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Macroeconomic Linkages between Hong Kong and Mainland China[1]

In addition to conducting analysis of macroeconomic developments and outlook in Hong Kong, economists in the Hong Kong Monetary Authority (HKMA) also carry out research projects to study the structural forces that shape current and future developments of major macroeconomic variables. One such important structural force has been the increasing economic integration between Hong Kong and Mainland China. This Research Letter provides a non-technical summary of ten research papers that have a common theme of "macroeconomic linkages between Hong Kong and Mainland China". These papers were completed by HKMA economists mostly in the past two years and are listed at the end of this article.

Broadly speaking, the first five papers focus on the "real" linkages between Hong Kong and the Mainland, mainly through the trade channel, and the second five papers focus on the financial market linkages. The papers shed light on important policy issues such as how resilient the Hong Kong economy is against external shocks; what is the relative importance of Mainland shocks and US shocks in influencing output and inflation in Hong Kong; how large portfolio capital outflows from China will be once its capital account is liberalised and what share of such flows will be routed through Hong Kong; and in what ways fund flows between Hong Kong and the Mainland affect Hong Kong's monetary and financial conditions.

A common message coming out of the analysis is that Hong Kong has primarily served as a gateway of trade and financial flows between the Mainland and the rest of the world, and Hong Kong's cyclical conditions are very much tied to fluctuations in the volume of flows of goods, services and capital between the Mainland and its major trading partners. Such a "bridge" role is likely to remain important for Hong Kong's economic future, even though trade and financial flows that are more closely linked to developments in domestic demand on the Mainland will gain increasing significance.

The observation that the Hong Kong economy has been more closely associated with external demand than with domestic demand for Mainland-produced goods and services is clearly demonstrated in *Research Memorandum 15-2005* "The macroeconomic impact on Hong Kong of hypothetical mainland shocks". In this paper, the authors use an econometric model to quantify the impact on Hong Kong of a range of

[1] This article was prepared by Dong He, Head (Economic Research), Research Department.

Mainland macroeconomic shocks. Seven hypothetical scenarios are considered: external shocks include a large renminbi revaluation, a significant US economic slowdown, a trade war, and an oil price hike; domestic shocks include an investment retrenchment, a credit crunch, and financial instability. The magnitudes of the shocks are deliberately set to be large—typically taken as two standard deviations of the shock variable based on historical observations over a ten-year period. The simulation analysis indicates that Hong Kong would be most affected if a major trade war broke out between the Mainland and its trading partners, reflecting the critical role of trade flows between the Mainland and its trading partners in influencing the cyclical conditions of the Hong Kong economy. Nevertheless, in all the shock scenarios, the size of output losses pales in comparison with that experienced by Hong Kong during the Asian crisis.

The role that Hong Kong plays in intermediating trade flows between the Mainland and its trading partners has important implications for the relationship between economic cycles in Hong Kong and those on the Mainland. In *Research Memorandum 11-2006* "Hong Kong's economic integration and business cycle synchronization with Mainland China and the US", the authors analyse what factors drive the co-movements of business cycles among the three economies. Their structural vector auto-regression analysis suggests that over the medium to long run, about 60% of variations in output and 45% of variations in prices in Hong Kong can be explained by US shocks, while the impact of Mainland shocks mostly concentrates on Hong Kong's price movements. They estimate that Mainland shocks explain over one-third of Hong Kong's price developments. Using a methodology to distinguish between the effects of common US shocks and idiosyncratic domestic shocks, they find little correlation between the business cycles in Hong Kong and the Mainland in the absence of the common US influences, whereas the influence of the US shocks on these two economies leads to a high degree of synchronisation. In other words, the business cycle co-movements of Hong Kong and the Mainland are largely due to the common influence of economic conditions in the Unites States.

The common influence on both Hong Kong and the Mainland of economic conditions in the US will be better understood with a closer look at the structure of trade flows between Hong Kong and its trade partners. In *Research Memorandum 18-2006* "Hong Kong's trade patterns and trade elasticities", the authors provide a detailed description of Hong Kong's trade structure. As a service-based economy, Hong Kong's domestic exports of goods accounted for only 5% of total exports of goods and services, or equivalent to about 10% of GDP. In contrast, re-exports of goods accounted for 77% of total exports of goods and services, or equivalent to 1.5 times of GDP. Most of Hong Kong's imports are for re-export to other economies. Specifically, imports of goods for re-export accounted for almost 70% of total imports of goods and services, or equivalent to 1.3 times of GDP, in 2005.

With such a complicated trade structure, how would exchange rate movements affect the volume of trade flows? In order to answer this question, the authors use an error-correction model to examine Hong Kong's long-run trade elasticities as well as their short-run dynamics. Their estimates indicate that the sum of the absolute values of the estimated price elasticities of Hong Kong's direct imports and exports is greater than one, implying that the Marshall-Lerner condition holds for Hong Kong. Moreover, changes in re-exports and re-export earnings are found to be sensitive to changes in the real effective exchange rate of the renminbi and income growth of the Mainland's trading partners.

While it is true that Hong Kong has played an important "bridge" role between the Mainland and the rest of the world, wouldn't this role diminish over time as the Mainland updates its own port facilities and becomes more efficient in handling the flow of goods to such an extent that the flows will bypass Hong Kong? In *Working Paper 04-2008* "Service exports: the next engine of growth for Hong Kong?" the authors document that service exports have become an increasingly important source of income growth for the Hong Kong economy. Mainland China is the largest buyer of services produced in Hong Kong, and its rising service demand has played a key role in driving the strong performance of Hong Kong's service exports in recent years. The authors argue that while trade-related service exports are expected to retain strong growth, financial service exports have the highest growth potential. In other words, Hong Kong has been and will continue diversifying its entrepôt role for Mainland produced goods and services, from a heavy reliance on traditional re-exports of manufactured goods toward offshore trade and services that cater to capital flows into and out of the Mainland.

Given that the Mainland is Hong Kong's largest trading partner, does this imply that the movement of the renminbi exchange rate significantly affect Hong Kong's inflation rate? As the renminbi continues to appreciate against the US dollar and the Hong Kong dollar, there has been public concern about the impact of this trend on consumer price inflation in Hong Kong. In *Research Note 01-2007* "How much of Hong Kong's imports from Mainland China is retained for domestic use?" the authors argue that the Mainland is actually a much smaller trading partner for Hong Kong than commonly thought in terms of imports retained for domestic use. Casual observation shows that the shops that populate most of the shopping malls in Hong Kong sell international brand-name goods. Even though many of these goods are made and assembled in China, as final products, they are not necessarily considered imports of Mainland origin, and the Mainland's contribution to the value added of these international goods is a small part of their overall costs.

Unfortunately, data on retained imports are not directly available and have to be estimated using figures for total imports, re-exports and re-export margins compiled by the Census and Statistics Department. However, while the data on imports and re-exports, compiled on the basis of trade declarations, should have a low margin of statistical error, estimation of the re-export margins is a difficult task and so the margin of error there may be significantly higher. Further, the re-export margin may vary between different goods imported from different economies, being influenced, for example, by different degrees of competition among producers and also among importers. The authors of this paper carefully analyse the sensitivity of re-export margins to different assumptions, and estimate that retained imports of China origin as a percentage of total retained imports would range from 9% to 17%. Even at these levels, the dependence of Hong Kong's retained imports on the Mainland as a source, and therefore the impact of the appreciation of the renminbi exchange rate on consumer prices in Hong Kong, seems to be much smaller than commonly perceived.

In contrast to analysis of trade linkages, analysis of fund flows between Hong Kong and the Mainland suffers more from data constraints, as balance-of-payments data are not available on a bilateral basis. In *Research Memorandum 07-2006* “Cross-border fund flows and Hong Kong banks’ external transactions vis-à-vis Mainland China”, the authors extract information on cross-border fund flows between Hong Kong and the Mainland from statistics on banking transactions. Assuming that all transactions are effected through the banking system, the authors find that Hong Kong was a net investor in the Mainland in terms of direct investment and portfolio investment, implying an increase in liability of Hong Kong banks vis-à-vis the Mainland. The authors also find that, although net Hong Kong dollar liabilities vis-à-vis the Mainland have remained a small proportion of total Hong Kong dollar funding in the banking system, they accounted for a significant part of the incremental movements of the latter. Thus cross-border fund flows can be an important influence on Hong Kong’s interest rates and hence monetary conditions.

Under the Linked Exchange Rate system (LERS), Hong Kong dollar interest rates should track US interest rates closely. But increasing cross-border fund flows between Hong Kong and Mainland China have raised the possibility that Mainland-related factors might exert greater influence. In *Working Paper 17-2007* “How do macroeconomic developments in Mainland China affect Hong Kong’s short-term interest rates?” the authors examine the significance of Mainland factors in determining Hong Kong’s interest rates after controlling for the influences of US factors. Using a vector auto-regression model, they find that an unexpected rise in the Mainland policy interest rate, or a higher-than-expected growth in Mainland output or money supply, have had tangible influence on the three-month HIBOR. Their analysis shows that US shocks still dominate, but Mainland shocks have become more important in accounting for the unexpected fluctuations in HIBOR in recent years. For example, from autumn 2003 to spring 2005 the large negative spread between HIBOR and LIBOR was mainly due to a Mainland-related factor—strong market expectation of a large renminbi revaluation. Thus, while the HIBOR-LIBOR spread is expected to be bounded inside a band that reflects the width of the Convertibility Zone of the LERS, Mainland-related shocks could exert a significant influence on the actual size of the spread.

As the Mainland progressively liberalises its capital account restrictions, particularly on portfolio outflows by Mainland residents, how large would such flows be and what would be their impact on international financial markets? This is an important question, and there is no shortage of answers in the popular press and investment bank reports; but most of those answers are pure guesswork. In *Research Memorandum 13-2006* “Outward portfolio investment from Mainland China: how much do we expect and how large a share can Hong Kong expect to capture?” the authors provide an analytical framework for a more educated guess of the potential volume of outward portfolio investment from the Mainland and how large a share Hong Kong can capture, assuming that the Mainland’s capital account is as open as any other developed economy’s. The authors estimate that, in the counterfactual scenario that the capital account on the Mainland is as liberalised as in an average OECD country, total outward portfolio investment from Mainland China would increase from the current 5% of GDP to 15% of GDP. They also project that the amount could eventually reach 23% to 54% of GDP, and 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.

The authors' findings suggest that while Hong Kong's comparative advantage lies mainly in its proximity and cultural affinity with the Mainland, according to their model estimates, the most important determinant of bilateral portfolio investment is the domestic share of world stock market capitalisation. An increase in Hong Kong's stock market size to that of Japan would almost double the share captured by Hong Kong. It is therefore important for Hong Kong to further strengthen the sophistication and competitiveness of its stock market in order to maintain its attractiveness as a major avenue to invest in assets of Mainland enterprises by both Mainland investors and other overseas investors.

In this regard, it is important to improve the efficiency of the price discovery mechanism, particularly for companies that issue both A shares on the Mainland and H shares in Hong Kong. Dual-listed A and H shares now account for 10 % of the Mainland (tradable) and Hong Kong stock market capitalisation. Large and persistent price differentials between A and H share prices have been observed, raising concerns about market segmentation within China and its implication for the efficiency of price discovery. In *Working Paper 11-2007* "Share price disparity in Chinese stock markets", the authors study the determinants of A-H share price disparity and find that, apart from micro market structure factors, macroeconomic factors such as renminbi appreciation expectations and monetary expansion have also contributed to the share price disparity.

In *China Economic Issues 06-2007* "Price convergence between dual-listed A and H shares", the authors examine the impact of price gaps on the dynamics of the corresponding A and H share prices and the wider stock markets. Their findings suggest relative price convergence but not absolute price convergence (i.e. price equalisation). The A share premium tended to reduce the corresponding A share price but raise the H share price, other things being equal. However, the relationship is found to be a nonlinear one: beyond a threshold of 100%, a larger price gap would have a diminishing dampening effect on A share prices but an increasing pulling-up effect on H share prices. The authors argue that the evidence of relative price convergence suggests some degree of arbitrage on the price gaps, and points to illicit cross-border capital flows given the restrictions on the formal channels. However, such arbitrage is partial and incomplete, and the market segmentation may induce speculative activities that exacerbate market volatility. Both concerns are likely to increase as the number of dual-listed companies rises over time. Thus, it is important to increase the linkages between the two markets by improving investor access. This would enhance the price convergence process and promote the healthy development of the financial market of the whole country.

The papers reviewed in this Research Letter should be seen as a first step towards an understanding of the macroeconomic linkages between Hong Kong and Mainland China. In addition to analysing such linkages from a demand perspective, which is a focus of these papers, it is also necessary to understand better the impact of increasing economic and financial integration on Hong Kong's long-run productivity and competitiveness—an area of further research by the Research Department of the HKMA.

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