40% in another 10 years. As a result, Japan has become one of the largest holders of foreign assets in the world, with its net international investment position (excluding foreign reserve assets) rising from US$2.3 billion (0.2% of GDP) in 1982 to US$738 billion (16% of GDP) in 2005.

Chart 6: Portfolio investment position as a percentage of GDP in Japan



Source: IMF.

Given the similarities between the two countries and the experience in Japan, would China follow Japan to become a key investor in the global financial markets? While in China, the domestic financial markets are less-developed and heavily regulated, experience in Japan suggests that given the high savings rates and limited domestic investment opportunities, the potential of portfolio investment overseas could be comparable to that in Japan following the capital account liberalisation in China.

c. Allocation patterns of international portfolio investment

Given the huge potential outward portfolio investment from China, how will it be allocated across different financial markets? An overview of the allocation pattern of international bilateral portfolio investment may provide some insights on the potential overseas portfolio investment behaviour of China should its capital account be as open as in a typical OECD country (Table 2). Global portfolio investment has expanded rapidly in recent years, with cross-border portfolio investment asset positions growing at an annual rate of 22% between 2001 and 2004. The increase is across countries, and is mainly attributable to marked increases in overseas securities investment by the US and the EU area, particularly in France. The rapid accumulation of global portfolio investment asset positions suggests that home bias in securities investment might have been diminishing in recent years.[7]

Table 2: Bilateral portfolio investment asset position, 2004

(% of total)	**Recipient country**									
Source Country	US	Euro area	UK	Switzerland	Japan	HK	Singapore	China	OFCs	**Sum Total**
US	-	25	20	4	10	1	1	0.3	10	**70**
Euro area	14	58	9	1	3	0.3	0.1	0.1	3	**89**
UK	25	39	-	2	6	1	1	0.3	4	**79**
Switzerland	13	52	6	-	2	0.1	0.1	0.0	4	**77**
Japan	35	30	6	1	-	0.5	0.2	0.2	14	**86**
NIEs	17	14	16	0.4	3	1	1	5	18	**77**
ASEAN-4	38	19	12	1	1	3	6	0.2	3	**82**
OFCs	65	10	5	0.4	2	0.1	0.0	0.0	6	**90**

Note: OFCs refers to offshore financial centres.
Source: IMF, CPIS.

The US and Europe are the largest destination of cross-border portfolio investment. In 2004, over 70% of global portfolio investment was invested in the US and the European markets. The dominant role of the US and Europe in the global financial markets reflects their highly developed and sophisticated markets, with a huge market size offering a great diversity of financial products. The combined size of their equity markets constitutes to around 70% of the world equity market capitalisation.

[7] According to the international Capital Asset Pricing Model (CAPM), an investor should hold domestic assets in his/her portfolio in proportion to their country's share of world capitalisation. In this context, home bias refers to the deviation from the international CAPM allocation, where investors hold portfolios that are overweighted in domestic securities.

Apart from financial market size, bilateral portfolio investment data show that geographical location may also affect the distribution of global securities investment. Information asymmetry due to differences in geographical locations among key financial markets may affect investor preference toward domestic and foreign securities. For example, time zone differences may cause delay in the dissemination of timely information, thus increasing investment risks and trading costs. Table 2 shows that the euro area is the major destination of portfolio investment assets from the European community including the UK and Switzerland. The significant share of intra-regional portfolio investment within the euro area partly reflects lower trading cost and exchange rate risk due to the use of a common currency. At the same time, the strong economic ties and proximity of financial markets among European countries are also important in attracting securities investment within the region.

In Asia, while most of the outward portfolio investment assets are invested in the US and Europe, geographical location also plays a role. For example, the NIE economies (Hong Kong, Korea and Singapore) have a larger share of outward portfolio investment in China, while the ASEAN economies (Indonesia, Malaysia, the Philippines and Thailand) have a larger share of outward portfolio investment in Singapore relative to other Asian neighbours.

IV. ESTIMATING PORTFOLIO INVESTMENT FROM MAINLAND CHINA

International experiences do not only provide insights on the potential portfolio investment behaviour in Mainland China through the above stylised facts, but are also used as a basis for our empirical analysis. The first part of our empirical analysis aims at estimating how much foreign portfolio investment China would hold should the capital account be as liberalised as any other developed economies. We first build a model to explain the international portfolio investment position based on the experience in countries with open capital account (excluding off-shore financial centres), and then draw inferences for China based on some reasonable projections about the explanatory variables.

a. The model

While our interest is to explain a country's outward investment position, most of the related research has focused on studying the determinants of international investment position (a total of the inward and outward positions) or international diversification. Based on data for 19 OECD countries, Lane (2000) attempted to explain the general trend in a country's gross international investment position as well as its portfolio, equity and debt components individually. He found that countries with a high degree of trade openness and larger domestic financial markets tend to hold more

foreign assets and liabilities. In a similar study, Lane and Milesi-Ferretti (2003) employed a panel data set for 18 OECD countries and identified trade openness, GDP per capita, and stock market capitalisation as important in explaining international financial integration.[8] In explaining patterns in international portfolio diversification, Amadi (2004) explored factors that determined equity home bias using panel data.[9] In addition to variables such as return differentials and the share of foreign firm listed in the domestic stock markets, he also incorporated information variables including internet penetration and mutual fund capitalisation, and found that they had a significant impact on the dependent variable.[10]

With reference to the above literature, we construct the following model to estimate the share of outward portfolio investment in GDP:

$$PI_{it}/GDP_{it} = \alpha_i + \alpha_1 SWCAP_{it} + \alpha_2 RTNDIFF_{it} + \alpha_3 PFFL_{it} + \alpha_4 Openness_{it} + \alpha_5 Internet_{it} + \alpha_6 \ln GDPC_{it} + \varepsilon_{it} \quad (1)$$

where

PI/GDP	=	Gross portfolio investment assets as a percentage of GDP
SWCAP	=	Domestic stock market capitalisation as a percentage of world capitalisation (-)
RTNDIFF	=	Difference between domestic and world stock market return (-)
PFFL	=	Number of foreign firms over total firms listed in the domestic stock market (+)
Opennes	=	percentage share of imports and exports in GDP (+)
Internet	=	percentage share of internet users in total population (+)
GDPC	=	per capita GDP (+)

Parentheses after the variables give their expected signs in the regression. The rationale of incorporating these variables is explained as follows.[11] First, sophistication of the domestic financial markets matters. A large and well-developed domestic stock market provides domestic residents with alternative investment opportunity and could thus reduce their incentives to invest abroad given their relative unfamiliarity with the foreign markets and the exchange rate risks involved. Financial theory also suggests that investors should diversify their portfolio according to

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[8] International financial integration was measured as total international investment position over GDP.

[9] Recent studies on the home bias puzzle include Baele, Pungulescu and Horst (2006), Kho, Stulz and Warnock (2006), and Sorensen et al (2006). However, these studies have a different context from our study here.

[10] Bohn and Tesar (1996) found that 'return-chasing' behaviour plays an important role in determining US equity investment in foreign markets, and Ahearne, Griever, and Warnock (2004) found that the share of foreign firms listed in the domestic stock markets was significant in explaining foreign diversification in the US.

[11] We have also attempted to include the size of mutual funds capitalisation as the mutual funds industry has been gaining more foreign scope. This variable, however, is not significant in our sample.

their country's share of world capitalisation. That is, if a country's share of world capitalisation is high, domestic residents would hold less foreign assets.

The difference between local and world market return could also be an important factor in determining the flow of capital. It is generally believed that investors would increase their foreign portfolio holdings when domestic market underperforms the rest of the world. This is sometimes called investors' 'return-chasing' behaviour.

The number of foreign firms over total firms listed in the domestic market is included. The listing of foreign firms in the local stock market would allow domestic residents to gain foreign exposure at a relatively lower cost, leading to an increase in foreign portfolio holdings. It should be noted that investment in locally-listed foreign firms is considered as outward portfolio investment in the balance of payment data.

Besides affecting a country's total trade and hence financial flows directly, a country's openness to the rest of the world could also influence its residents' familiarity with the foreign markets and their general willingness to invest abroad.

Following the recent 'home bias' literature that emphasises the importance of information variables on cross-border portfolio flow, we also include the percentage internet users in total population as a proxy measure for the ease of each country to access foreign information.

GDP per capita is also considered. In addition to the general belief that countries with higher GDP per capita tends to hold more external assets (and liabilities), Lane and Milesi-Ferretti (2003) found that income per capita appears to influence the propensity to engage in international asset trade to the extent that higher income is associated with lower risk aversion.

b. Estimation results

Subject to data availability, 19 OECD countries are chosen as our sample as these countries have opened their capital account for a reasonably long and stable period of time.[12] As outward portfolio investment behaviour is determined more by cross-country differences relatively to variation over time, estimation using a

[12] Based on the information published by the IMF, we first selected 43 countries using a rough criterion that countries which have no restrictions on more than half of the 13 types of capital account transactions are considered to have open capital accounts. Due to data limitation, the number of sample countries is reduced to 19. It should be noted that based on this selection criterion, Australia is not considered as having an open capital account. However, most of the country's measures imposed on the capital account do not represent major barriers to cross-border capital flows, and we have therefore also added this country to our sample.

cross-sectional regression might be more appropriate. Nevertheless, the use of cross-sectional data alone gives too few data points, and the model is estimated here using a panel data regression based on the sample countries for the period 2000-2004 to increase the number of observations.[13] The estimation is carried out using country fixed effects and White diagonal standard errors and covariance to correct for heteroscedasticity and serial correlation.[14] Table 3 summaries the results for different specifications. In each case, an additional explanatory variable is added, and the parameter estimates are robust to different specifications when a new variable is added to the model. Column (6) represents the full model.

Table 3: Fixed effects panel regression results

	Dependent variable: PI_{it} / GDP_{it}					
Independent variable:	(1)	(2)	(3)	(4)	(5)	(6)
$RTNDIFF_{it}$	-0.144 (-3.57)***	-0.068 (-2.32)**	-0.078 (-3.08)***	-0.096 (-3.53)***	-0.072 (-2.35)**	-0.072 (-2.35)**
$\ln(GDPC_{it})$	---	0.340 (8.02)***	0.360 (9.08)***	0.360 (10.04)***	0.318 (7.37)***	0.318 (7.38)***
$PFFL_{it}$	---	---	1.774 (4.68)***	1.272 (3.667)***	1.328 (3.76)***	1.327 (3.76)***
$Openness_{it}$	---	---	---	0.906 (3.56)***	0.935 (3.56)***	0.936 (3.56)***
$Internet_{it}$	---	---	---	---	0.229 (1.68)*	0.230 (1.69)*
$SWCAP_{it}$	---	---	---	---	---	-0.029 (-0.12)
Adjusted R^2	0.964	0.982	0.986	0.988	0.988	0.988
No. of observations	95	95	92	92	92	92

Note: Figures in parentheses are t-statistics. Standard errors are corrected for heteroskedasticity and serial correlation.
*** denotes significance at 1% level
** denotes significance at 5% level
* denotes significance at 10% level

[13] Our sample includes Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Israel, Italy, Japan, Netherlands, New Zealand, Portugal, Spain, Sweden, Switzerland, UK and the US with annual data from 2000-2004.

[14] Diagnostic testing including Hausman tests and Chow test are conducted, and the results suggest that time-invariant country specific effects are present in our sample. Accordingly, the fixed effects estimation procedure is used to estimate the model.

The model appears to be able to explain portfolio investment position in the OECD countries reasonably well. In all specifications the model has a very high explanatory power of over 90%. This is in part due to the inclusion of country dummies under the presence of country fixed effects, for which the estimated coefficients are not shown in the table. Nevertheless, regression using the explanatory variables only still gives an R-square of over 80%.

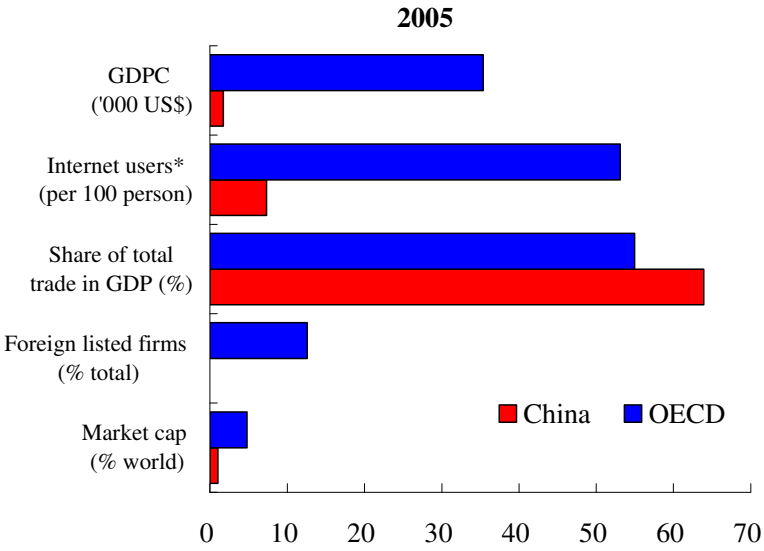
All variables have the expected signs and are highly significant, except for the domestic share of stock market capitalisation. Although the domestic share of stock market capitalisation turns out to be insignificant, the sign is correctly negative. Its insignificance might suggest that investors, on average do not follow financial theory as closely as one would expect. The results suggest that recent developments including free trade and the advancement in information technology such as the internet, might have made it more cost-effective to invest overseas for a better risk-return trade-off.

Based on the proportion of variation in the dependent variable explained by the variation in each explanatory variable, the most important determinant of outward portfolio investment is *Openness*, followed by the share of foreign firms listed in the local stock market (*PFFL*) and per capita GDP (*GDPC*). An increase in the trade-to-GDP ratio by 1% is found to raise outward portfolio investment as a percentage of GDP by 0.9 percentage points. Similarly, both an increase in the share of foreign firms listed in the domestic stock market and a rise in per capita income will increase outward portfolio investment. For the rest of the variables, while higher internet penetration will increase portfolio investment overseas, domestic residents will tend to hold less foreign portfolio investment assets when domestic stock market return is higher than the rest of the world.

c. Potential outward portfolio investment from China

Given these results and assuming the same relationship identified in the estimated Equation (1) to hold for China by the time its capital account is as liberalised as in a typical OECD country, we apply the model estimates to predict the volume of outward portfolio investment for China, based on some projections about the explanatory variables for the country. In order to provide reasonable assumptions, it would be useful to look at where China stands internationally in terms of the determinants of outward portfolio investment. For most of the determinants, China is at a far lower level than the average of the OECD countries, including the domestic share of world stock market capitalisation, the share of foreign listed firms, internet penetration and per capita GDP (Chart 7). It is only in terms of the share of total trade in GDP, where China is higher than its OECD counterparts. However, it is expected that the dependence of China on trade would decline when the country continues to develop.

Chart 7: How China compares to OECD countries in the determinants of outward portfolio investment



Note: OECD countries include Australia, Austria, Canada, Denmark, Finland, France, Germany, Greece, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, UK and U.S.
* 2004 figures for internet users.
Sources: World Development Indicators, World Federation of Exchange, Balance of Payment Statistics and World Economic Outlook.

Assumptions

Against this backdrop, we try to make some reasonable assumptions about the future values of the explanatory variables for China by the time its capital account is as liberalised as in a typical OECD country. We consider three scenarios. The first is a counterfactual exercise, assuming that China has a liberalised capital account today and that the parameter estimates and relationship identified in Equation (1) are applicable, that is, what would be the outward portfolio investment for 2005 given the actual value for the explanatory variables during the year?

However, it should be noted that this counterfactual scenario only serves as a reference based on existing economic and financial conditions in China and provide an easy-to-understand scenario. Given the current development stage of the Mainland economy and the degree of openness of its capital account, it would not be appropriate to assume that Equation (1), which is estimated based on experience in the OECD countries with a reasonably long and stable period of open capital account experience, would hold for China at present. In fact, the aim of this study is to provide an educated guess on what would be the outward portfolio investment holdings by the time the Mainland economy is mature enough to liberalise its capital account to an extent similar to an average OECD country. It should also be noted that we focus on the steady state value in this study, instead of the foreign investment immediately after the full liberalisation.

Therefore, for Equation (1) to be truly applicable, we project ahead in the other two scenarios the values for the explanatory variables by the time China's capital account is as open as in a typical OECD country. Scenario 1 provides a less bullish projection, which could be viewed as a more conservative baseline scenario. First, per capita income (*GDPC)* is assumed to reach the average level of coastal provinces in China at US$2,983 in 2005, increasing from the current national level of around US$1,700.[15] We do not employ the OECD average as it would be too high to be a realistic assumption—it would take as long as close to 30 years for China to reach that level based on the current pace of growth. *INTERNET* penetration is assumed to reach the current level in Greece, which was the lowest among OECD countries at 20%, but still much higher than the current level in China of 8.5%. *Openness* is assumed to be slightly lower at 60%, compared with 64% in 2005. The share of foreign firms listed in the domestic stock market (*PFFL*) is assumed to reach the level in Japan of around 0.85%, which is the lowest among OECD countries. Assumption based on the OECD average of 10% appears to be too high, given that so far no foreign firm is allowed to be listed in the domestic stock market in China. Finally, the return differential between the domestic and world stock market (*RTNDIFF*) is assumed to equal to 0, that is, the stock return in China equals the world average. We made this assumption because this factor differs greatly from one year to another, and there is no particular rationale behind what its value would be when the capital account is as liberalised as in a typical OECD country. It would be reasonable to set it to 0 so that the projected portfolio investment would not be affected by these short-term effects.

On the other hand, Scenario 2 is based on more bullish assumptions. *GDPC* is assumed to reach the current level in Shanghai at US$6,277, increasing from the current national level of around US$1,700.[16] *INTERNET* penetration is assumed to reach the average level in OECD countries of 53% in 2004 which is the latest data available from the World Bank's World Development Indicators. The rest of the assumptions remain the same as in Scenario 1.

Projections

Table 4 summarise the projections under different scenarios. Based on our model estimates, the counterfactual scenario for 2005 suggests that outward portfolio investment relative to GDP will be around 15% in China, which is three times as large as the actual figure of 5%, and equivalent to US$340 billion. Under Scenario 1, the projected volume of outward portfolio investment will reach 23% of GDP by the time

[15] It would take approximately 6 years for China's per capita GDP to reach the average level of coastal provinces based on the current pace of growth.

[16] It would take approximately 14 years for China's per capita GDP to reach the level in Shanghai based on the current pace of growth.

the capital account is as liberalised as in a typical OECD country. Under the more bullish Scenario 2, we obtain a figure of 54%. Accordingly, the projected volume of total outward portfolio investment from China would reach US$904 billion and US$4,468 billion for Scenarios 1 and 2 respectively.[17]

Table 4: Potential outward portfolio investment (PI) from China

	2005	Scenario 1	Scenario 2
Actual outward PI position (% of GDP)	5.3%	---	---
Projected outward PI position			
(% of GDP)	15%	23%	54%
(USD, billion)	340	904	4,468

Source: Staff estimates.

These estimates appear to lie within a reasonable range when compared with the average outward portfolio investment-to-GDP ratio of major countries over the past 5 years, with the US being 24%, Japan 38% and the average for OECD countries 46%. They also appear reasonable when compared with the experience in Japan, where as mentioned previously, its outward portfolio investment as a percentage of GDP increased to 18% after 10 years of opening and further to the current 46% after another 10 years (Chart 6).

V. HOW LARGE A SHARE CAN HONG KONG EXPECT TO CAPTURE?

The model above suggests that China's outward portfolio investment position could reach US$340 billion should the capital account be as liberalised as in a typical OECD country in 2005. The amount could reach as high as US$900 billion to US$4,500 billion under scenarios based on assumptions projected for the future. Given the strong economic and financial ties, Hong Kong is expected to benefit from the liberalisation of capital account transactions in Mainland China. So how much can Hong Kong capture from this outward portfolio investment from the Mainland? In the second part of the study, we use a gravity model, again based on experience in the OECD countries, to estimate the share of Mainland's portfolio investment that can be captured by Hong Kong.

[17] The projected volume of outward portfolio investment from China in terms of US dollar in Scenarios 1 and 2 is derived by multiplying the projected share of GDP with the estimated GDP based on the corresponding per capita GDP used in the projection and assuming population to stay constant at its 2005 level.

a. The gravity model

Gravity model is widely used in studies of bilateral merchandise trade relationship across countries. The model postulates that trade flows between two countries are positively related to the size of the economy (the mass variable) and negatively related to their geographical distance (the distance variable). Previous studies show that the model has a strong explanatory power in analysing international trade relationship. In recent years, financial liberalisation and globalisation have increased research interest in the allocation pattern of international investment position and cross-border capital flows. In earlier studies, Frankel (1997) used a gravity model to analyse the impact of preferential trade arrangements on foreign direct investment (FDI). Stein and Duade (2001) used it to analyse FDI flows from the OECD economies to the host countries, focusing on how institutional characteristics affect the volume of bilateral flows. Loungani et al (2003) found that both gravity and information variables played an important role in directing investment flows across countries.

In the context of bilateral portfolio investment flows and holdings, empirical findings generally support the relationship postulated in the gravity model in bilateral investment flows. For example, Lane and Milesi-Ferretti (2004) analysed bilateral equity holdings across countries using a gravity model, and found that they are positively related to trade and negatively related to geographical distance. Moreover, countries with higher per capita income and more developed stock markets tend to have larger cross-border equity asset and liability positions. Portes and Rey (2004) used a gravity model to explain bilateral gross equity investment flows across countries, and found that they are positively related to stock market capitalisation and negatively related to the geographical distance between the source and the recipient country. Their results also suggest that information asymmetry and differences in transaction technology are key determinants of bilateral equity investment flows across countries. Another study by Faruqee, Li and Yan (2004) also found that gravity variables, transaction cost and information asymmetry were significant determinants of international portfolio holdings. In sum, these studies suggest that gravity model has a strong explanatory power for cross-border capital flows and investment positions.

To assess the share of potential outward portfolio investment from the Mainland that could be captured by Hong Kong, we construct a gravity model to identify the key determinants driving bilateral portfolio investment asset holdings across countries with liberalised capital accounts. Specifically, we estimate the model with the following specifications. Parentheses after the variables denote their expected signs in the regression.

$$PI_{ij} / \sum PI_{i} = \alpha_0 + \alpha_1 MKTCAP_i + \alpha_2 MKTCAP_j + \alpha_3 \ln(DISTANCE_{ij}) + \alpha_4 \ln(Internet_i * Internet_j) + \alpha_5 LANG_{ij} + \alpha_6 RTNDIFFRW_{ij} + \alpha_7 FXVOL_{ij} + e_{ij} \quad (2)$$

where

Dependent variable:

$PI_{ij} / \Sigma PI_i$ = Share of the recipient country in total outward portfolio investment position of the source country

Mass variable:

$MKTCAP_i$ = Share of world stock market capitalisation in the source country (+)

$MKTCAP_j$ = Share of world stock market capitalisation in the recipient country (+)

Distance variable:

DISTANCE = Geographical distance between the capital cities of the source and the recipient countries, a proxy for information asymmetry (-)

Information variables:

Internet = Cross product of the number of internet users per 1,000 people in the source and the recipient countries, a proxy for information costs (+)

LANG = Dummy variable capturing the similarity of language used in the source and the recipient countries, a proxy for cultural affinity and familiarity with the recipient country (+)

Return-chasing motive variables:

RTNDIFFRW = Difference in stock market return between the source and the recipient countries relative to the global stock market return (-)

FXVOL = Exchange rate volatility of the recipient country's currency against the source country's currency, a measure of exchange rate risk (-)

Since a typical gravity model usually includes the mass and distance variables, we use the share of stock market capitalisation in the source and the recipient countries relative to the world total (*MKTCAP*) to capture the size effect, and the geographical distance between the capital cities of the two countries (*DISTANCE*) to capture the distance effect. In the context of a gravity model on cross-border investment, the distance variable is usually regarded as a proxy measure of information flows between the source and the recipient countries.

Apart from the size and distance variables, we identify two information variables and two return-chasing variables to explain the allocation pattern of portfolio investment asset holdings across countries. In general, the lower is the cost of searching information in the source and the recipient countries, the larger will be the size

of their bilateral portfolio investment asset holdings. We use the number of internet users per 1,000 people (*Internet*) as a proxy measure of information costs, as higher internet usage suggests lower costs of searching information. At the same time, we also use a dummy variable (*LANG*) to capture the cultural ties and market familiarity between the source and the recipient countries, with a value of 1 if they share a common language and zero otherwise. Since using the same language will facilitate residents in the source country to digest the latest market information and developments in the recipient country more easily, this tends to increase the bilateral portfolio investment asset position.

Among the two variables for capturing the effect of return-chasing motives on cross-border securities investment, one is the stock index return differential (*RTNDIFFRW*) between the source and the recipient countries relative to the global stock market return. If the equity return in the recipient country relative to the world return is higher than that in the source country, the share of outward portfolio investment position in the recipient country would rise. Nevertheless, the higher investment return from overseas may also reflect in part the compensation for higher exchange rate risk. This is captured by exchange rate volatility (*FXVOL*) in the model, where less portfolio investment is expected to be allocated to countries with large exchange rate movements. A detailed description of the sources and definitions of variables used in the gravity model is provided in Annex I.

b. Estimation results

Based on the period averages of annual data from 2001 and 2004 for the sample of OECD countries used in the model in the last section, we estimate the gravity model using a cross-sectional regression.[18] The estimation results show that the parameter estimates have the correct signs and are statistically significant, except for the share of world stock market capitalisation ($MKTCAP_i$) of the source country (Table 5). The parameters of the size and distance variables are also robust to different specifications when a new explanatory variable is added to the model. Column (5) represents the full model.

[18] The estimation results obtained from cross-sectional regression are robust compared with those obtained from panel regression using pooled cross sectional and time series data. There are little changes in the parameter estimates, and the explanatory variables are significant with the correct signs.

Table 5: Cross-sectional regression results of the gravity model

Dependent variable: $\left(PI_{ij} / \sum PI_{i}\right)$					
Independent variable:	(1)	(2)	(3)	(4)	(5)
$MKTCAP_i$	0.05	0.04	0.03	0.03	0.02
	(2.69)***	(2.18)**	(1.92)*	(1.42)	(1.16)
$MKTCAP_j$	0.55	0.54	0.53	0.54	0.57
	(6.41)***	(6.66)***	(6.53)***	(6.74)***	(6.84)***
$ln(DISTANCE_{ij})$	-0.01	-0.01	-0.01	-0.01	-0.01
	(-7.47)***	(-7.05)***	(-7.03)***	(-7.26)***	(-3.96)***
$LANG_{ij}$	---	0.02	0.02	0.02	0.02
		(2.83)***	(2.53)**	(2.56)**	(2.59)***
$Ln(Internet_i * Internet_j)$	---	---	0.01	0.01	0.01
			(1.84)*	(1.79)*	(2.78)***
$RTNDIFFRW_{ij}$	---	---	---	-0.01	-0.005
				(-4.04)***	(-4.11)***
$FXVOL_{ij}$	---	---	---	---	-0.63
					(-3.20)***
Adjusted R^2	0.519	0.535	0.537	0.555	0.566
No. of observations	412	412	412	412	412

Note: Figures in parentheses are t-statistics. Standard errors are corrected for heteroskedasticity.
*** denotes significance at 1% level
** denotes significance at 5% level
* denotes significance at 10% level

Based on the proportion of variation in the dependent variable explained by the variation in each explanatory variable, the most important determinant of the share of bilateral portfolio investment is the share of world stock market capitalisation of the recipient country ($MKTCAP_j$), followed by *DISTANCE* and exchange rate volatility (*FXVOL*). If the share of world stock market capitalisation of the recipient country increases by 1 percentage point, the share of outward portfolio investment position in the recipient country will rise by 0.6 percentage points on average. The distance variable shows that if the source and the recipient countries are far apart, there will be less bilateral portfolio investment asset holdings between the two. The exchange rate volatility variable indicates that less portfolio investment will be allocated to countries with large exchange rate movements.

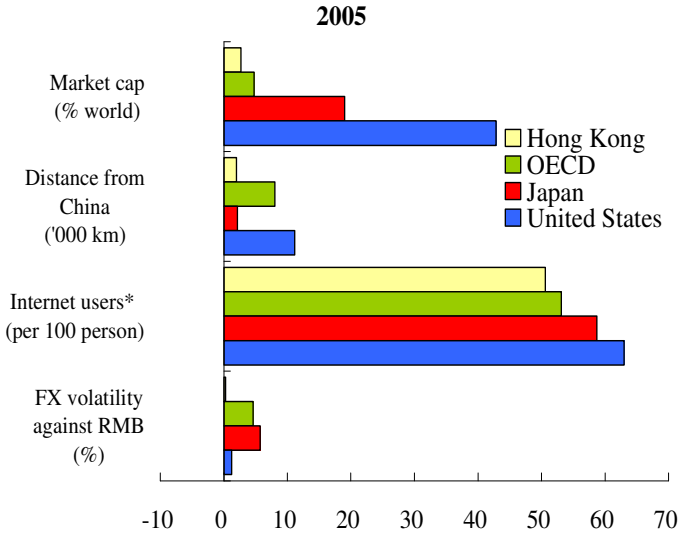
The relationship of the rest of the explanatory variables with the share of bilateral portfolio investment also conforms to *a priori* expectations. The language dummy suggests that if the recipient country shares a common language used in the source country, the share of bilateral portfolio investment asset holdings will increase by 2 percentage points. The parameter estimate for the internet variable reflects that more popular use of the internet in the source and the recipient countries will increase bilateral portfolio investment. The regression results also show that if the equity return in the

recipient country is greater than the source country by 1 percentage point relative to the global stock market return, this will increase the share of portfolio investment in the recipient country by 0.5 percentage points.

c. Share of Mainland China's outward portfolio investment captured by Hong Kong

By applying the results from the gravity model, we estimate the share of Mainland China's outward portfolio investment captured by Hong Kong if the capital account is as liberalised as in a typical OECD economy. To enable us in making some reasonable assumptions for the projection, it is useful to look at how Hong Kong compares with the OECD countries in terms of its attractiveness to portfolio investment from the Mainland. These figures suggest that compared with other OECD countries, Hong Kong could benefit mainly from its close proximity and cultural ties with the Mainland and the relatively low exchange rate volatility against the renminbi (Chart 8). In terms of other variables, while internet penetration in Hong Kong is not too far from the OECD average, it does not have an edge over major economies such as the US, UK and Japan. More importantly, compared with major economies, Hong Kong lags behind in terms of the domestic share of world stock market capitalisation. It remains small compared with major markets such as Japan which also has a relatively close proximity to the Mainland.

Chart 8: How Hong Kong compares to OECD countries in its attractiveness to outward portfolio investment from China



Note: Foreign exchange volatility is the standard deviation of the currency of the source country per unit of RMB, standardised by its mean.

* 2004 figures for internet users.

Sources: World Development Indicators, World Federation of Exchange, Balance of Payment Statistics and World Economic Outlook.

Assumptions

Based on the parameters estimated from the gravity model, we project six scenarios using different sets of assumptions. The first is a counterfactual exercise. Using the 2005 data in Mainland China and Hong Kong, we apply the parameters estimated from the gravity model. The other five scenarios are based on different sets of assumptions by the time China's capital account is as liberalised as in a typical OECD country. The assumptions underlying the first 2 scenarios are consistent with those used in our model in the first part of the study.[19] Given the relatively mature financial market developments, *MKTCAP* and *Internet* for Hong Kong are assumed to stay at its level in 2005, while exchange rate volatility (*FXVOL)* is assumed to stay at its average level in 2000-2005.[20]

In Scenario 3, we assume foreign *FXVOL* to increase to the level between the Japanese yen and the US dollar, while other variables are assumed to be the same as in Scenario 1. The aim of this scenario is to see what would happen when the Mainland increases the flexibility of its exchange rate regime so that the exchange rate volatility of the renminbi against the US dollar and hence the Hong Kong dollar increases to say, a level similar to that of the Japanese yen against the US dollar.

In Scenario 4, Hong Kong's share of world stock market capitalisation is assumed to increase along with the projected number of Mainland-related shares listed in the local stock market in the next ten years, while other variables are assumed to be the same as in Scenario 1. This scenario aims to estimate how much more Hong Kong could capture through an increase in its stock market size, as a consequence of the growing importance of its financial market as an avenue to invest in Mainland stocks. We assume the market capitalisation of the locally listed Mainland-related shares to increase at its average pace of growth in recent years.[21] In fact, the recent growth of Hong Kong's stock market capitalisation has been driven by the listing of H-shares. Over the past six years, the market capitalisation of red chips and H-shares has been growing by an average annual rate of around 20%, compared with the average growth rate for the total market of around 9%. For non-Mainland-related stocks, Hong Kong's share of world market capitalisation is assumed to stay constant.

In Scenario 5, we further assume Hong Kong's share of world stock market capitalisation to increase to that of Japan, again with other variables assuming to

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[19] Internet penetration and return differential between domestic and world stock markets are assumed to be the same as in Scenarios 1 and 2 in the first part of the analysis.

[20] Given that exchange rate volatility differs quite significantly from one year to another, the average level over the past years is used, instead of values in one particular year.

[21] Over the next ten years, the world stock market capitalisation is assumed to grow at 3% based on its average annual growth rate in the past six years. Based on these assumptions, the total market capitalisation of Hong Kong will grow by 12% per annum in the next ten years.

be the same as in Scenario 1. This scenario tries to estimate how much more Hong Kong could capture if the size of its stock market increases to that in Japan.

Projections

Based on the 2005 data in Mainland China and Hong Kong, Hong Kong is expected to capture around 9% of the Mainland's outward portfolio investment position (Table 6). Based on the counterfactual scenario from the model in the first part which suggests that the Mainland's total outward portfolio investment position would be around US$340 billion in 2005, if 9% of these funds are invested in Hong Kong, this would be equivalent to approximately US$32 billion.

Table 6: Projected share of Mainland China's outward portfolio investment (PI) captured by Hong Kong

(In USD, billion)	2005 Counterfactual	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
Projected China's total outward PI position	340	904	4468	904	904	904
Projected % share of HK in China's total outward PI position	9.4%	10.8%	12.1%	8.6%	13.6%	20.1%
Projected inward PI position from China	32	98	539	78	123	182

Source: Staff estimates.

Under Scenario 1, the share captured by Hong Kong is estimated to be around 11%, whereas under Scenario 2, the share is 12%. There are little differences between the projected shares of portfolio investment captured by Hong Kong in the first two scenarios, as there are only slight differences in their assumptions. However, there are significant differences when applying these figures to our previous projections for the Mainland's total outward portfolio investment position. The resulting projected portfolio investment from the Mainland to Hong Kong would be equivalent to US$98 billion and US$539 billion respectively.

The projection in Scenario 3 shows that if exchange rate volatility increases to the level between the Japanese yen and US dollar, Hong Kong will capture 8.6% of the Mainland's outward portfolio investment, which is around 2 percentage points less than its share under the baseline Scenario 1. On the other hand, the projection in Scenario 4 shows that an increase in Hong Kong's share of world stock market capitalisation, as a result of the growing importance of Mainland-related shares in the locally listed stock market, could raise Hong Kong's share of portfolio investment from the Mainland by around 3 percentage points to 14%. The projection in Scenario 5 further suggests that if Hong Kong manages to increase its stock market size to that of Japan, it could almost double its share in the Mainland's outward portfolio investment to 20%.

In terms of inward portfolio investment position in Hong Kong, the counterfactual scenario suggests that if 9% of the Mainland's outward portfolio investment is invested in Hong Kong, this is equivalent to about 19% of Hong Kong's total inward portfolio investment position in 2005 (Table 7). This will make Mainland China the third largest portfolio investment creditor in Hong Kong after the US and the UK.

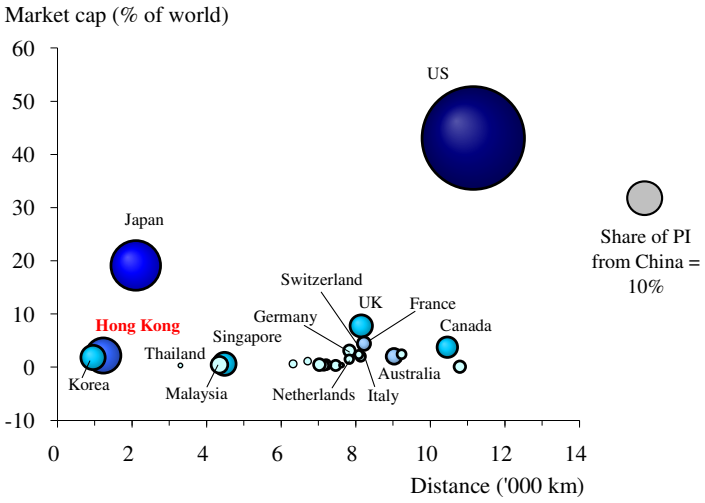
Table 7: Hong Kong's inward portfolio investment position by country

	2005 (Counterfactual)	
Source Country	**USD, bn**	**% of total**
United States	41	24.2
United Kingdom	32	18.9
China	32	18.8
Japan	11	6.3
Luxembourg	10	6.2
Singapore	9	5.4
France	5	2.9
Canada	5	2.7
Netherlands	4	2.5
Ireland	4	2.5

Source: Staff estimates.

It would also be interesting to look at how Hong Kong is competing with other countries in attracting portfolio investment from the Mainland. Chart 9 shows the allocation of the Mainland's outward portfolio investment across major financial markets with respect to stock market capitalisation and distance from the country, which are the core determinants of bilateral portfolio investment in the gravity model. The size of the bubble represents the share of portfolio investment from the Mainland captured by each market in 2005. A darker colour denotes higher ranking in terms of the share of portfolio investment captured.

Chart 9: Allocation of China's outward portfolio investment across major financial markets (based on counterfactual scenario for 2005)



Source: Staff estimates.

Based on the counterfactual scenario for 2005 from our model estimates, it is expected that while Hong Kong captures a significant share of the Mainland's portfolio investment, a major portion would be invested in the US, Japan and the UK, which have a combined share of around 75% of the global stock market capitalisation. The rest is expected to be invested in Asian economies with developed financial markets given their relatively close proximity and economic linkage with Mainland China, such as Singapore and Korea.

It would be useful to check on the reasonableness of our estimates, based on the existing allocation pattern of China's portfolio investment position across different financial markets. However, there is limited information in this respect and no official data on inward portfolio investment from the Mainland is available in Hong Kong. Nevertheless, according to data reported from Japan, it received US$13 billion of inward portfolio investment from China in 2004, which was equivalent to 14% of China's outward portfolio investment position.[22] This is close to our projections of around 13% for Japan.

VI. CONCLUSION AND POLICY IMPLICATIONS

To summarise, based on the existing stage of economic and financial developments, total outward portfolio investment from China can be expected to increase from the current 5% of GDP to 15%, should its capital account be as liberalised as in a

[22] Sources: State Administration of Foreign Exchange, People's Republic of China and Coordinated Portfolio Investment Survey (CPIS), IMF.

typical OECD economy. Assumptions based on our projections for the future suggest that total outward portfolio investment from Mainland China could reach 23% to 54% of GDP by the time the Mainland is mature enough to open its capital account more fully. As a result, Hong Kong could capture around 10% of the outward portfolio investment from the Mainland. This is equivalent to US$32 billion under our counterfactual scenario for 2005, and around US$100 billion to US$540 billion should the Mainland's capital account be as open as in a typical OECD country.

a. Policy implications

Naturally, three questions arise from our empirical findings. First, what is Hong Kong's comparative advantage? Secondly, how can Hong Kong increase its competitiveness in attracting portfolio investment from the Mainland? Lastly, what will be the implications for the Hong Kong economy?

With regard to the first question, while the model results show that Hong Kong's proximity and cultural affinity with the Mainland are important determinants, market capitalisation is the most important factor in determining the allocation of cross-border investment, although distance also plays a significant role. Therefore, size matters. It is thus important for Hong Kong to increase its stock market size through maintaining the soundness and sophistication of its capital markets and status as an international financial centre. As discussed earlier, our projections show that an increase in Hong Kong's stock market size as a result of the growing importance of Mainland-related shares listed in the local stock market could increase Hong Kong's share in Mainland's portfolio investment by 3 percentage points, while a further increase in its share in world stock market capitalisation to that of Japan could almost double the share captured by Hong Kong.

However, it should be noted that the former estimates only capture the impact of the growing importance of Mainland-related shares listed in the local stock market through its effect on the total market size, and do not reflect the effect due plainly to the desire of Mainland investors to invest in assets of domestic enterprises.[23] In fact, the attraction of Hong Kong to Mainland investors is more than factors due to proximity of the market, but also its role as a platform to invest in shares of domestic enterprises that are not listed on the Mainland, or that have higher liquidity in Hong Kong's stock market compared to the Mainland's. The former is particularly true as some of the world's largest initial public offerings (IPOs) by major Mainland corporations which are not listed domestically, have taken place in Hong Kong in recent years.

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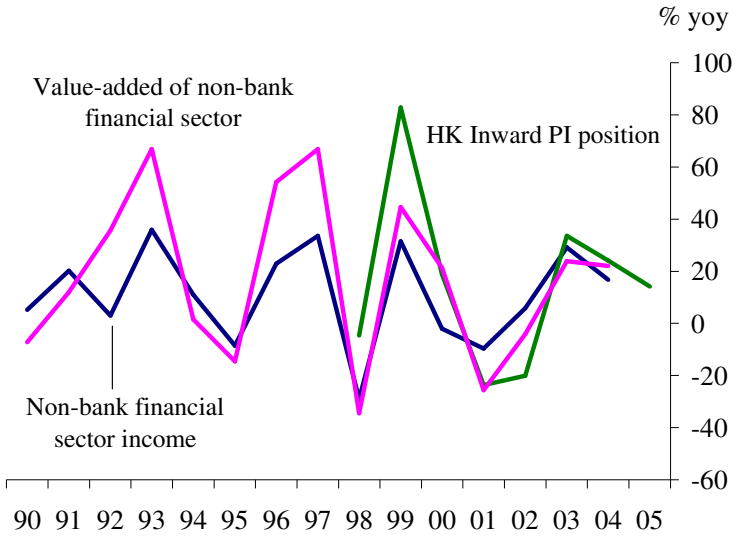
[23] In order to estimate separately the effect on Mainland's portfolio investment to Hong Kong due to the desire of Mainland investors to invest in assets of domestic enterprises, the share of stocks from the source country listed in the recipient country has to be included in the model. However, due to data limitations, this explanatory variable is not incorporated into our final model.

Nevertheless, such effect could be offset in part by the possibility that the need for cross-border listing in Hong Kong might decline by the time the Mainland has become more developed with a more sophisticated financial market. This would reduce the pace of growth of Mainland-related shares listed in the Hong Kong stock market. It is therefore important for Hong Kong to maintain the sophistication and competitiveness of its financial markets over time not only to increase its stock market size, but also to maintain its role as a major avenue to invest in assets of Mainland enterprises by both Mainland investors and other overseas investors.

In terms of the implications for the Hong Kong economy, increased portfolio investment from the Mainland is expected to benefit the financial services industry in Hong Kong, and increase contributions from this sector to GDP. Past development shows that there has been a strong co-movement between Hong Kong's inward portfolio investment position and non-bank financial sector income (Chart 10). The potential sizable portfolio investment from the Mainland would not only boost equity and debt market activities in Hong Kong, but also foster the fund management and custodian services industry.

Chart 10: Inward portfolio investment position and financial sector income and value added



Source: CEIC.

A rough estimate of past relationship suggests that if growth in Hong Kong's inward portfolio investment position increases by 1 percentage point, growth in the value added of the non-bank financial sector would rise by 0.7 percentage points on average.[24] Based on our counterfactual scenario, liberalisation in the Mainland's capital account would boost Hong Kong's inward portfolio investment position by US$32 billion which is equivalent to a 18%-increase from the actual level in 2005.[25] This would increase GDP growth by 0.3 percentage points and raise the contribution from non-bank financial services to GDP to 3.1% from the current 2.8%.

d. Caveats

However, it is important to note that these projections are subject to a number of caveats. First, counterfactual scenarios are based on current economic and financial conditions which would have further evolved by the time the capital market is as open as in a typical OECD country, whereas projections in different scenarios are based on assumptions about the future steady state which are subject to a number of uncertainties. These projections are also subject to country-specific factors not captured by the model, including the differences in policy effects across countries, so that the estimated relationship based on experience for the OECD countries may not necessarily be fully applicable to the case of China, and can therefore, only serve as ballpark estimates.

Another caveat is that the size of the debt market, which is an important determinant of bilateral portfolio investment, has not been taken into account in the model estimation due to data limitation. Among the global portfolio investment assets invested in the US and European markets, a large portion of funds is used to purchase debt securities such as government bonds. Therefore, in addition to the equity market, Hong Kong might also need to strengthen its efforts in developing the debt market to attract more portfolio investment.

At the same time, apart from portfolio investment flows directly to Hong Kong's domestic capital markets, Hong Kong could also play the role in providing wealth-management services through which funds from the Mainland could be invested in other overseas markets. It should be noted that portfolio investment data do not capture investment in funds for which Hong Kong is not the custodian, even though investment and wealth management services might be provided in Hong Kong. Investors from the Mainland might invest in overseas funds using Hong Kong's wealth

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[24] Estimates derived by regressing the growth of value-added of the non-bank financial sector on the growth of inward portfolio investment position in Hong Kong.

[25] While actual data for inward portfolio investment from Mainland China to Hong Kong is not available, the amount is expected to be very small. As such, the percentage increase in Hong Kong's inward portfolio investment is computed by assuming that the actual amount received in 2005 is minimal, so that the increase is approximately equal to the total projected amount of US$32 billion.

management services without having capital physically flowing into Hong Kong. While such flows would not be reflected in Hong Kong's portfolio investment data, this could nevertheless still benefit Hong Kong's financial sector through the income generated from the services they provide. Therefore, Hong Kong may benefit more than what the estimated inward portfolio investment from the Mainland to Hong Kong would suggest. This also implies that it is important for Hong Kong to strengthen its fund management and custodian services in order to benefit more fully from the liberalisation of the Mainland's capital account.

Annex I

Data Definition and Sources

Panel Data for Equation (1)

Variables	Definition	Sources
PI_{it}/GDP_{it}	Gross portfolio investment asset as a percentage of GDP.	International Financial Statistics, IMF.
$SWCAP_{it}$	Domestic stock market capitalisation as a percentage of world capitalisation.	World Development Indicators 2004 & 2005.
$RTNDIFF_{it}$	Difference between domestic and world stock market return.	Morgan Stanley Capital International.
$PFFL_{it}$	Number of foreign firms over total firms listed in the domestic stock market.	World Federation of Exchange and Federation of European Stock Exchange.
$Openness_{it}$	Percentage share of trade flows (exports plus imports) in GDP.	Balance of Payment Statistics, IMF.
$Internet_{it}$	Percentage share of internet users in the total population.	World Development Indicators, 2004 & 2005.
$GDPC_{it}$	Gross domestic product per capita	World Economic Outlook, IMF.

Bilateral cross-sectional data for Equation (2)

Variables	Definition	Sources
$PI_{ij}/\Sigma PI_i$	Outward portfolio investment position of country i to country j as a share of total outward portfolio investment position of country i.	Portfolio investment: CPIS Data, IMF.
$MKTCAP_i$	Domestic stock market capitalisation of country i as a share of world capitalisation.	World Development Indicators 2004 & 2005 and World Federation of Exchange.
$MKTCAP_j$	Domestic stock market capitalisation of country j as a share of world capitalisation.	World Development Indicators 2004 & 2005 and World Federation of Exchange.
$DISTANCE_{ij}$	Geographical distance between the capital cities of country i and country j.	Jon Haveman's International Trade Data.
$(Internet_i*Internet_j)$	Cross product of internet users per 1000 people of country i and country j.	World Development Indicators 2004 & 2005.
$LANG_{ij}$	A dummy variable where countries share a common language equal to 1 and 0 otherwise.	CIA, The World Fact Book, 2006. (http://www.cia.gov/cia/publications/factbook/)
$RTNDIFFRW_{ij}$	Stock market return differential between country i and country j relative to the world stock market return.	Morgan Stanley Capital International.
$FXVOL_{ij}$	Exchange rate volatility: standard deviation of country j currency per unit of country i currency, normalised by its mean.	International Financial Statistics, IMF.

Note: Country i denotes the source country and country j denotes the recipient country.

Annex II

Major milestones of the capital account liberalisation process in China

1980	China starts borrowing abroad and invest in overseas markets.
	Four cities are first chosen to be Special Economic Zones which aims to promote trade and attract foreign investment in the manufacturing industries.
1982	The first foreign-owned bank opened branch in China to facilitate foreign currency transaction.
1984	Fourteen more selected coastal cities are opened to foreign direct investment.
1989	Domestic enterprises are allowed to invest abroad with their own foreign exchange earnings.
1991	The official exchange rate regime is changed to managed floating from periodical adjustment.
	Domestic residents are allowed to purchase foreign exchange for overseas study, tourism etc. up to a certain limit.
1992	Domestic enterprises can issue foreign currency-denominated shares, which can only be purchased by non-residents.
1993	The first Mainland firm, Qingdao Beer, is listed on the Hong Kong Stock Exchange.
1994	Substantial reforms take place in restructuring the foreign exchange control system: establishing the system of "purchasing and surrendering foreign exchange through designated banks", and unifying dual exchange rates and the managed floating exchange rate regime.
1996	Renminbi becomes convertible under the current account.
	Financial institutions are allowed to issue bonds in the international market.
2001	World Trade Organization (WTO) accession.
2002	Qualified foreign financial institutions are allowed to invest in the renminbi-denominated domestic stock and bond markets - the so called Qualified Foreign Institutional Investors (QFII) scheme.
2004	Qualified insurance companies are allowed to invest their foreign exchange assets in overseas bond and money markets.
2006	Banks, fund managers, securities houses and insurance companies are allowed to make foreign portfolio investments - the so called Qualified Domestic Institutional Investors (QDII) scheme.
	Upper limits on the foreign exchange holdings are raised to US$500,000 from US$200,000 for domestic firms and to US$20,000 from US$8,000 for individuals.
	Restrictions on the amount of foreign currency allowed to be purchased by domestic investors for qualified foreign direct investment are removed.
	By the end of the year, the financial sector will be opened to full foreign competition, according to the WTO commitment.

Sources: Zhao (2006), Prasad and Wei (2005), and State Administration of Foreign Exchange, People's Republic of China.

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