THE CHINA MONEY PUZZLE: WILL DEVALUATION OF THE YUAN HELP OR HURT THE HONG KONG DOLLAR?

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Abstract

A Chinese yuan devaluation could affect the stability of the Hong Kong dollar. This paper studies two linkages. The first, trade balance effect is studied through a CGE model. The result shows that the net change in Hong Kong's foreign reserve after a yuan devaluation is in fact negligible. The second, psychological effect is studied by a survey of financial market participants. In spite of the small trade balance effect, all respondents believe that a yuan devaluation would lead to a panic selling of Hong Kong assets. Therefore, a yuan devaluation is bad for Hong Kong dollar primarily through market psychology.

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1. INTRODUCTION

Against the background of domino devaluations of most Asian currencies around China, the relative stability of the Chinese yuan, and the repeated pledges made by the Chinese leaders not to devalue the yuan, have attracted attention. On several occasions, U.S. treasury officials and International Monetary Fund officials have openly praised the Chinese decision to hold the yuan steady.

Is this a rational policy? Most will say that it is a good policy for the Asia region and for the world community. But is it a sensible policy for China's self interest, leaving aside possible soft "credits" it may get from foreign governments and international organizations? The answer to this question will help us to understand how committed the Chinese government is to the nondevaluation, and how long they will keep the commitment.

Recent CGE studies (Noland, Liu, Robinson, and Wang, 1998) reveal that the Asian devaluations have a clear negative effect on the Chinese economy through two channels: China's exports to these economies will decline, and more importantly, China's exports to third-country markets such as the United States and Japan will suffer because the Chinese goods are becoming less competitive.[1] The study further demonstrates a 3-6 percent real devaluation in the Chinese currency (a relatively modest change) can restore the competitiveness of China's external trade position *ex ante*.

Should China undertake the devaluation? The answer depends not just on how it will affect China's direct exports and imports, but in an important way, on how it will affect the Hong Kong dollar. For many politically important reasons, Hong Kong's prosperity is of vital concern to the leaders in Beijing since the reversion of the former British colony back to Chinese rule on July 1,

1997.[2] For many in the international financial community, the stability of the Hong Kong dollar has become a symbol of the health of Hong Kong's economy. Hence, how the Hong Kong dollar will be affected is a crucial consideration when the Chinese leaders' contemplate a possible devaluation of the RMB.

What is the effect of an RMB devaluation on the Hong Kong dollar? Some observers (e.g., Hu (1998), Passell (1998)) have said that an RMB devaluation would cause a severe run on the Hong Kong dollar, possibly making the peg indefensible. Other observers have claimed that an RMB devaluation would trigger another round of devaluations of other Asian currencies that would reduce the competitiveness of Hong Kong exports, and ultimately reduce its reserve as well. We will call this negative view the psychological factor. However, the negative outcome is not a certainty because there is an important offsetting factor based on the fact that Hong Kong is an important entrepot for trade with China. (Wei and Zeckhauser (1998); Hu, Li and Li (1998)). China's indirect exports and imports through Hong Kong are about 20–30 percent of China's total exports and imports during recent years. A recent paper by Feenstra, Woo, Hai and Yao (1998), found the markup on Chinese exports through Hong Kong to be about 27 percent, and the markup on Chinese imports through Hong Kong to be negligible. Since an RMB devaluation would increase Hong Kong's entrepot exports because of its positive impact on China's exports, the value-added in the entrepot export would increase Hong Kong's foreign exchange reserve and enable Hong Kong to defend its currency better. Furthermore, because the value-added in Hong Kong's entrepot imports for China is negligible, the loss in reserve due to a decline in China's indirect imports through Hong Kong would be small. Realizing this connection, currency traders should buy, rather than sell, Hong Kong dollars when the RMB devalues. In short, devaluation of the RMB creates a positive entrepot

effect.

However, there are negative direct trade effects that directly act against the positive entrepot effect. An RMB devaluation would also reduce Hong Kong's direct exports to China (and possibly to elsewhere), and increases its imports from China. So the net effect of an RMB devaluation on Hong Kong's trade balance and hence its foreign reserve position is not clear without careful quantification. We will call this ambiguous net effect the trade factor. Surprisingly, we are not aware of any quantitative study that addresses this factor.

This paper examines the trade factor and the psychological factor on the Hong Kong dollar if the RMB were devalued. The trade factor is quantified by using a CGE model to calculate the effect of an RMB devaluation on Hong Kong's external trade and on Hong Kong's ability to defend its currency. The psychological factor is assessed by using a small survey of currency and equity traders in Hong Kong on their reactions to a possible RMB devaluation.

The paper is organized as the follows. Section 2 provides a description of the CGE model used in this study. Section 3 presents the simulation results and related discussions. Section 4 discusses the small survey of traders. Section 5 concludes.

2. STRUCTURE OF THE CGE MODEL

The model used in this study is a multi sectoral, multi-country, computable general equilibrium (CGE) model and is part of a family of models that have been used widely to analyze the impact of global trade liberalization and structural adjustment programs (Wang, 1997a). It focuses on real trade flows, trade balances, world prices, and real exchange rates. Like most CGE models, it does not consider financial markets, interest rates, or inflation; and so cannot be used to analyze the direct impact of the crisis on financial markets.

Detailed algebraic specification of the model can be found in Wang (1997a) and Noland *et al* (1998). Here we provide an intuitive description of its structure. The model includes 18 regions,[3] each with 14 sectors [4] and five primary factors of production: agricultural land, natural resources, capital, unskilled labor, and skilled labor.[5] The regions are linked by commodity trade. Within each region, the model solves for domestic commodity and factor prices that equate supply and demand in all goods and factor markets. The model also solves for world prices equating supply and demand for sectoral exports and imports across the world economy. In addition, for each region, the model specifies an equilibrium relationship between the balance of trade (in goods and non-factor services, or the current account balance) and the real exchange rate (which measures the average price of traded goods — exports and imports — relative to the average price of domestically produced goods sold on the domestic market). An exogenous change in a particular region's exchange rate will reverberate across the world economy, affecting the aggregate trade balances and/or real exchange rates of all 18 regions as they adjust their trade flows and structures of production to achieve a new equilibrium.

In each regional model, there is one competitive firm in each sector, which produces only one product. The production is characterized by two-level nesting of constant elasticity of substitution (CES) functions. At the first level, firms are assumed to use two types of inputs: a composite primary factor and an aggregate intermediate input according to a CES cost function. At the second level, the split of intermediate demand is assumed to follow Leontief specification, therefore, there is no substitution among intermediate inputs. Technology in all sectors exhibit constant return to scale implying constant average and marginal cost.

Products from different regions are imperfect substitutes (the Armington assumption), and

the private household in each region maximizes a Stone-Geary utility function over the 14 composite goods, subject to their budget constraints yielding to the Extended Liner Expenditure System (ELES) of household demand functions. Household savings are treated as demand for future consumption goods with zero subsistence quantity (as in Howe, 1975). An economy-wide consumer price index is specified as the price of savings. It represents the opportunity cost of giving up current consumption in exchange for future consumption (Wang and Kinsey, 1994). Government spending and investment decisions in each region are based on Cobb-Douglas utility functions, which generate constant expenditure shares for each composite commodity. In each region, firm intermediate inputs, household consumption, government spending and investment demand constitute total demand for the same Armington composite of domestic products and imported goods from different sources. A two-level nested CES aggregation function is specified for each composite commodity in each region. The total demand is first divided between domestic produced and imported goods, then the expenditure on imports is further divided according to the geographical origin under the assumption of cost minimization. Complete trade flow matrices for all trade partners are part of the model solution. To distinguish between Hong Kong's re-exports and Hong Kong's domestically produced goods for exports, all Hong Kong's re-exports are allocated back to their original source countries in the model's base year data, therefore, in the simulation of the model, the solutions of bilateral trade flows between Hong Kong and all its trade partners, including China, are only imports for its own consumption and exports from its own domestic production. In the calculations presented in the next section, we then decompose China's total trade into its direct trade and indirect trade through Hong Kong.

There is an international shipping industry in the model, and each region allocates a fraction

of the output of its transportation and service sector to satisfy the demand for shipping which is generated by interregional trade. The global shipping industry has a unitary elasticity of substitution among supplier sources. This means that the margins associated with this activity are commodity/route specific. In equilibrium, the total value of international transportation services at the world price equals the sum of the export proportions of the service sector's output from each region.

The government in each region imposes import tariffs, export subsidies, and indirect taxes, in ad valorem terms. Tariff and tax (subsidy) rates vary by sector and by destination.

The model determines relative prices within each region and on world markets. Traded and non-traded goods are assumed to be distinct (and imperfect substitutes) by sector, so changes in relative world market prices are only partially transmitted to domestic markets. The model thus incorporates a realistic degree of insulation of domestic commodity markets from world markets, but the links are still important and provide the major mechanism by which the crisis is transmitted across regions. However, since the model cannot determine inflation, only relative prices change. The United States is specified as the "reference" economy, with both its aggregate price level and exchange rate specified as fixed exogenously. That is, all relative world prices and trade balances are measured in terms of real U.S. dollars. In addition, the aggregate consumer price index is fixed exogenously in each region, which defines a "no inflation" benchmark.

The equilibrium exchange rate determined by the model for each region can be interpreted as the real effective exchange rate (REER) deflated by the ratio of the regional consumer price index and the U.S. consumer price index. It is important to emphasize that the exchange rate variable in the model is not a financial exchange rate, since the model has no assets or asset markets. It represents

the equilibrium real exchange rate that is consistent with a given trade balance.

For each region, the model includes three macro balances: savings-investment, balance of trade (in goods and non-factor services), and government expenditure-receipts (government deficit). The three balances are not independent and the determination of these macro balances is the subject of traditional macroeconomic models. In terms of our real trade model, which does not include financial markets or variables typical of macro models, the determination of these macro aggregates is specified by exogenously determined rules. The macro adjustment mechanism constitutes the macro "closure" of the model.

Since this model is used to explore the impact of changes in real exchange rates on trade balances, we specify a macro closure that assumes any macro adjustment is spread in a neutral manner across aggregate consumption, investment, and government expenditure. Aggregate investment and government expenditure are simply specified as fixed shares of total absorption in each region (or aggregate regional expenditure, which equals gross domestic product—GDP—plus imports minus exports). Aggregate domestic savings and balance of trade (foreign savings) in each region is assumed to adjust endogenously to match aggregate investment, thus achieving savings-investment equilibrium even with endogenous changes in the government deficit and the balance of trade.

In the aggregate, as noted above, there is a functional relationship between the balance of trade (in goods and non-factor services, or the current account balance) in each region and the real exchange rate. If the real exchange rate depreciates, the price of traded goods increases relative to the price of domestically produced goods sold on the domestic market. Exports increase, imports decrease, and the trade balance will improve. Given our assumption that aggregate investment is

determined as a share of aggregate absorption, changes in the trade balance, which directly affect foreign savings, are assumed to have only a partial effect on aggregate investment in the region. Instead, they lead to an equilibrium adjustment in the domestic savings rate, which partially offsets the change in foreign savings.

In the base solution, the initial trade balance and exchange rate are assumed to be in equilibrium for each region — that is, the initial trade balance is assumed to be "sustainable" and consistent with the initial real exchange rate. In simulation experiments, we change the exchange rate for a particular region, which changes the equilibrium trade balance both in aggregate and bilaterally. In the multi-region model, there is a ripple effect, since, as noted in the previous discussion, a depreciation in one region's real exchange rate implies a relative appreciation for its trading partners, leading to changes in their equilibrium trade balances as well. The world model is closed in the sense that the sum of all regional trade balances must be zero. Thus, we can use the model to see how real exchange rate shocks lead to adjustments in trade balances worldwide in a consistent framework.

In the simulations, we change the real exchange rate of one region at a time, keeping all other regional real exchange rates fixed (for a detailed description on the justification of simulation designs, see Norland, *et al.*,1998). We use the model as a simulation laboratory to isolate the exchange rate transmission effect. We do not attempt to model a mix of exchange rate and trade balance adjustments or to forecast what might actually happen. This real model, with no money or asset markets, simply cannot be used for such forecasting. The model does allow us to explore structural adjustment effects such as changes in sectoral production, exports, and imports. In principle, the model could be linked to a macro model that includes asset flows and could determine

the set of real exchange rates resulting from some macro shock. Our model could then be used to determine the resulting real trade flows and regional sectoral structural adjustments.

3. THE EFFECT OF A YUAN DEVALUATION ON HONG KONG'S TRADE BALANCE — THE TRADE FACTOR

The effects of any shock, an RMB devaluation included, on the Hong Kong dollar can be real (through its effect on Hong Kong's ability to defend its currency, particularly on the level of its foreign exchange reserve) or psychological (through its effect on market's perception on Hong Kong authority's commitment to defend the currency even if it were able to do so). Considering the changes in Hong Kong's foreign exchange reserve through changes in its trade account resulting from a RMB devaluation, or the real effect first, there are four channels need to analysis:

a) Hong Kong's direct export to China declines, which reduces Hong Kong's foreign reserve.

b) Hong Kong's re-export (on behalf of the rest of the world) to China may decline. Assuming that Hong Kong derives some value-added from this entrepot trade (this is debatable as will be made clear later), it has a negative effect on Hong Kong's foreign reserve.

c) Hong Kong's direct imports from China may increase, again reducing Hong Kong's foreign reserve.

d) Hong Kong's re-export for China (i.e., China's indirect exports to the rest of the world through Hong Kong) may increase. Assuming that Hong Kong gets certain percentage of value-added from this entrepot trade, its foreign reserve may increase.

The four channels have conflicting effects on Hong Kong's foreign reserve and hence its ability to defend the dollar peg (three negative and one positive). This is as far as non-numerical reasoning can go.

We now turn to simulation results from the CGE model. As a benchmark case, let us consider a 10 percent devaluation in RBM (vis-a-vis the U.S. dollar). Table 1A presents the results of the simulation. Column 2 indicates that Hong Kong's total direct exports to China declines by 573 million U.S. dollars. Of that, electronics exports fall by USD 59 million, textile by 47 millions, and light manufacturing by 41 million.

Column 3 of Table 1A shows that Hong Kong's re-exports to China fall by USD 3,549 million, of which electronics, light manufacturing and textiles fall by USD 540, 282, and 267 millions, respectively. As large as these numbers may be in comparison with Hong Kong's direct exports, the effect on Hong Kong's foreign reserve may be very limited. Hong Kong's re-export to China, by definition has to be imported from the rest of the world first. So the effect on Hong Kong's reserve depends on the markup that Hong Kong charges on this trade.

Feenstra *et al*. (1998) shows that a reasonable estimate of the markup on this trade is somewhere between zero to 0.6 percent, reflecting an extremely competitive situation in re-exporting to China. It has been argued that many mainland companies have branches in Hong Kong that have as much knowhow about exporting to China as any Hong Kong firm. This contributes to an ever lower margin in this business. In any case, if we use the zero markup estimate, obviously, Hong Kong's reserve is unaffected by the massive reduction in the indirect export to China(Column 4a in Table 1A). The maximum drop in the foreign reserves (when the 0.6 percent estimate is used) is only $21.3 million (Column 4b), which is less than a tenth of a percent of Hong Kong's US$88 billion foreign reserves at the end of the third quarter in 1998.

After a 10 percent RMB devaluation, Hong Kong's direct imports from China would increase by $925.4 million. More than half of the change come from textile ($320.1 million), food and

agriculture (141.9 million) and "other manufacturing durables" ($228.6 million). (Column 5 in Table 1A).

In contrast, Hong Kong's re-exports for China (i.e., China's indirect export via Hong Kong to the rest of the world) would increase by $4,046.4 million dollars. Light manufacturing ($2,564.4 million) and textiles ($678.5 million) are the two most important items of the change, reflecting the improved competitiveness of China's labor intensive manufactures after RMB devaluation. The largest increase is light manufacturing products, which is composed of mainly shoes, toys, sport and travel goods. China's textile products are also competitive, but its exports are restrict by quotas and competition from other Asia countries. Of course, just like the re-exports to China by Hong Kong, only the change in the value-added is what affects Hong Kong's foreign reserve.

According to Feenstra et al. (1998) there are three estimates of the markup for this entrepot trade: 23 percent, 27 percent, and 33 percent. Feenstra et al. (1998) preferred estimate is 27 percent. In Columns 7a-7c of Table 1A, we report the changes in the value-added corresponding to each estimate of the markup.

The net effect of a 10 percent RMB devaluation depends on the relative size of the above four effects (Columns 2, plus 4, plus 7 and minus 5). Because there are two markup estimates for Hong Kong's re-exports to China (from the rest of the world), and three markup estimates for Hong Kong's re-exports for China (or China's indirect exports), there are altogether six combinations of the estimates. Table 1B reports the net effect of a 10 percent RMB devaluation on Hong Kong's foreign reserves through its trade account. Despite of the increased foreign currency earning for Hong Kong through its entrepot trading, one sees that all estimates are negative, meaning that the negative effects dominate the positive effect.

How important is the effect in quantitative term? The six estimates range from -$163 million dollars to -$589 million dollars. Hong Kong's trade deficit in 1997 was $21.4 billion US dollars.[6] So the effect of a 10 percent RMB devaluation is additional increase in Hong Kong's trade deficit (over the 1997 level) by somewhere between 0.8 percent to 2.8 percent, which is relatively small.

To put the estimates into perspective, let us compare them with the actual month-to-month change in Hong Kong's foreign currency assets. According to a Hong Kong Monetary Authority's press release, the official foreign currency assets at the end of April 1998 were US$96.2 billion [7], which was lower by US$ 600 million from the end of March figure. The press release states that "the fall in foreign currency assets held in the Exchange Fund can be attributed to withdraws of fiscal reserves to meet government operational needs," and that "monthly figures of the foreign currency assets are likely to show short-term variations due to seasonal factors." So even the largest estimate of the effect of a 10 percent RMB devaluation on Hong Kong's official foreign exchange reserve is smaller than the actual month-to-month fluctuation in the reserve with an RMB devaluation.

To get a sense of the robustness of the estimates, Tables 2 and 3 report simulation results for a 5 percent and 20 percent devaluation of the Chinese RMB. We perform exactly the same set of calculations as in Table 1. In both instances, Hong Kong would see a large increase in its foreign exchange earning through value-added derived from its re-exports for China to the rest of the world. But this increase in the foreign exchange earning is not big enough to offset the decrease in earning through its widened trade deficit in its direct trade with China. After a 5 percent RMB devaluation, the net decline in Hong Kong's foreign currency assets will range from US$ 119 million to US$ 328 million. After a 20 percent RMB devaluation, the net decline in Hong Kong's foreign currency assets

will be between US$ 327 million to US$ 1158 million. These are relatively small effects compared with the actual size of Hong Kong's trade deficit or the actual size of its official foreign assets or the month-to-month movement in the official foreign assets.

4. THE PSYCHOLOGICAL FACTOR

The previous section shows that a devaluation of the Chinese currency will have a small negative effect on Hong Kong's foreign exchange reserve through its effect on its trade account. As we stated earlier, the speculative pressure on Hong Kong dollar comes from the market perception of the Hong Kong authority's commitment to defend the currency as much as from the perception of the authority's ability to defend the currency. How would the market participants in Hong Kong react to a (hypothetical) news of RMB devaluation?

Towards this end, a survey of seven market participants was conducted.[8] The respondents include a currency trader, two securities traders, two portfolio (mutual fund) managers, and two investment bank economists. The survey was conducted between March 15-25, 1998 in Hong Kong. The survey consists of three substantive questions in addition to the question asking the respondent to identify the line of business he or she is in. Because the survey is relatively short, we repeat the questions below.

Question 1: *How much do you think the Chinese RMB is over-valued?*

a. Over 20 percent

b. Between 10–20 percent

c. Below 10 percent

d. The current rate is about right

e. It is somewhat undervalued

f. Don't know

Question 2: *One hypothesis says that if the RMB devalues (depreciates), Hong Kong's exports will become more competitive in the world market because most of the goods that Hong Kong exports are made on the mainland. As a result, Hong Kong's foreign exchange reserve will again start to rise. Hong Kong will be in a better position to defend its U.S. dollar-link exchange rate system. Do you agree with this hypothesis?*

a. Strongly agree

b. Basically agree

c. Basically disagree

d. Strongly disagree

e. Don't know

Question 3: *Another hypothesis says that if the RMB devalues, currency traders and ordinary people in Hong Kong will immediately start to sell Hong Kong dollars possibly in panic. They do so because they will lose confidence in the ability of HKMA to defend the Hong Kong dollar despite possible benefits that the RMB devaluation may have on Hong Kong. Do you agree with this hypothesis?*

a. Strongly agree

b. Basically agree

c. Basically disagree

d. Strongly disagree

e. Don't know

Table 4 presents the results of the survey. On the first question, two respondents thought that

the RMB (versus U.S. dollar) exchange rate was about right, two thought it was overvalued between 10 percent and 20 percent, and three were not sure either way. In other words, there was no strong sentiment that the RMB is severely overvalued. This ambiguity in the answers is perhaps not surprising. From 1994 to mid-1997, the Chinese inflation rate had been a lot higher than the U.S. rate. Yet, its currency, under a (tightly) managed float system, was actually appreciating in value at about 1 percent per year. Since mid-1997, its inflation rate has come down dramatically, to almost zero rate (in terms of CPI, or negative in terms of retail price inflation rate) in the first quarter of 1998.

On the second question, five out of seven people disagree with the hypothesis that an RMB devaluation will raise Hong Kong's foreign exchange reserve. But most did not check "strongly disagree." Two respondents actually checked "basically agree." This pattern of answers corresponds well to our discussion in the last section that the effect of an RMB devaluation has four effects on Hong Kong's trade account, in conflicting directions. While the net effect from the CGE simulations is negative, it is quantitatively small, which might explain why the survey respondents (without the tool of a CGE model) do not have a consensus on this.

The responses to question 3 stand out in sharp contrast to those to the early two questions. All respondents agree with the hypothesis that an RMB devaluation will lead to a panic selling of the Hong Kong dollar. This suggests that the effect of an RMB devaluation on the Hong Kong dollar, in people's mind, must go beyond what it does to Hong Kong's trade account (or even foreign exchange reserves).

We should be careful about drawing too much from the survey given its small sample size. The small sample prevents us from doing formal statistical testing. On the other hand, even in this

small sample, it is remarkable that all respondents agree on the psychological effect of an RMB devaluation on the Hong Kong dollar (i.e., possible panic selling will be triggered).

5. SUMMARY AND CONCLUDING REMARKS

A devaluation of the Chinese Yuan will affect the defensibility of the peg of the Hong Kong dollar vis-a-vis the U.S. dollar through its impact on Hong Kong's trade balance, and its impact on the psychology of foreign exchange market participants. Hong Kong's trade balance is shaped to a significant extent by Hong Kong being the conduit of a huge amount of indirect trade between China and the rest of the world. It derives a significant income from the mark-up on its indirect exports for China but virtually no income from its indirect exports to China. This observation seems to suggest a devaluation of the Chinese currency could increase Hong Kong's foreign exchange earnings. Indeed, our CGE simulation shows that this effect is present. However, Hong Kong also loses foreign exchange earnings through its direct trade with China. The latter, negative effect, dominates the former, positive effect. On the other hand, the net effect is quantitatively small compared to Hong Kong's actual trade deficit or the actual size of its official foreign assets or the month-to-month fluctuations in the official foreign assets.

The psychological impact of a yuan devaluation is studied through a (small-sample) survey of financial market participants in Hong Kong in March 1998. The survey revealed several pieces of interesting information. The respondents were not sure whether the Chinese yuan was overvalued relative to the U.S. dollar. While most of the respondents thought that an RMB devaluation would not increase Hong Kong's foreign exchange reserves, everyone believed that an RMB devaluation would lead to a panic selling of the Hong Kong dollar.

The limited evidence that we have presented suggests that a yuan devaluation would tend to trigger a speculative attack on the Hong Kong dollar. Although our CGE model indicates that a yuan

devaluation is likely to have a negligible effect on Hong Kong's overall trade balance because of four offsetting channels, the market psychology may work against the Hong Kong dollar.

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FOOTNOTES

[1] However, China will obtain intermediate inputs and semi-processed products at lower cost from the affected neighboring countries such as South Korea for its exports in processed trade sectors. Processed trade has already accounted for more than half of China's total exports in 1995. Thus, this effect might mitigate some negative effects caused by the crisis.

[2]The obvious important reasons include, one, the continued prosperity of Hong Kong will be a clear demonstration to Taiwan of China's commitment to the principle of "one country, two systems"; and, two, the faltering of Hong Kong's economy will reflect badly on China's ability in economic management, a bad signal to the international community for a country that has come to rely increasingly on foreign direct investment.

[3]The regions in the model are United States, Canada, Mexico, Europe Union, Oceania, Japan , Korea, Taiwan, China , Hong Kong, Indonesia, Thailand, the Philippines , Singapore, Malaysia, South Asia, Latin America and the Caribbean, and the Rest of the World.

[4]The sectors are agricultural products, processed food and beverages, forestry and fisheries, mining, energy, textile and apparel, light manufacturing, industrial intermediates, motor vehicles and parts, other transportation equipment, electronics, machinery, housing and construction, and services.

[5] Skilled workers are defined as International Labor Office (ILO) International Standard Classification of Occupations (ISCO) occupation groups 0-2 (Professional, technical and related workers; Administrative and managerial workers). The remainder, ISCO 3-5 (Clerical and related workers; Sales workers; Service workers), ISCO 6 (Agricultural workers),and ISCO 7-9 (Production and related workers, Transport equipment operators, and Laborers) are classified as unskilled.

[6] According to the table labeled as "Gross Domestic Product Estimates by Expenditure

Component," in Hong Kong Monetary Authority's Home Page (www.info.gov.hk/hkma), Hong Kong's total exports of goods (fob) and total imports of goods(cif) in 1997 were 1403.9 and 1532.9 billion Hong Kong dollars (current price), respectively. Using an exchange rate of US$1=Hong Kong$7.74, this is equivalent to a trade deficit of US$21.4 billion.

[7] "Hong Kong's Latest Foreign Currency Assets Figures Released," in Hong Kong Monetary Authority's Home Page (www.info.gov.hk/hkma/new/press/exchangefund/980522e.htm).

[8] We would like to thank Simone S. of an investment bank in Hong Kong for help in carrying out this survey.

Table 1A
The Impact of 10 Percent RMB Devaluation on Hong Kong's Direct Trade and Re-exports

(In million US dollars)

Sectors Export side	Col 2[a] Change of Hong Kong's Direct Export to China	Col 3 Change of Hong Kong's Re export to China from ROW	Col 4A Markup on Re export to China from ROW %	Col 4B Markup on Re export to China from ROW US$	
Percentage of make up[d]			0%	0.60%	
Food and Agriculture	-28.50	-365.23	0	-2	
Mine and Energy	-15.30	-196.07	0	-1	
Textile	-46.90	-266.77	0	-2	
Light Manufacturing	-40.80	-281.92	0	-2	
Electronics	-59.00	-540.13	0	-3	
Motor Vehicle and Parts		-192.86	0	-1	
Other Manufacturing Durables	-382.70	-1706.40	0	-10	
Total	-573.20	-3549.38	0	-21.30	

Import side	Col 5[a] Change of Hong Kong's Direct Import from China	Col 6[c] Change of Hong Kong's Re export for China to ROW	Col 7A Markup on Re-Export for China to ROW	Col 7B Markup on Re-export for China to ROW	Col 7C Markup on I Re-export for China to ROW
Percentage of make up[d]			0.23	0.27	0.33
Food and Agriculture	141.94	11.65	3	3	4
Mine and Energy	85.49	24.64	6	7	8
Textile	320.07	678.52	156	183	224
Light Manufacturing	100.34	2564.41	590	692	846
Electronics	32.59	241.49	56	65	80
Motor Vehicle and Parts	16.32	6.74	2	2	2
Other Manufacturing Durables	228.61	518.95	119	140	171
Total	925.36	4046.40	930.67	1092.53	1,335

Notes:

a. Results directly from the model solution.

b. Using the share of Hong Kong's re-export to China in China's total imports multiply Change of China's total imports (exclude direct imports from Hong Kong) from the model. The share is calculated by the authors based on Hong Kong Custom Statistics and China's total imports at base year (1995) GTAP data.

c. Using the share of China's export via Hong Kong in its total exports multiply changes of China's total exports (exclude China's direct export to Hong Kong) from the model. The share is calculated by authors using export data from the Chinese Customs and China's total exports (exclude Hong Kong's direct imports from China) at base year (1995) GTAP data.

d. The markups margin is from Feenstra, Woo, and Yao (1998).

Table 1B
The Impact of 10 Percent RMB Devaluation on Hong Kong's Current Account

	Col2-Col5 +Col4A+Col7A	Col2-Col5 +Col4A+Col7B	Col2-Col5 +Col4A+Col7C	Col2-Col5 +Col4B+Col7A	Col2-Col5 +Col4B+Col7B	Col2-Col5 +Col4B+Col7C
Sectors	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade
Scenarios	0% import, 23% export markup	0% import, 27% export markup	0% import, 33% export markup	0.6% import, 23% export markup	0.6% import, 27% export markup	0.6% import, 33% export markup
Food and Agriculture	-167.76	-167.30	-166.60	-169.95	-169.49	-168.79
Mine and Energy	-95.12	-94.14	-92.66	-96.30	-95.31	-93.84
Textile	-210.91	-183.77	-143.06	-212.51	-185.37	-144.66
Light Manufacturing	448.67	551.25	705.12	446.98	549.56	703.42
Electronics	-36.05	-26.39	-11.90	-39.29	-29.63	-15.14
Motor Vehicle and Parts	-14.77	-14.50	-14.09	-15.93	-15.66	-15.25
Other Manufacturing Durables	-491.95	-471.19	-440.06	-502.19	-481.43	-450.30
Total	-567.89	-406.03	-163.25	-589.19	-427.33	-184.55

Table 2A
The Impact of 5 Percent RMB Devaluation on Hong Kong's Direct Trade and Re-exports

(In million US dollars)

Sectors Export side	Col 2[a] Change of Hong Kong's Direct Export to China	Col 3 Change of Hong Kong's Re export to China from ROW	Col 4A Markup on Re export to China from ROW %	Col 4B Markup on Re export to China from ROW US$	
Percentage of make up[d]			0%	0.60%	
Food and Agriculture	-14.87	-215.14	0	-1	
Mine and Energy	-8.13	-113.83	0	-1	
Textile	-25.56	-152.36	0	-1	
Light Manufacturing	-21.49	-156.92	0	-1	
Electronics	-30.92	-296.34	0	-2	
Motor Vehicle and Parts	-0.02	-102.36	0	-1	
Other Manufacturing Durables	-199.68	-946.51	0	-6	
Total	-300.67	-1983.46	0	-11.90	

Import side	Col 5[a] Change of Hong Kong's Direct Import from China	Col 6[c] Change of Hong Kong's Re export for China to ROW	Col 7A Markup on Re-Export for China to ROW	Col 7B Markup on Re-export for China to ROW	Col 7C Markup on I Re-export for China to ROW
Percentage of make up[d]			0.23	0.27	0.33
Food and Agriculture	71.81	5.25	1	1	2
Mine and Energy	43.14	11.26	3	3	4
Textile	164.26	313.80	72	85	104
Light Manufacturing	50.51	1269.96	292	343	419
Electronics	16.52	120.09	28	32	40
Motor Vehicle and Parts	7.87	2.81	1	1	1
Other Manufacturing Durables	114.94	249.67	57	67	82
Total	469.05	1972.85	453.76	532.67	651

Notes:

a. Results directly from the model solution.

b. Using the share of Hong Kong's re-export to China in China's total imports multiply Change of China's total imports (exclude direct imports from Hong Kong) from the model. The share is calculated by the authors based on Hong Kong Custom Statistics and China's total imports at base year (1995) GTAP data.

c. Using the share of China's export via Hong Kong in its total exports multiply changes of China's total exports (exclude China's direct export to Hong Kong) from the model. The share is calculated by authors using export data from the Chinese Customs and China's total exports (exclude Hong Kong's direct imports from China) at base year (1995) GTAP data.

d. The markups margin is from Feenstra, Woo, and Yao (1998).

Table 2B
The Impact of 5 Percent RMB Devaluation on Hong Kong's Current Account

	Col2-Col5 +Col4A+Col7A	Col2-Col5 +Col4A+Col7B	Col2-Col5 +Col4A+Col7C	Col2-Col5 +Col4B+Col7A	Col2-Col5 +Col4B+Col7B	Col2-Col5 +Col4B+Col7C
Sectors	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade
Scenarios	0% import, 23% export markup	0% import, 27% export markup	0% import, 33% export markup	0.6% import, 23% export markup	0.6% import, 27% export markup	0.6% import, 33% export markup
Food and Agriculture	-85.47	-85.26	-84.95	-86.76	-86.55	-86.24
Mine and Energy	-48.68	-48.23	-47.55	-49.36	-48.91	-48.24
Textile	-117.65	-105.10	-86.27	-118.56	-106.01	-87.18
Light Manufacturing	220.09	270.89	347.09	219.15	269.95	346.15
Electronics	-19.82	-15.02	-7.81	-21.60	-16.79	-9.59
Motor Vehicle and Parts	-7.24	-7.13	-6.96	-7.86	-7.74	-7.58
Other Manufacturing Durables	-257.19	-247.21	-232.23	-262.87	-252.89	-237.91
Housing and Construction	0.00	0.00	0.00	0.00	0.00	0.00
Services	0.00	0.00	0.00	0.00	0.00	0.00
Total	-315.96	-237.05	-118.68	-327.87	-248.95	-130.58

Table 3A
The Impact of 20 % RMB Devaluation on Hong Kong's Direct Trade and Re-exports

(In million US dollars)

Sectors Export side	Col 2[a] Change of Hong Kong's Direct Export to China	Col 3 Change of Hong Kong's Re export to China from ROW	Col 4A Markup on Re export to China from ROW %	Col 4B Markup on Re export to China from ROW US$	
Percentage of make up[d]			0%	0.60%	
Food and Agriculture	-58.20	-840.82	0	-5	
Mine and Energy	-31.68	-443.79	0	-3	
Textile	-98.03	-585.01	0	-4	
Light Manufacturing	-83.75	-611.12	0	-4	
Electronics	-120.84	-1103.55	0	-7	
Motor Vehicle and Parts	-0.08	-400.97	0	-2	
Other Manufacturing Durables	-660.14	-3704.59	0	-22	
Total	-1052.72	-7689.85	0	-46.14	

Import side	Col 5[a] Change of Hong Kong's Direct Import from China	Col 6[c] Change of Hong Kong's Re export for China to ROW	Col 7A Markup on Re-Export for China to ROW	Col 7B Markup on Re-export for China to ROW	Col 7C Markup on I Re-export for China to ROW
Percentage of make up[d]			0.23	0.27	0.33
Food and Agriculture	285.56	21.07	5	6	7
Mine and Energy	171.77	44.96	10	12	15
Textile	648.59	1246.30	287	337	411
Light Manufacturing	201.36	5049.39	1,161	1,363	1,666
Electronics	65.63	476.57	110	129	157
Motor Vehicle and Parts	32.06	11.45	3	3	4
Other Manufacturing Durables	458.49	996.18	229	269	329
Total	1863.46	7845.92	1804.56	2118.40	2,589

Notes:

a. Results directly from the model solution.

b. Using the share of Hong Kong's re-export to China in China's total imports multiply Change of China's total imports (exclude direct imports from Hong Kong) from the model. The share is calculated by the authors based on Hong Kong Custom Statistics and China's total imports at base year (1995) GTAP data.

c. Using the share of China's export via Hong Kong in its total exports multiply changes of China's total exports (exclude China's direct export to Hong Kong) from the model. The share is calculated by authors using export data from the Chinese Customs and China's total exports (exclude Hong Kong's direct imports from China) at base year (1995) GTAP data.

d. The markups margin is from Feenstra, Woo, and Yao (1998).

Table 3B

The Impact of 20 Percent RMB Devaluation on Hong Kong's Current Account

	Col2-Col5 +Col4A+Col7A	Col2-Col5 +Col4A+Col7B	Col2-Col5 +Col4A+Col7C	Col2-Col5 +Col4B+Col7A	Col2-Col5 +Col4B+Col7B	Col2-Col5 +Col4B+Col7C
Sectors	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade	Net Change in For ex Reserve Due to Change of Trade
Scenarios	0% import, 23% export markup	0% import, 27% export markup	0% import, 33% export markup	0.6% import, 23% export markup	0.6% import, 27% export markup	0.6% import, 33% export markup
Food and Agriculture	-338.91	-338.07	-336.81	-343.96	-343.12	-341.85
Mine and Energy	-193.11	-191.31	-188.61	-195.77	-193.97	-191.28
Textile	-459.97	-410.12	-335.34	-463.48	-413.63	-338.85
Light Manufacturing	876.25	1078.22	1381.19	872.58	1074.56	1377.52
Electronics	-76.86	-57.79	-29.20	-83.48	-64.42	-35.82
Motor Vehicle and Parts	-29.51	-29.05	-28.36	-31.91	-31.45	-30.77
Other Manufacturing Durables	-889.51	-849.66	-789.89	-911.74	-871.89	-812.12
Total	-1111.62	-797.78	-327.03	-1157.76	-843.92	-373.17

Table 4: Survey of Market Participants

	Currency Trader	Security Trader	Security Trader	Fund Manager	Fund Manager	Economist	Economist
Q1: How Much is RMB Over-valued?							
> 20%							
Between 10-20%		y				y	
< 10%							
About right	y		y				
Somewhat undervalued							
Don't know				y	y		y
Q2: An RMB devaluation will increase Hong Kong's foreign exchange reserve							
Strongly agree							
Basically agree			y	y			
Basically disagree	y				y	y	y
Strongly disagree		y					
Don't know							
Q3: An RMB devaluation will lead to panic selling of the Hong Kong dollar							
Strongly agree				y		y	y
Basically agree	y	y	y		y		
Basically disagree							
Strongly disagree							
Don't know							

Notes:

(1) The survey was conducted in Hong Kong between March 15-25, 1998. The full questions can be found in the text of the paper.

(2) "y" indicates a check.