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ABSTRACT

This paper has two aims. The first is to reduce the range within which the true U.S.-China bilateral trade deficit lies. The second is to identify the determinants of the bilateral trade deficit and offer an assessment of their relative importance. We calculate a smaller range of values for the bilateral trade deficit than in previous studies, due to a new estimation method that takes advantage of our access to detailed Chinese Customs data at the commodity level. For example, the revised US-China bilateral trade deficit is $15 billion to $20 billion in 1994, and $16 billion to $22 billion in 1995, compared to the official range of $8 billion to $30 billion, and $9 billion to $34 billion, respectively. The widening of the US-CHINA bilateral trade deficit in recent years reflected many factors. In our opinion, the two chief factors are (i) macroeconomic forces in the US and China moving in opposite direction, causing their respective overall trade balance to move in opposite directions; and (ii) the accelerated relocation of production of US imports from East Asia to China.

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Introduction

It is quite incredible that while the negotiations of China's accession to the World Trade Organisation (WTO) are greatly influenced by the deficit that the United States runs in its trade with China, the actual size of the US-China bilateral trade deficit[1] is not actually known! The US puts the 1995 bilateral trade deficit to be $34 billion, while China puts it at $9 billion. If the US figure is correct, then China has the second highest bilateral deficit, after Japan whose bilateral trade deficit with the US is $59 billion. But if China's figure is correct, then the China bilateral trade deficit is lower than that the US bilateral trade deficits with Canada, Mexico, Germany and Taiwan.

Some analysts have interpreted the large US-China bilateral trade deficit as prima facie evidence of unacceptably high levels of protectionism in China, and have advocated stringent entry conditions for China's admission into WTO, even though China is in the poorest third of the world's economies.[2] In response, supporters for easier entry conditions for China have emphasised other factors (e.g. the movement of low-skill, labor-intensive manufacturing industries to China from neighboring economies) for the recent widening of the bilateral trade deficit.

Because the overall trade balance of a country equals domestic saving minus domestic investment, the normal expectation is that low-income countries that have high rates of return to investments (e.g. China) should be borrowing from abroad to finance their development. However, since 1994, China has been running an overall trade surplus that is growing over time. This counter-intuitive phenomenon of a low-income China that is extending loans to the outside

[1] We will treat the US as the "home country" in that a bilateral trade deficit (surplus), in our usage, means that the US is running a deficit (surplus) in its trade with that particular trading partner.

world has strengthened the impression of a mercantilist China intent focussed on export promotion. This impression has its origin in the great extent that China has increased its penetration of the US market over the last decade. Of the 34 categories of manufactured goods imported by the US, China was among the top 5 suppliers in 9 categories in 1995, up from 1 category in 1990 and none in 1985.[3]

Our focus on the US-China bilateral trade balance is of course based on political economy considerations.[4] In 1988, the U.S. Congress passed Super-301 legislation to combat "unfair" trading practices by foreign countries. Because the imposition of the retaliatory measures permitted by Super-301 can seriously rupture international political and economic relations, it is important that the criteria upon which retaliatory actions are made are accurately quantified. We focus on the US-China bilateral trade deficit because the bilateral trade deficit has been cited many times by U.S. politicians and by the U.S. Trade Representative as an important indicator of the existence of unfair trading practices. The large discrepancy between the U.S. and the Chinese estimates of the bilateral trade deficit doubtlessly makes decision-making about Super-301 actions more inexact.

This paper has two aims. The first is to reduce the range within which the true bilateral trade deficit lies. The second aim is to identify the determinants of the bilateral trade deficit, and offer an assessment of their relative importance. To anticipate our discussion, section 1 presents

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[2] This is according to GDP per capita in 1995 measured using the market exchange rate. When it is measured using a PPP exchange rate, China is in the poorer half of the world's economies. Data are from the World Development Report 1997.

[3] If we consider the top 10 suppliers in each category, then China was in 15 categories in 1995, 3 categories in 1990, and 1 category in 1985. See Appendix Table A3.

[4] The bilateral trade balance is not a welfare indicator. The working of comparative advantage under free trade in a multi-country model could yield an outcome where three countries form a circular chain of bilateral trade deficits (i.e. A runs a deficit with B, B runs a deficit with C, and C runs a deficit with A). Furthermore, when capital flow is introduced into the model, some countries would run overall trade

a smaller range of values for the bilateral trade deficit than in previous studies. We are able to achieve this because we devised a new estimation method that takes advantage of our access to detailed Chinese Customs data at the commodity-by-commodity level. The size of the discrepancy between our revised US figure and the revised Chinese figure is only 4 to 26 percent of the size of the discrepancy between the two official figures. The size of the *average discrepancy* between the revised figures is only 9 percent of the size of the average discrepancy between the official figures. For example, the revised US-China bilateral trade deficit is $15 billion to $20 billion in 1994, and $16 billion to $22 billion in 1995, compared to the official range of $8 billion to $30 billion, and $9 billion to $34 billion, respectively.

Section 2 of this paper points out that protectionism can influence the *overall* trade balance only if it can modify saving-investment behavior in the economy, and this requires wealth effects to be uncharacteristically strong and unusually fast to appear. The major cause of China's current account surplus is its high household saving rate. The high saving rate is, in turn, generated by China's demographic profile, the absence of social insurance for the bulk of the population, and the post-1978 appearance of investment-motivated saving in response to the scarcity of formal financial intermediation to finance the investment of the non-state sector.

The widening of the US-China bilateral trade deficit in recent years reflected many factors. In our opinion, the two chief factors are (i) macroeconomic forces in the US and China moving in opposite directions, causing their respective overall trade balance to move in opposite directions; and (ii) the accelerated relocation of production of US imports from East Asia to China.

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account deficits for several periods. The bilateral trade deficits and overall trade deficits actually make every country better off because a country that is made worse off can choose to retreat into autarky.

1. Measuring the Bilateral Trade Deficit – The Role of Hong Kong

Of all the economic issues between the United States and China, none has the potential for greater confusion than the bilateral trade deficit. The official trade statistics of the United States and China have huge discrepancies. Much of the difference is due to, among others, the different treatment of Hong Kong's entrepôt trade by the two sides. In the 1988-95 period, on the average, over two-third of U.S. imports from China came through Hong Kong.

The resolution of the discrepancy between the U.S. and Chinese data rests large on two issues: first, the accounting of the Chinese goods shipped to the U.S. via Hong Kong; and second, the measurement of the value added by Hong Kong traders to these goods. The U.S. Commerce Department records the re-exports from Hong Kong as U.S. imports from China. Up until 1993, the Customs General Administrations of China recorded them as Chinese exports to Hong Kong, rather than to the U.S. Since 1993, China has gradually modified this approach to identify the final destination of its exports to Hong Kong, though its accounting of these goods remains incomplete.

The magnitudes of the Hong Kong re-export markups have been estimated in a number of studies, including Fung (1996), Fung and Lau (1996), Lardy (1994), Sung (1991), and West (1995). The markups cited in these studies come primarily from surveys conducted by Hong Kong agencies, and individual interviews. Since 1988, the Hong Kong Trade and Development Council has conducted several surveys on the magnitude of Hong Kong re-export markups among the local business community. These surveys have found the average markups around 14% for 1988 and 17% for 1991. A survey by Hong Kong Census and Statistics Department shows that the average markup for 1990 is 13.4%. In a report by the same agency to the GATT Informal Group of Experts on Export Statistics, the average markup is found to be 13% for 1988

and 25% for 1993. In Fung's interview for 1994 (reported in Fung, 1996; Fung and Lau, 1996), the markup for Chinese goods is reported at 25%. Besides showing that the average markup has increased over time, the surveys also indicate that the markup for the Chinese goods is well above the average markup for re-exports through third countries.

A recent report by the Joint Commission on Commerce and Trade (1996), a US-China intergovernmental agency, used disaggregate data on Hong Kong's import and re-export trade to estimate the markup for 1992 and 1993. This study (hereafter referred to as the "interagency report") finds that the average markup on Hong Kong re-exports of Chinese goods to the U.S. is 29 percent of the re-export value. It attempts to reconcile the differing trade statistics of the two countries using the markups and additional information on specific commodities.

The interagency report is a major advance in the estimation of the Hong Kong re-export markups, but it is vulnerable to two potential flaws. First, the import data used in the study only identifies the countries of origin and not the destination countries. This ignores that fact that there are three types of Hong Kong imports from China: imports that are retained in Hong Kong; re-exports to the U.S.; and re-exports to other countries. Therefore, the *overall* import unit-value may not reflect the actual unit-value for goods re-exported to the U.S. The distortion on the unit-value is more likely to be highest for goods where only a small portion is re-exported to the U.S. Secondly, in the two datasets (Hong Kong imports and re-exports), there are some records that appear to suffer from measurement error, either because different units where used for imports and re-exports, or because these transactions occurred in different calendar years. The estimates obtained for the markups are quite sensitive to these measurement errors.

In this part of the paper, we try to improve the markup estimation in these two respects, using both Hong Kong *and* Chinese trade statistics for the period 1988-1995. The Chinese trade

data, provided by the Customs General Administration of China, contain information on destination countries for its exports via Hong Kong. The import unit-value calculated from this data should be more accurate than that obtained from the Hong Kong data alone. In addition, we construct a method to detect and eliminate records in the Hong Kong data that potentially suffer from measurement error, and we reconcile the results we obtain with other estimates of the markup. Finally, we use our estimates of the markups to correct the bilateral U.S.-China trade figures. For example, the bilateral deficit in 1995 is $33.8 billion according to official U.S. figures, but only $8.6 billion according to official Chinese figures. Using our markup estimates for the re-export activities in Hong Kong, we find that the actual trade deficit in 1995 is in the range of $15.6 to $21.6 billion.

The Role of Hong Kong in U.S.-China Trade

The entrepôt trade of Hong Kong has caused the bilateral US-China trade deficit estimated by the U.S. Dept of Commerce to be very different from that estimated by China's Customs authorities. In Table1, we contrast the values of eastbound and westbound trade between the U.S. and China, as reported by these two countries. Part A gives eastbound trade (i.e. China's exports and U.S. imports), and Part B gives westbound trade (U.S. exports and China's imports), while Part C computes the difference between westbound and eastbound trade to arrive at the U.S.-China trade balance. The information in the first column is obtained from the U.S. Department of Commerce, while that in the second to fourth columns is obtained from the Customs General Administration, People's Republic of China. We supplement this with information on Hong Kong re-exports in the last column, as reported by the Hong Kong Census and Statistics Office.

From Part C of Table 1, we can see that U.S.-China trade balance differs not only in the magnitude reported by the two countries, but even in its sign! The United States reports a trade *deficit* with China, which has increased about tenfold over the years 1988-1996, from about $3.5 billion to $39.5 billion. In contrast, China reports that the United States was running a trade *surplus* in the years 1988-1992, which turned into a deficit beginning in 1993. In 1996, the U.S. reported deficit with China of $39.5 billion compares to the Chinese reported value of the U.S. deficit of $10.5 billion, so that these two figures differ by $29 billion or a factor of three times. Clearly, the difference between these values is large enough that it risks misunderstanding between the countries on what the "true" value of the deficit might be.

The most important source of the different values for the trade deficit is the entrepôt trade of Hong Kong. The U.S. Department of Commerce calculates total Chinese exports to the US as the sum of (a) Chinese goods shipped directly to U.S., and (b) Hong Kong re-exports of goods from Chinese origin (i.e. Chinese goods shipped indirectly to U.S.).[5] In other words, the value of all goods that originate in China are counted as Chinese exports to the United States. In contrast, the Chinese customs authorities calculate exports to the United States as consisting of component (a), and only those goods in component (b) whose final destination (the U.S.) is known at the time the product leaves China. It is often the case, however, that the Chinese exporter does not know the final destination of the good, so that many of the goods bound for the United States are not counted as such in the Chinese trade statistics; rather, these goods are treated as exports to Hong Kong.

Since 1993, the Chinese customs authorities have attempted to determine the final destination for goods exported to Hong Kong with greater accuracy, so as to improve its reported

[5] There is also a small amount of Chinese goods that are shipped to the U.S. through countries other than Hong Kong.

trade statistics. It is still the case, however, that many of the goods bound for the United States via Hong Kong are not recorded as such. This can be seen by breaking up the Chinese exports to the U.S. into those goods that are directly exported (in the third column of Table 1, Part A), and those goods that are exported via Hong Kong (in the fourth column). The latter can be compared to the value reported by the Hong Kong census authorities, in the last column, on the value of re-exports from China to the U.S. Thus, in 1988, China reported $705 million in exports to Hong Kong bound for the U.S., while Hong Kong reported $5.6 billion in re-exports to the U.S. that originated in China. These differ by a factor of eight times. In 1995, China reported $14.3 billion in exports to Hong Kong bound for the U.S., while Hong Kong reported $27.5 billion in re-exports to the U.S. that originated in China. These now differ by only a factor of two, though the difference in dollar values is still very large.

In comparison, for westbound trade in part B of Table 1, China used to report twice as many imports from the U.S. via Hong Kong as that country reported as re-exports ($2,538 versus $1,237 million in 1988).[6] This discrepancy may be due to differing conventions in China and Hong Kong as to what constitutes a re-export: this term normally implies that there has been no "significant transformation" of a good, such as through a production process. If Hong Kong determined that there had been a transformation of a good imported from the U.S., and then sent to China, it would be counted as an actual export from Hong Kong, rather than a re-export. In this same instance, China could classify it as an import from the U.S. via Hong Kong, resulting in a higher import value, as shown in part B of Table 1. In any case, by 1995 the difference between the Chinese imports of U.S. goods via Hong Kong, and the Hong Kong re-exports, has been essentially eliminated.

[6] The larger number reported by China in the pre-1995 period is quite surprising given the many news reports of large-scale smuggling into China from Hong Kong.

There are several reasons why the value of Chinese goods sent to Hong Kong, and destined for the U.S., differs from the reported value of Hong Kong re-exports from China to the U.S. The first, which has already been mentioned, is that an exporter in China may not know the ultimate destination of a good when it is sent to Hong Kong. But even if this discrepancy did not occur, there is still a second reason. The value of Chinese exports to Hong Kong, which are destined for the U.S., represent the value of these goods *when they leave China*. In contrast, the Hong Kong re-exports from China to the United States represent the value of these goods *when they leave Hong Kong*. In other words, these two values differ by the *markup or value-added in Hong Kong*. Since it can be expected that traders in Hong Kong are providing various services to these goods, such as arranging for transportation and insurance, as well as identifying customers, the value-added in Hong Kong may be substantial. In 1995, for example, we saw in Table 1 that the Hong Kong re-exports from China to the U.S. were twice as large ($27.5 billion) as the Chinese exports to Hong Kong destined for the U.S. ($14.3 billion): some of this difference represents exports that are simply not recorded as such in China, but an equally large portion could represent the markup to the value of the goods in Hong Kong.

There are two other reasons why Hong Kong re-exports from China to the U.S. are larger than Chinese exports to Hong Kong: smuggling, and transfer pricing. Smuggling would lead to this discrepancy if it were recorded in Hong Kong but not in China. Since we will be making use of the Hong Kong re-export values in this study to correct the Chinese trade values, we will have taken smuggling into account, provided that it is recorded in Hong Kong. (If it is not recorded in China or Hong Kong, but is recorded as an import into the U.S., then we are not able to correct for this). On transfer pricing, it is commonly asserted that many companies in China under-price their export invoices (with the help of the Hong Kong re-exporters) to transfer profits out of

China into Hong Kong. There are a whole array of reasons for this capital flight. Chinese managers use invoice under-pricing for "round-tripping" where the transferred profits return to China under the guise of foreign investments in order to reap the tax concessions offered to foreign enterprises and joint-venture companies. They use invoice under-pricing to diversify (internationalize) their companies' portfolios to reduce risks. Foreign partners of joint-ventures in China use invoice under-pricing to reduce the level of book profits which they share with the Chinese partners.

Given that there is some value-added in Hong Kong, that activity should be properly recorded as an export from Hong Kong – not from China. The U.S. Department of Commerce does not follow this practice, however. The United States counts the *total value* of goods from Hong Kong, that originated in China, as Chinese exports, so that it is implicitly ignoring the value added in Hong Kong. For this reason, the trade deficit with China reported by the U.S. is *overstated.* On the other hand, China is unable to count all of the goods leaving its country, and destined for the U.S. via Hong Kong, as an export to the United States. For this reason, the value of the U.S. trade deficit as reported by China is *understated.* In order to estimate the "true" value of the deficit, it is necessary to compute the value-added in Hong Kong on goods shipped from China to the U.S., and also in the reverse direction. Attributing this value-added as an export from Hong Kong, the discrepancy between the U.S. and Chinese magnitudes of the bilateral trade deficit can be substantially reduced. In the following section we proceed to estimate this value-added.

Markup on Hong Kong Re-exports to the United States

The value-added attributed to Hong Kong equals the markup on the prices of goods shipped through this entrepôt center, multiplied by the value of these goods. There are several

estimates of the markup available, as summarized in Table 2. The interagency report from the Joint Commission on Commerce and Trade (1996) estimated the markup as 40.7% for 1992 and 1993. This markup is expressed as a percentage of the value of Chinese goods *imported* into Hong Kong. Alternatively, the markup can be expressed as a percentage of the value of goods when they are *re-exported* from Hong Kong, and we will consistently follow this practice. The 40.7% markup increases the value of the goods by a factor of 1.407, so that expressed in terms of the re-export value, the markup becomes 40.7/1.407=28.9%. This markup for 1992 and 1993 is shown in the first column of Table 2.

A second estimate of the markup has been made by the Hong Kong Census and Statistics Department, based on a survey of exporters. These markups are also expressed as a percentage of the re-export value, and are shown in the second column of Table 2. It can be seen that the markups reported by the Hong Kong survey is less than that estimated in the interagency report. This is no coincidence, but reflects underlying differences in the methodology used to estimate the markup. To explain these differences, we use the example illustrated in Figure 1.

Consider a product that is shipped from China to Hong Kong, and from there is re-exported to the United States and other locations. Suppose that the unit-value of this item when it arrives in Hong Kong is $1.00. This unit-value is the average over *all units* sent to Hong Kong, regardless of their final destination. It should be stressed that the "overall" unit-value of this type is all that is available in the actual Hong Kong import data. Because imports are collected by source country, but *not* by eventual destination, it is impossible to distinguish the unit-value of imports destined for the U.S. from those destined for elsewhere. It is precisely this limitation of the Hong Kong data that makes estimation of the markup difficult. To illustrate this, suppose that the goods destined for the U.S. are of higher quality, and have a unit-value of

$1.10, while those destined for the rest of the world have a unit-value of $0.90: these unit-values are not observed in the Hong Kong data, however. Then to estimate the markup, one approach is to compare the "overall" unit-value of the Hong Kong imports from China ($1.00) with the unit-value of the Hong Kong re-exports from China to the U.S. ($1.50). This gives a markup of $0.50, or 33% when expressed relative to the re-export value of $1.50.

This calculation is labeled as Method A in Figure 1, and corresponds precisely to the calculation performed by the interagency Report, as shown in the first column of Table 2. That report computed the markup by comparing the "overall" unit-value of Hong Kong imports from China, to the unit-value of Hong Kong re-exports from China to the United States. We have made exactly the same calculation for a wider range of years, using the Hong Kong import and re-export data, and these results are reported in the third column of Table 2. We see that the markups range from 26.9% to 31.5% over 1988-1995.[7] It is evident that this method will *overstate* the "true" markup if the Hong Kong imports from China that are destined for the United States are, on average, priced higher than those destined for other markets. In that case, the "overall" unit-value of Hong Kong imports from China is too low, so the markup obtained is to too high. To correct for this overstatement, we can consider an alternative calculation of the markup, which is labeled as Method B in Figure 1.

Method B compares the "overall" unit-value of Hong Kong import from China ($1.00) with the "overall" unit-value of Hong Kong re-exports from China to the world ($1.30). Note that both the goods entering Hong Kong and those leaving can be destined for any final market,

[7] The formulas used to obtain the markups are described in the Appendix. In principle, the values we obtain for the markup using Method A should be identical to those obtained by the Interagency group in 1992 and 1993. It is evident from Table 2 that the actual values differ somewhat. This may be due to the fact that the Hong Kong data we worked with in those two years were organized by the 5-digit SITC, Revision 3 classification, whereas the Hong Kong data that the Interagency group worked with was organized by the 6-digit Harmonized System classification.

so in this sense, the calculation is consistent. If the goods re-exported to the rest of the world are priced lower than those going to the United States, then this method gives an estimate of the markup that is *less than* that from Method A. For the values in Figure 1, Method B give a markup of $0.30, or 23% when expressed relative to the re-export value of $1.30. It turns out that Method B corresponds to the question that the Hong Kong Census asked exporters in their survey: namely, what is the average markup on all goods imported from China and re-exported (to anywhere in the world)?[8] We have made this calculation using the Hong Kong data, resulting in the values shown in column four of Table 2. We find that Method B gives an estimated markup ranging from 19.6% to 23.4% over 1988-1995, which is less than that obtained from Method A in every year. Thus, the difference between the interagency estimates and those from the Hong Kong Census shows up equally well in our own estimates of the markups from Methods A and Method B.

This raises the question of whether it is possible to improve upon these approaches, and obtain another estimate of the markup, possibly lying in-between those from Methods A and B. To achieve this, we will have to rely on data beyond that of Hong Kong imports and re-exports since, as explained above, this data does not distinguish the Hong Kong imports from China that are destined for the United States from those that are destined for elsewhere. This means that the difference in prices of these imports, illustrated by $1.10 and $0.90 in Figure 1, cannot be measured from the Hong Kong data. In order to measure these prices, we rely instead on the Chinese export data from the General Customs Administration. Using that data, we can distinguish a unit-value for Chinese exports to Hong Kong, destined for the United States, from the unit-value for Chinese exports to Hong Kong that are destined for all other markets. It turns

[8] This information draws on communication between the Hong Kong Census and Statistics Department and the General Customs Administration, People's Republic of China.

out that the goods destined for the U.S. tend to have higher prices than those destined elsewhere, as illustrated in Figure 1. By merging the China export data with the Hong Kong import and re-export data, we are therefore able to make a more accurate calculation of the markup, indicated by Method C in Figure 1.

In Method C, we use the Chinese export data to measure the unit-value of goods exported to Hong Kong and destined for the U.S. ($1.10). This is compared to the unit-value of Hong-Kong re-exports from China to the U.S. ($1.50), giving a markup of $0.40 or 27% when expressed relative to the re-export value of $1.50. In the final column of Table 2, we report the results from a calculation of this type, using both the Chinese and Hong Kong trade data.[9] We see that Method C gives an estimate of the markup that varies between 22% and 28.7% over 1988-1995, and lies in between that obtained from Methods A and B in every year. Thus, we can treat Methods A and B as providing upper and lower-bounds, respectively, to the "true" markup, and view Method C as giving the preferred estimate. Our calculations have shown how the differences between the interagency report and the Hong Kong Census can reconciled, and improved upon, to obtain an estimate of the markup that lies in-between these two sources.

The same methods we have used above can be applied to measure the markup on Hong Kong re-exports to any other country. In Table 3 we report the results for re-exports from China to Germany, Japan, and the United Kingdom. In each case, we calculate the markups from methods A and C, since the results for method B – which gives the markup for re-exports from China to the entire world – do not depend on the country of destination. (The results for method B in Table 2 therefore are unaffected when the country of destination changes). It can be seen that the markups for re-exports to Germany are slightly larger than those for the United States, while the markups for Japan are larger still, and the markups to the United Kingdom are

somewhat smaller. Overall, the differences with the markups obtained for the United States are not that great, especially as compared to the year-to-year fluctuation in the estimated markups for any country.[10] Method C continues to give smaller estimates of the markup as compared to method A is virtually all cases, and it is our preferred estimate.

We note that the markup for re-exports to the U.S. estimated by Method C in Table 2 shows a broad decline over the 1988-94 period, going from 28 percent in 1988 to 25 percent in 1991, and then to 22 percent in 1994 (though increasing in 1995). This secular decline in markup is consistent with the competitive effects of more firms entering into the re-export industry over time. However, this is only a conjecture because the markup for re-exports to Germany, Japan, and the United Kingdom appears to be, respectively, trendless, increasing over time, and decreasing slightly over time. In work under progress, we are determining how much each of the movements of the national average markup could be attributable to movements in the markup of particular products (i.e. markup is unstable but composition of products is stable), and to changes in the composition of re-exports (i.e. composition of products is unstable but individual markup is stable).

Markup on Hong Kong Re-exports from the U.S. to China

We turn next to the issue of U.S. exports to China that pass through Hong Kong. While there are rather substantial markups on the re-exports from China to the U.S. (eastbound trade), existing studies have found smaller markups on the re-exports from the U.S. to China

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[9] This calculation is described in detail in the Appendix.

[10] The variation in the markups is greater as one considers Hong Kong re-exports from China to developed versus developing countries, such as the U.S. versus African nations. In that case, we find that the markups to Africa are negative in some cases, suggesting that the lowest-quality goods are sent there. A computer disk containing the markup calculations for all country pairs, and for various commodities, is under preparation and will be available from the authors.

(westbound trade). For example, the Hong Kong Census and Statistics Department finds from their survey that the markups on trade from the United States to China decline from 11.3% in 1990 to 5.7% in 1994. However, these figures actually refer to the Hong Kong re-export margin *on all trade with country of origin other than China.*[11] For example, these margins include goods shipped from Japan to the U.S. via Hong Kong, as well as from Japan or the United States to China, etc. Thus, these figures are not an accurate estimate of the Hong Kong markup on re-exports from just the United States to China.

The interagency report prepared by the U.S. Department of Commerce and the Chinese General Customs Administration does not present markups on Hong Kong re-exports from the U.S. to China in 1992 and 1993, but focuses instead on the differences in trade values reported by these countries due to shipments of aircraft, and other factors. The reason why the interagency report omits the markups on westbound trade is because when they are computed according to the same method used for eastbound trade, *negative* markups are obtained. This is shown for various years in the first column of Table 4.

We see that from 1984-87 the markups are positive, but after that the markups become negative beginning in 1988. The more puzzling finding is that the post-1987 markups sometimes indicate a *reduction* in the re-export value, such as more than 100%, that is much too large to be believable.[12] While mark-downs in the value of particular goods must occur in some instances, it is doubtful that they occur across most goods frequently, and by over 100 percent three times in the 1984-95 period. Our assessment is that the very large mark-downs reflect measurement errors in the data. In particular, since the unit-value for each traded item is constructed by

[11] This information draws on communication between the Hong Kong Census and Statistics Department and the General Customs Administration, People's Republic of China.

dividing the value by the quantity, then any inaccuracy in the quantity (such as change in units when re-shipped) will result in measurement error in the unit-values.[13]

In fact, measurement error was already found when we consider the re-export from China to the U.S. (eastbound trade), in Table 2. As indicated there, several of the markup estimates were made while omitting some outlying observations (i.e. particular SITC or harmonized system categories). A good example is the markup for 1994, using method A. When all the harmonized system categories are included, the markup obtained is 19.4%, as compared to 29.3% (reported in Table 2) after several observations are omitted. The difference between these two estimates is almost entirely explained by a single harmonized system category – HS 26090000, which is *tin ores and concentrates.* Evidence that its quantity is incorrectly measured in re-exports comes from the fact that the *re-export* quantity is 617 times greater than the quantity that Hong Kong *imported* from China in 1994! This almost surely reflects measurement error in the data, and when this single observation is omitted, the estimated markup becomes much closer to that obtained in surrounding years.

Whenever the re-export quantity is greater than the import quantity, we shall interpret this as evidence of measurement error, such as different units in measuring quantities. We compute the ratio QRATIO=(quantity re-exported through Hong Kong)/(quantity imported into Hong Kong) to alert us to the measurement problem. The storage of commodities would make the re-export quantity greater than the import quantity, so some values of QATIO greater than unity might still be acceptable. We therefore consider two criterion for eliminating outliers: first, omitting all harmonized system categories for which QRATIO>2; and, second, omitting all

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[12] Recall that the markups are measured relative to the re-export value, so if the re-export value is one-half of the import value, then the markup is –100 percent. If the re-export value is even lower, then the markup exceeds 100 percent in absolute value, which is labeled <-100 in Table 4.

harmonized system categories for which QRATIO>1. The second criterion is stricter than the first, in the sense that more observations are omitted. (The actual number of observation deleted is reported in the Appendix, Tables A1 and A2).

The results for the Hong Kong re-exports from the United States to China are shown in Table 4. When the observations with QRATIO>2 are omitted, the extremely large and negative markups are eliminated, and most of the negative values occurring after 1988 are quite small. When the additional observations with QRATIO>1 are omitted, then the negative markups are eliminated almost entirely, except for 1994 and 1995. Based on this evidence, we conclude that more realistic markups are obtained when the outlying observations (as identified by QRATIO) are omitted. Generally, excluding these observation *raises* the markup. This follows because the observation with high values of QRATIO will necessarily have a low value for the markups on re-exports, so that excluding these erroneous observations will raise the overall markup.

Hence, our preferred value for the markups are those shown in the last columns of Table 4 (omitting all observations with QRATIO>1). In the Appendix, we also report the markups obtained on eastbound trade when outlying observation are excluded. These are generally higher than those reported in Table 2, indicating that even our preferred estimates in Table 2 (i.e. method C), may be an underestimate of the "true" markup.

The final columns of Table 4 indicate a decline in the markup over time. This decline could be partly due to more competition among traders in the re-sale of goods to China, and partly to due to exchange rate movements during this period. In particular, there is a very large fall in the markup from 20 percent in 1987 to 8 percent in 1988, which occurs simultaneously with an large percent depreciation of the Chinese Yuan against the U.S. dollar. This is illustrated

[13] For example, while U.S. trade is generally reported in "billions" or "millions", Chinese trade is generally reported in "yi" or "wan" which are, respectively, "hundred millions" and "ten thousands".

in Figure 2, where we plot the markups from Methods A and B (from Table 5, deleting observation with QRATIO>1) and the exchange rate between the Chinese yuan and the U.S. dollar.[14] If many Hong Kong companies had signed yuan-denominated contracts in 1987 to deliver U.S.-made goods to China, then the large unexpected depreciation of the yuan against the U.S. dollar would naturally reduce the markup on re-exports. While contracts may explain the 1987-88 drop in the markup, it is surprising that the fall in the markup has apparently been permanent.

Revised Values for U.S.-China Trade Deficit

We can now use the estimated markups for goods shipped through Hong Kong to revise and reconcile the differing values for U.S.-China trade. The key principle is that the value-added on goods as they pass through Hong Kong should be attributed to Hong Kong, rather than treated as an export of some other country. This value-added is computed as the Hong Kong markup times the re-export value of the goods as they leave Hong Kong. Thus, for eastbound trade in part A of Table 5, the first column shows the value-added on Hong Kong re-exports of Chinese goods to the United States. This is obtained by using the Hong Kong value for these re-exports, multiplied by the markups obtained by method C in Table 2. In 1995, for example, the Hong Kong re-exported $27.5 billion in goods from China to the U.S. (Table 1A, column 5), of which we attribute $7 billion as the value-added in Hong Kong (Table 5A, column 1).

This value-added in Hong Kong should be deducted from the value that the United States reports as imports from China, which was $45.5 billion in 1995 (Table 1A, column 1), to obtain the *revised* value of U.S. imports of $38.3 billion (Table 5A, column 2). This revised figure

[14] China had multiple exchange rates off and on, and the rate we are using is from the IMF and it is a weighted average of the multiple rates. During the period of our analysis, the exchange rate between the

therefore corrects for the policy of the U.S. Department of Commerce to attribute the value of all Chinese goods passing through Hong Kong en route to the United States as Chinese exports, thereby ignoring the value-added in Hong Kong. The value for Chinese exports to the U.S. also needs to be adjusted, to reflect the fact that many of these exports are simply not recorded. Instead of using the Chinese value for the exports to the United States via Hong Kong (Table 1A, column 4), we instead use the value reported by Hong Kong for Chinese re-exports to the U.S. Kong (Table 1A, column 5), *less* the value-added onto these goods in Hong Kong. This calculation yields the revised figure for Chinese exports to the United States of $30.8 billion in 1995 (Table 5A, column 3).

The discrepancy between the revised U.S. imports from China and the Chinese exports to the U.S. is now $7.5 billion. A small amount of this discrepancy reflects factors such as: differences in the geographic territories considered by the two countries (the U.S. includes Puerto Rico and the U.S. Virgin Islands as part of its customs territories, whereas China does not); the U.S. includes the value of repairs as imports whereas China does not include these as exports; and other factors identified in the interagency report. While the discrepancy is still sizable, it is much less than the original discrepancy of $20.3 in the reported value from each country. Thus, by properly attributed the value-added to Hong Kong, we have reduced to discrepancy in the U.S. and Chinese values for eastbound trade to about one-third of its original magnitude.

Revised values for westbound trade are considered in part B of Table 5. The Hong Kong value-added shown in the first column is computed using the simple average of the markups

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Hong Kong dollar and the U.S. dollar ranged between 7.7 and 7.8 HK$ per US$.

obtained from methods A and B in Table 4 (with QRATIO>1).[15] Because these markups are all rather small, the precise figures which are used has little influence on the results. The revised value of U.S. exports shown in the second column is obtained from the published value of U.S. exports (Table 1B, column 1), and adding the value reported by Hong Kong for U.S. re-exports to the China (Table 1B, column 5), *less* the value-added onto these goods in Hong Kong. In 1995, this results in U.S. exports to China of $16.7 billion, as compared to the reported value of $11.8 billion. Taking the difference between these exports and the revised value of U.S. imports from China in 1995, we obtain the trade deficit of $21.6 billion in 1995 (shown in part C of Table). This compares with a deficit of $33.8 billion using the published U.S. figure for 1995, so that our revised estimate is about two-thirds of its original value.

Turning to the Chinese data, the published import data from the U.S. is recorded on a c.i.f. (cost including freight) basis, whereas the U.S. export are recorded as f.a.s. (free along side), which does not include any transportation charges. In order to make these comparable, we multiply the original Chinese imports by 0.94, which offsets the inclusion of transportation charges. The revised value for Chinese imports from the U.S. is $15.2 billion in 1995 (Table 5B, column 3). Taking the difference with the revised value for U.S. exports to China we obtain a discrepancy of –$1.6 billion, with the U.S. exports being higher. This compares to a discrepancy of $4.4 billion in the published figures, with the U.S. exports being less than Chinese imports. Thus, the discrepancy is reduced to about one-third of its original magnitude.

Much of remaining difference on westbound trade reflects the treatment of aircraft exports to China, as well as car exports. The Chinese Customs authorities treat aircraft exports from the U.S. as a lease, and count only the value of the lease that year, whereas the United

[15] When the average markup was negative in 1994 and 1995, we assumed zero markup for these two years, i.e. we attributed no value-added to Hong Kong.

States counts the entire value of the aircraft as an export.[16] In addition, cars brought into China by foreigners for personal use are not included in published trade statistics, whereas the U.S. would include these as exports, which also helps to explain why the revised U.S. exports are higher.[17]

Taking the difference between the revised value of Chinese imports and exports with the U.S., we obtain another estimate of the U.S.-China trade deficit shown in the second column of Table 5, part C: the revised Chinese numbers give a deficit of $15.6 billion in 1995, as compared to $21.6 billion from the revised U.S. figures. These differ by $5 billion, while the original data had a difference of $25.2 billion for 1995 in the trade deficits reported in Table 1, part C. Figure 3 graphs the two official estimates and our revised estimates. Thus, proper attribution of trade flows through Hong Kong has therefore tremendously reduced the discrepancy in the U.S. and Chinese values of the trade deficit, to *one-fifth* of its original size. It is hoped that these calculations will prove useful to official statistical agencies in both countries, so that the trade figures reported by each will be in closer correspondence, and can therefore contribute to improved understanding of the bilateral trade situation.

2. Explaining the Bilateral Trade Deficit

We begin by laying out the determination of the *overall* current account (CA) position, within which the *overall* trade balance is the most important component. Broadly speaking, the primary determinants of the overall trade balance are macroeconomic and structural in nature,

[16] The interagency report estimates that the Chinese imports of aircraft would need to be increased by $785 million in 1992 and $1,089 million in 1993 to be consistent with the U.S. treatment of aircraft.
[17] The interagency report estimates that the Chinese imports of cars would need to be increased by $199 million in 1993 to be consistent with the U.S. treatment of cars.

and they work through saving and investment behavior.[18] This can be seen from the following decomposition:

$$CA = (S - I)^{private} + (S - I)^{SOE} + (S - I)^{govt}$$

So, for a given pegged value of the exchange rate, contractionary fiscal policy increases CA directly by increasing $(S - I)^{govt}$; and contractionary monetary policy increases CA by decreasing the investment spending of private and state-owned enterprises (SOEs).

Any structural factor that increases $S^{private}$ without increasing $I^{private}$ correspondingly would raise CA. This is the situation in China after the initiation of economic deregulation in 1978. Past central planning, closure to international trade, and promotion of local self-sufficiency created many highly profitable production niches and arbitrage possibilities, but private businesses cannot undertake the required investment immediately because they cannot get loans either from the wholly state-owned banking monopoly or from off-shore foreign financial institutions. Because the state banks do not channel much of the private savings to private investors, the only way that a private Chinese businessman can invest is to accumulate enough savings to start his own workshop-factory. This is a feasible option because the threshold size for the average Chinese enterprise is small. In an economy that is open to trade but closed to private capital movements, the failure of the domestic banks to match the available private saving flow with desired private investment creates the twin phenomena of a high private saving rate, and a persistent CA surplus.[19]

Investment-motivated saving is only one of the important factors behind China's high household saving rate. Two other important factors are the low coverage of social insurance

[18] Sachs (1982) and Sheffrin and Woo (1990).

programs, and the demographic profile of the population. The absence of pensions and medical insurance for most of the population necessitates a higher saving rate to prepare for retirement, and health emergency. A large proportion of China's labor force is now in the phase of the life-cycle to begin saving seriously in anticipation for retirement. The state policy of keeping the size of family small has reduced the number of dependent children, enabling the parents to save more.

An appreciation of the exchange rate should reduce CA by lowering the private saving rate because the rise in the purchasing power of domestic wealth would reduce the amount needed to be saved in order to make the required purchase. Investment spending could also increase because the decline in the price of imported capital goods would allow more investment projects to be implemented sooner.

The ability of import liberalization to reduce a CA surplus requires that: (a) it can to generate the same wealth effects as an appreciation of the currency; and/or (b) the resulting investment boom in the export sector and nontraded goods sector be greater than the collapse in investment in the import-competing sector[20]; and/or (c) saving to decline substantially because of previous intertemporal substitution, where consumers, in the past, had expected an eventual decline in the prices of imports, and postponed their consumption. The import liberalization would hence release the pent-up demand for imports.

The uncertainty over the efficacy of import liberalization to change the overall trade balance significantly in a sustained way can also be seen in terms of sectoral production. Import

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[19] Liu and Woo (1994) formalizes the above analysis within a life-cycle model, and presents empirical evidence that show that, ceteris paribus, a higher level of financial market sophistication generates a lower private saving rate.

[20] If import liberalization is accompanied by capital account liberalization that would end the immediate financing of new investments, then the rise in investment spending and the drop in savings would cause CA to decrease.

liberalization would reduce the importable sector, and increase imports; but the resulting flow of scarce resources (particularly capital) into the exportable sector would increase exports, and the final result may be an unchanged overall trade balance, particularly if the level of aggregate demand is kept constant.[21]

The US-China Bilateral Trade Deficit

Table 6 shows that the bilateral trade balance swung from a surplus of $3 billion in 1980 to a deficit of $40 billion in 1996. This reversal of the bilateral trade balance is in line with the opposite movements in the overall trade balance of the two countries.

The US overall trade deficit increased from $23 billion in 1980 to $170 billion in 1996, or, equivalently, from 0.8 percent of GDP to 2.2 percent of GDP. In this period, the private saving rate fell as personal consumption increased from 63 percent of GDP to 68 percent of GDP. It is hence quite natural that of the 25 largest US trade partners, 18 of them ran surpluses in their trade with the US in 1996 compared to only 8 countries in 1980.

Just as US saving-investment behavior was widening the US overall trade deficit, macroeconomic forces within China were reducing China's overall trade deficit. China's consolidated budget deficit (formal government budget deficit plus central bank financing of SOE losses) amounted to about 6 percent of GDP for the last two years, which is down from the 8 percent of the previous three years. Monetary policy has also been tight. It is hence not surprising that China's overall trade balance has gone from a deficit of $11 billion in 1993 to a

[21] It must be pointed out however, that import liberalization can change a particular bilateral trade balance drastically even though the overall trade balance is relatively unchanged. This would certainly be true in the case of selective liberalization, where there would be a reconfiguration of bilateral trade deficits within the same overall trade deficit.

surplus of $20 billion in 1996, where were –2 percent of GDP and 2 percent of GDP respectively.[22]

Hence lies the first important determinant of the bilateral trade balance: the opposite movements of macroeconomic forces in the two countries, reinforced by demographic trends and by China's reforms. To a first approximation, the widening bilateral trade deficit reflected the saving slow down in the US (that has been pulling in foreign resources to finance capital formation) and the surge in investment-motivated saving in China (that was necessary to compensate for the low level of financial intermediation available to the increasingly liberalized non-state sector).

Table 6 also shows the second important determinant of the US-China bilateral trade balance: the shifting of some of the production of US imports from other countries to China. The result is that a large part of the bilateral trade deficits that the US had with the newly-industrialised countries of Hong Kong, Singapore, South Korea and Taiwan (NIC-4) in the 1980s was transferred to US-China bilateral trade in the 1990s.[23] (The most massive relocation of production to China is the case of Hong Kong. US-Hong Kong bilateral trade balance went from a deficit of $2 billion in 1980 to a surplus of $4 billion in 1996.)

It is difficult to say that Southeast Asia's share of the US market has been reduced by the emergence of China as a trading state. While Malaysia, Indonesia, Philippines and Thailand (the ASEAN-4) have seen their collective share of US overall trade deficit falling from 19 percent in

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[22] The tight money policy also caused the capital account in 1996 to be in surplus because it forced many SOEs to remit their unreported export earnings home for working capital.

[23] The extent of this relocation of production to China is sensitive to the time period. For example, NIC-4 accounted for 23 percent of the overall US trade deficit in 1988 and 4 percent in 1996, while China's share of the US overall trade deficit grew from 2.6 percent in 1988 to 23.2 percent in 1996 – a drop of 19 percentage points, and a gain of 21 percentage points respectively. But, much less correspondence is seen if the 1985-96 period is considered instead: a "mere" 13 percentage point drop in the NIC-4's share of the US overall trade deficit compared with the 23 percentage point rise in China's share.

1980 to 12 percent in 1996, it is important to note that ASEAN-4's share rose throughout 1985-96 subperiod when China really began serious integration into the global economy.

Table 7 confirms the view that the developments in US-China bilateral trade deficit over the last decade mirrored opposite developments in US trade with NIC-4. NIC-4's share of US imports dropped 4.0 percentage points over the 1988-96 period, while China's share rose 4.6 percentage points in the same period. The point that China's penetration of the US market has come largely at the expense of its industrialised Asian neighbors is vividly seen in Table 8 which reports the top 5 suppliers by selected commodities in US imports.[24] By 1995, China has displaced South Korea as one of the top 5 suppliers of "apparel and other textile products" and "leather and leather products"; displaced Japan as a top 5 supplier of "household appliances" and "other manufacturing"; and displaced Taiwan as a top 5 supplier of "miscellaneous plastic products," "other paper and allied products," and "stone, clay, concrete and gypsum"; and displaced Indonesia as a top 5 supplier of "lumber, wood, and furniture."

Concluding Remarks

We found that proper adjustment for value added in Hong Kong on China's exports going to the US reduced (on the average) 91 percent of the discrepancy between the official US and official China estimates of the US-China bilateral trade balance. Our revised estimates for the US data reduced the official US estimate of the bilateral trade deficit by a third on the average. The same adjustments on the official Chinese estimates of the US-China bilateral trade balance

[24] The data in Table 8 is drawn from the Statistics Canada World Trade Database, which incorrectly attributes a good deal of Chinese trade to Hong Kong (i.e. it relies on Chinese official trade data, which understates its exports to the U.S. and other countries). Therefore, the Chinese share of these markets in the United States is even larger than reported in Table 8.

converted the surpluses of 1988-92 to deficits, and magnified the deficits of 1993-95 by a factor of two.

The increase in the bilateral trade deficits in the 1990s reflects the stance of macroeconomic policies and structural conditions in both countries. The United States had an investment boom that was sucking in foreign funds from high-saving countries like China. If the post-1978 surge in investment-motivated saving in China is responsible for some of the rise in the household saving rate, then the provision of more financial intermediation to facilitate investment by the non-state sector will help to reduce China's overall trade surplus, and attenuate the wrong image of China as a mercantilist state. As the Chinese financial system is relatively backward compared to that of the United States, the granting of permission to more US financial institutions to operate in China will not only improve financial intermediation but will also provide a learning opportunity for Chinese financial institutions.

Increased trade benefits both countries, and the rest of the world. It is therefore important for the future growth of the world trading system that agreement be reached soon on the conditions of China's accession into WTO.

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Table 1: US-China Bilateral Trade Deficit (1988-1996)

(A) Eastbound trade (China Exports and US Imports), in Million US$					
	(1)	(2)	(3)	(4)	(5)
Year	**US**	**China Published Exports to US**			**Hong Kong**
	Imports	**Total**	*Direct Exports*	*via Hong Kong*	**Re-exports**
1988	8511	3382	2676	705	5589
1989	11988	4410	3369	1041	8517
1990	15237	5179	3813	1367	10534
1991	18969	6159	4372	1786	13413
1992	25728	8594	5555	3039	18058
1993	31540	16965	6212	10753	21716
1994	38787	21461	7986	13476	25258
1995	45543	24713	10455	14259	27548
1996	51513	26683	14230	12453	Na

(B) Westbound trade (US Exports and China Imports), in Million US$					
	(1)	(2)	(3)	(4)	(5)
Year	**US**	**China Published Imports from the US**			**Hong Kong**
	Exports	**Total**	*Direct Imports*	*via Hong Kong*	**Re-exports**
1988	5010	6668	4130	2538	1237
1989	5755	7863	5329	2534	1324
1990	4806	6588	4229	2359	1327
1991	6278	8008	5279	2729	1716
1992	7418	8901	5699	3202	2346
1993	8763	10687	6401	4287	3174
1994	9282	13894	9690	4204	3697
1995	11754	16118	11245	4873	4972
1996	11993	16155	11602	4553	Na

(C) Trade Balance Between US and China, in Million US$		
Year	**US Data**	**China Data**
1988	-3501	3286
1989	-6233	3453
1990	-10431	1409
1991	-12691	1849
1992	-18310	307
1993	-22777	-6278
1994	-29505	-7567
1995	-33789	-8595
1996	-39520	-10528

Notes to Table 1:

Na = not available.

Direct exports from China and direct imports from China also includes a small amount of goods traveling via countries other than Hong Kong.

Sources:

U.S. imports and exports from *U.S. Foreign Trade Highlights, 1996,* U.S. Department of Commerce, International Trade Administration, Office of Trade and Economic Analysis, August 1997, Tables 6 and 7.

China imports and exports computed from disaggregate electronic data provided by the Customs General Administration, People's Republic of China.

Hong Kong re-exports computed from disaggregate electronic data provided by the Hong Kong Census and Statistics Office.

Table 2: Markups in Hong Kong Re-Exports From China to the United States

Year	Interagency Report	Hong Kong Census	Method A	Method B	Method C
1988			30.6	23.1 *	28.0
1989			31.5	23.4	28.7
1990		17.4	31.3	22.9	28.1
1991		20.5	28.6	23.2	25.1
1992	28.9	22.9	29.5	22.3	24.2
1993	28.9	24.9	30.7	22.7	23.3
1994			29.3 *	19.6	22.0
1995			26.9	22.3	26.1
Average	28.9	21.4	29.8	22.4	25.7

* Estimated by omitting some outlying observations.

Sources:

Interagency report: Report of the Trade Statistics Subgroup, Trade and Investment Working Group, Joint Commission on Commerce and Trade, 1996. Also reported in: United States Department of Commerce News, "Comparison of the 1992-1993 Merchandise trade Statistics of the United States and the People's Republic of China," released April 29, 1996; available from, http://www.census.gov:80/foreign-trade/reconcile/china.html.

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Methods A, B, C: Authors' calculations.

Table 3: Markups in Hong Kong Re-Exports From China to other Industrial Countries

Year	To Germany		To Japan		To the U.K.	
	Method A	Method C	Method A	Method C	Method A	Method C
1988	30.3	29.2	29.6	27.9	26.0	25.8
1989	28.9	28.0	32.0	30.3	28.1	27.6
1990	25.0	22.8	34.6	33.1	26.4*	26.4*
1991	26.5	23.2	37.0	35.4	28.1	27.4
1992	33.4	28.8	35.3	28.7	26.0	24.3
1993	33.9	30.7	40.2	30.1	24.8	22.7
1994	31.8	30.7	39.5	35.0	25.8	26.9
1995	30.1	29.1	42.7	39.6	25.2	24.8
Average	30.0	27.8	36.4	32.5	26.3	25.6

* Estimated by omitted some outlying observations.

Note: Method B gives identical results to those in Table 2, since this method uses Hong Kong re-exports from China to all countries.

Source: Authors' calculations.

Table 4: Markups in Hong Kong Re-Exports

From the United States to China

Year	All observations		Delete QRATIO>2		Delete QRATIO>1	
	Method A	Method B	Method A	Method B	Method A	Method B
1984	3.7	-9.8	9.6	-1.1	11.7	-2.0
1985	12.9	5.7	17.4	9.7	21.0	10.8
1986	6.8	7.5	15.3	10.2	22.3	19.3
1987	13.9	3.3	18.2	14.5	21.4	20.2
1988	<-100	<-100	-0.2	8.2	-0.9	7.7
1989	-4.6	-2.1	0.0	2.2	4.9	7.7
1990	<-100	<-100	-1.0	-1.3	9.4	12.0
1991	-12.6	-10.8	-1.6	-3.5	5.1	0.7
1992	-7.7	-6.0	0.1	-1.2	3.6	5.2
1993	<-100	<-100	-1.9	-4.2	5.0	2.3
1994	-28.4	-22.9	-4.1	-5.0	-1.1	-2.6
1995	-15.3	-11.3	-7.5	-3.8	-2.2	0.6

Notes:

Method C is not computed because the markups from methods A and B are quite close. QRATIO equals the quantity of Hong Kong re-exports from the United States divided by total Hong Kong imports from the United States, for each SITC or harmonized system item. The items with QRATIO>2 or QRATIO>1 are deleted when computing the average markups in the columns labeled as such.

Source: Authors' calculations.

Table 5: Revised Values for US-China Bilateral Trade Deficit (1988-1996)

(A) Eastbound trade (China Exports and US Imports), in Million US$					
	(1)	(2)	(3)	(4)	(5)
Year	**HK Value Added**	**U.S. Imports**	**China Exports**	**Discrepancy *(revised)***	**Discrepancy *(original)***
1988	1562	6949	6703	246	5129
1989	2442	9546	9444	102	7578
1990	2961	12276	11386	890	10058
1991	3366	15603	14419	1184	12810
1992	4367	21361	19245	2115	17134
1993	5063	26477	22865	3612	14575
1994	5556	33231	27688	5543	17326
1995	7202	38341	30800	7540	20830

(B) Westbound trade (US Exports and China Imports), in Million US$					
	(1)	(2)	(3)	(4)	(5)
Year	**HK Value Added**	**U.S. Exports**	**China Imports**	**Discrepancy *(revised)***	**Discrepancy *(original)***
1988	42	6205	6226	63	1658
1989	83	6996	7308	395	2108
1990	142	5991	6051	202	1782
1991	50	7944	7478	-417	1730
1992	103	9660	8264	-1293	1483
1993	116	11821	9930	-1775	1924
1994	0	12979	13060	81	4612
1995	0	16726	15151	-1575	4364

(C) Trade Balance Between US and China, in Million US$		
Year	**US Data**	**China Data**
1988	-744	-477
1989	-2550	-2136
1990	-6285	-5335
1991	-7659	-6941
1992	-11700	-10982
1993	-14657	-12935
1994	-20252	-14628
1995	-21615	-15649

Notes to Table 5:

Part A:

Column (1) equals Table 1A, column (5) times the percentage markup from Table 2, method C.

Column (2) equals Table 1A, column (1) minus Table 5A, column (1).

Column (3) equals Table 1A, column (3)+(5) minus Table 5A, column (1).

Column (4) equals Table 5A, column (2) minus column (3).

Column (5) equals Table 1A, column (1) minus column (2).

Part B:

Column (1) equals Table 1B, column (5) times the percentage markup from Table 4, average of methods A and B (with QRATIO>1).

Column (2) equals Table 1B, column (1)+(5) minus Table 5B, column (1).

Column (3) equals Table 1B, column (2) multiplied by 0.94, minus Table 5B, column (1).

Column (4) equals Table 5B, column (3) minus column (2).

Column (5) equals Table 1B, column (2) minus column (1).

Part C:

Column (1) equals Table 5B, column (2) minus Table 5A, column (2).

Column (2) equals Table 5B, column (3) minus Table 5A, column (3).

Table 6: Bilateral Trade Balances With Biggest Exporters To The U.S., 1980-1994

	1980	1985	1988	1990	1994	1995	1996
TRADE BALANCE OF THE UNITED STATES (in US$ millions)							
U.S. OVERALL TRADE BALANCE	-23,350	-136,624	-129,117	-116,017	-175,998	-158,703	-170,214
US BILATERAL TRADE BALANCE WITH:							
JAPAN	-10,229	-46,639	-53,069	-42,696	-66,470	-59,136	-47,580
CHINA	2,710	-67	-3,409	-10,344	-29,395	-33,789	-39,520
CANADA	-6,901	-23,855	-14,768	-12,980	-25,110	-17,104	-21,683
MEXICO	2,384	-5,851	-2,764	-2,038	531	-15,809	-17,505
GERMANY	-1,219	-11,770	-13,275	-10,400	-13,385	-14,450	-15,450
TAIWAN	-2,660	-12,017	-13,111	-11,424	-10,345	-9,637	-11,447
ITALY	1,044	-5,198	-5,000	-4,935	-7,708	-7,486	-9,528
MALAYSIA	-1,274	-858	-1,644	-2,055	-7,273	-8,639	-9,283
VENEZUELA	-793	-3,351	-615	-6,112	-4,117	-5,124	-8,424
INDONESIA	-3,742	-3,774	-2,094	-1,461	-3,624	-4,075	-4,273
FRANCE	2,111	-3,526	-2,302	196	-3,575	-2,964	-4,190
THAILAND	269	-700	-1,554	-2,427	-5,652	-4,683	-4,147
SWEDEN	103	-2,271	-2,418	-1,640	-2,575	-3,176	-3,722
SINGAPORE	1,054	-902	-2,535	-2,187	-3,573	-3,228	-3,623
SAUDI ARABIA	-7,184	1,985	-2,015	-6,006	-1,875	-2,222	-3,156
INDIA	574	-654	-493	-786	-3,074	-2,430	-2,842
PHILIPPINES	249	-788	-847	-923	-1,961	-1,712	-2,019
ISRAEL	452	-312	-536	-415	-849	-88	-332
SWITZERLAND	737	-1,467	-1,283	-1,198	-1,299	-1,367	580
UNITED KINGDOM	2,554	-4,159	-497	2,307	226	1,927	1,984
BRAZIL	614	-4,486	-4,953	-2,886	-1,209	2,606	3,945
SOUTH KOREA	198	-4,320	-9,691	-4,263	-2,048	1,200	3,966
HONG KONG	-2,105	-5,778	-4,829	-3,319	506	3,940	4,101
BELGIUM-LUXEMBURG	4,496	1,301	2,638	5,306	3,807	6,552	5,794
NETHERLANDS	6,621	2,990	4,972	7,345	7,016	10,153	10,080
BILATERAL TRADE BALANCE AS PERCENT OF OVERALL TRADE BALANCE (in percent)							
JAPAN	43.8	34.1	41.1	36.8	37.8	37.3	28.0
CHINA	-11.6	0.0	2.6	8.9	16.7	21.3	23.2
CANADA	29.6	17.5	11.4	11.2	14.3	10.8	12.7
MEXICO	-10.2	4.3	2.1	1.8	-0.3	10.0	10.3
GERMANY	5.2	8.6	10.3	9.0	7.6	9.1	9.1
TAIWAN	11.4	8.8	10.2	9.8	5.9	6.1	6.7
ITALY	-4.5	3.8	3.9	4.3	4.4	4.7	5.6
MALAYSIA	5.5	0.6	1.3	1.8	4.1	5.4	5.5
VENEZUELA	3.4	2.5	0.5	5.3	2.3	3.2	4.9
INDONESIA	16.0	2.8	1.6	1.3	2.1	2.6	2.5
THAILAND	-1.2	0.5	1.2	2.1	3.2	3.0	2.4

SINGAPORE	-4.5	0.7	2.0	1.9	2.0	2.0	2.1
PHILIPPINES	-1.1	0.6	0.7	0.8	1.1	1.1	1.2
SOUTH KOREA	-0.8	3.2	7.5	3.7	1.2	-0.8	-2.3
HONG KONG	9.0	4.2	3.7	2.9	-0.3	-2.5	-2.4
OTHER TOP 25 TRADE PARTNERS	0.2	10.9	11.2	9.0	8.1	4.9	4.5
ASEAN-4	19.3	4.5	4.8	5.9	10.5	12.0	11.6
NIC-4	15.0	16.8	23.4	18.3	8.8	4.9	4.1
NIC-3	6.0	12.6	19.6	15.4	9.1	7.4	6.5
CHINA + HONG KONG	-2.6	4.3	6.4	11.8	16.4	18.8	20.8
Memo items (as percent of US GDP)							
US trade account balance	-0.84	-3.27	-2.56	-2.02	-2.54	-2.39	-2.50
US current account balance	0.08	-2.97	-2.54	-1.65	-2.14	-1.78	-1.94

Notes to Tables 6 and 7:

The list of countries was determined by the top suppliers of US imports in 1994.

ASEAN-4 refers to Indonesia, Malaysia, Philippines and Thailand collectively.

NIC-4 refers to the newly-industrialised countries Hong Kong, Singapore, South Korea and Taiwan collectively.

NIC-3 refers to the newly-industrialised countries Singapore, South Korea and Taiwan collectively.

Source for Tables 6 and 7:

U.S. Foreign Trade Highlights, U.S. Department of Commerce, International Trade Administration, Office of Trade and Economic Analysis, various years.

Table 7: Export and Imports Shares of Top U.S. Trading Partners

	1980	1985	1988	1990	1994	1995	1996
SHARE OF PURCHASES OF US EXPORTS (IN PERCENT)							
JAPAN	9.45	10.44	11.70	12.32	10.60	11.00	10.82
CHINA	1.73	1.83	1.62	1.28	1.90	2.01	1.92
CANADA	15.68	21.76	21.40	20.88	21.51	21.76	21.47
MEXICO	6.87	6.32	6.45	7.33	10.20	7.92	9.09
GERMANY	4.89	4.14	4.29	4.71	3.77	3.83	3.76
TAIWAN	1.93	2.10	3.77	2.97	3.37	3.30	2.95
ITALY	2.49	2.14	2.10	2.04	1.42	1.52	1.41
MALAYSIA	0.59	0.70	0.67	0.85	1.37	1.51	1.37
VENEZUELA	2.08	1.50	1.44	0.81	0.80	0.79	0.76
INDONESIA	0.64	0.37	0.34	0.50	0.58	0.57	0.64
THAILAND	0.50	0.35	0.53	0.76	0.96	1.14	1.15
SINGAPORE	1.36	1.61	1.76	2.03	2.43	2.62	2.67
PHILIPPINES	0.91	0.65	0.59	0.65	0.78	0.91	0.98
SOUTH KOREA	2.03	2.74	3.37	3.76	3.63	4.34	4.26
HONG KONG	1.18	1.26	1.74	1.62	2.10	2.43	2.23
OTHER TOP 25 TRADE PARTNERS	24.22	20.48	20.09	21.06	18.37	18.52	18.58
ASEAN-4	2.65	2.08	2.13	2.76	3.69	4.13	4.14
NIC-4	6.51	7.71	10.64	10.38	11.53	12.70	12.12
NIC-3	5.32	6.45	8.90	8.76	9.43	10.26	9.89
CHINA + HONG KONG	2.91	3.10	3.36	2.90	4.01	4.44	4.15
SHARE OF SUPPLIES OF US IMPORTS (IN PERCENT)							
JAPAN	12.79	19.86	20.39	18.11	17.87	16.61	14.48
CHINA	0.43	1.12	1.92	3.08	5.86	6.13	6.48
CANADA	17.03	20.05	18.46	18.59	19.57	19.42	19.60
MEXICO	5.21	5.51	5.17	6.01	7.39	8.35	9.34
GERMANY	4.92	5.92	6.06	5.72	4.80	4.96	4.90
TAIWAN	2.85	4.76	5.65	4.60	4.04	3.89	3.76
ITALY	1.81	2.80	2.62	2.56	2.22	2.20	2.30
MALAYSIA	1.07	0.67	0.85	1.06	2.11	2.35	2.24
VENEZUELA	2.21	1.88	1.15	1.86	1.21	1.31	1.66
INDONESIA	2.14	1.32	0.72	0.68	0.98	1.00	1.04
THAILAND	0.34	0.42	0.73	1.08	1.56	1.53	1.43
SINGAPORE	0.79	1.23	1.82	1.99	2.32	2.50	2.56
PHILIPPINES	0.72	0.62	0.61	0.68	0.87	0.94	1.03
SOUTH KOREA	1.75	2.91	4.59	3.74	2.97	3.25	2.85
HONG KONG	1.94	2.44	2.33	1.92	1.46	1.38	1.24
OTHER TOP 25 TRADE PARTNERS	17.25	15.42	15.73	15.63	13.97	13.36	13.58
ASEAN-4	4.27	3.03	2.91	3.51	5.51	5.82	5.73
NIC-4	7.34	11.35	14.40	12.25	10.80	11.02	10.41
NIC-3	5.39	8.90	12.07	10.33	9.34	9.64	9.17
CHINA + HONG KONG	2.38	3.57	4.25	5.00	7.33	7.51	7.72

Appendix: Calculation of Markups

The data used to compute the markups were the disaggregate Hong Kong import and re-export data, at the six-digit SITC (Rev. 2) level for 1988-1991, the five-digit SITC (Rev. 3) level for 1992-1993, and the eight-digit Harmonized System level for 1994-1995. In addition, we used the disaggregate Chinese export data at the five-digit SITC level for 1988-1991 and the six-digit Harmonized System level for 1992-1995. Initially, all markups were computed relative to the *import value* into Hong Kong. Let this markup be denoted by M_1. For the purposes of presentation in this paper, they have been re-expressed as relative to the *re-export value* from Hong Kong, which is denoted by M_2. The relationship between these two is simply $M_2=M_1/(1+M_1)$. In this appendix, we will discuss how the margin M_1 was computed.

Eastbound Trade (China to the United States via Hong Kong)

Let the unit-value of Hong Kong imports from China be denoted by $PM_i = VM_i/QM_i$, where VM_i is the value and QM_i is the quantity of imports, and i denotes the SITC or HS category. Let the unit-value of Hong Kong re-exports of Chinese goods to the United States be denoted by $PX_i=VX_i/QX_i$, where VX_i is the value and QX_i is the quantity of re-exports to the U.S. Then Method A compares PX_i and PM_i. The formula used to obtain the re-export markup aggregated over all SITC or HS is:

$$\text{Method A } M_1 = \frac{\sum_i PX_iQX_i - PM_iQX_i}{\sum_i PM_iQX_i} = \sum_i \left(\frac{PX_i}{PM_i} - 1\right)\left(\frac{PM_iQX_i}{\sum_j PM_jQX_j}\right). \qquad (1)$$

Table 8: China's Penetration Into US Markets Over Time (Shares Of Largest 5 Countries In US Imports of Each Product)

1980	SHARE	1985	SHARE	1990	SHARE	1993	SHARE	1995	SHARE
APPAREL AND OTHER TEXTILE PRODUCTS									
HK	22.42%	HK	20.37%	HK	21.54%	HK	20.32%	HK	16.55%
TAIWAN	16.40%	KOREA	14.26%	KOREA	13.05%	CHINA	10.51%	CHINA	9.11%
KOREA	14.20%	TAIWAN	13.42%	TAIWAN	9.78%	KOREA	8.15%	MEXICO	7.70%
JAPAN	6.82%	ITALY	5.78%	CHINA	5.71%	TAIWAN	7.40%	TAIWAN	6.02%
CHINA	4.69%	JAPAN	5.77%	ITALY	4.64%	MEXICO	4.51%	KOREA	5.40%
LEATHER AND LEATHER PRODUCTS									
TAIWAN	31.33%	TAIWAN	29.11%	KOREA	23.79%	HK	27.92%	HK	31.00%
KOREA	16.38%	KOREA	18.99%	HK	15.53%	CHINA	20.40%	CHINA	21.11%
ITALY	14.30%	ITALY	13.27%	TAIWAN	15.50%	BRAZIL	8.93%	ITALY	8.50%
BRAZIL	7.73%	BRAZIL	12.99%	ITALY	9.88%	KOREA	7.44%	BRAZIL	6.15%
SPAIN	4.71%	SPAIN	5.85%	BRAZIL	7.43%	ITALY	6.53%	INDONESIA	4.84%
OTHER PAPER AND ALLIED PRODUCTS									
CANADA	31.60%	CANADA	21.13%	CANADA	27.62%	MEXICO	29.33%	CANADA	42.05%
JAPAN	11.17%	MEXICO	17.75%	JAPAN	9.12%	CANADA	27.56%	MEXICO	16.29%
FRANCE	8.46%	TAIWAN	15.90%	MEXICO	8.44%	HK	7.33%	HK	9.15%
UK	7.23%	JAPAN	6.72%	HK	8.13%	JAPAN	6.92%	JAPAN	5.07%
KOREA	6.63%	KOREA	5.34%	TAIWAN	7.50%	TAIWAN	4.30%	CHINA	3.84%
MISCELLANEOUS PLASTIC PRODUCTS									
TAIWAN	35.09%	TAIWAN	31.77%	TAIWAN	24.49%	HK	14.65%	CANADA	17.04%
HK	10.41%	HK	9.17%	CANADA	18.09%	MEXICO	14.25%	HK	15.33%
JAPAN	9.05%	JAPAN	9.12%	HK	11.96%	CANADA	13.95%	CHINA	12.24%
CANADA	7.19%	CANADA	8.00%	JAPAN	7.04%	TAIWAN	13.11%	MEXICO	11.82%
GERMANY	5.98%	GERMANY	6.57%	GERMANY	6.03%	CHINA	9.12%	TAIWAN	9.25%
HOUSEHOLD APPLIANCES									
JAPAN	33.86%	JAPAN	31.27%	HK	21.13%	HK	18.44%	HK	19.65%
HK	19.20%	TAIWAN	16.21%	TAIWAN	16.46%	MEXICO	13.46%	MEXICO	15.05%
TAIWAN	9.84%	HK	14.03%	JAPAN	15.09%	JAPAN	12.99%	CHINA	11.85%
NETHERLANDS	7.15%	KOREA	8.36%	KOREA	10.27%	TAIWAN	10.55%	TAIWAN	8.07%
GERMANY	4.55%	NETHERLANDS	4.52%	GERMANY	6.12%	CHINA	9.88%	JAPAN	7.81%
LUMBER, WOOD, FURNITURE, ETC.									
CANADA	64.49%	CANADA	56.74%	CANADA	51.28%	CANADA	55.19%	CANADA	55.92%
TAIWAN	4.66%	TAIWAN	10.42%	TAIWAN	12.46%	TAIWAN	9.50%	TAIWAN	6.66%
PHILIPPINES	3.96%	ITALY	4.93%	ITALY	6.14%	MEXICO	6.12%	MEXICO	6.46%
KOREA	3.92%	INDONESIA	4.05%	INDONESIA	4.95%	INDONESIA	4.19%	ITALY	5.12%
YUGOSLAVIA	2.31%	DENMARK	3.13%	GERMANY	2.77%	ITALY	3.90%	CHINA	3.12%
STONE, CLAY, CONCRETE,GYPSUM, ETC.									
JAPAN	27.37%	JAPAN	21.11%	ITALY	16.11%	JAPAN	12.53%	CANADA	14.09%
CANADA	12.97%	CANADA	13.14%	JAPAN	15.32%	CANADA	12.29%	ITALY	12.03%
ITALY	11.67%	ITALY	13.07%	CANADA	12.42%	ITALY	12.01%	JAPAN	10.62%
UK	7.83%	TAIWAN	8.30%	TAIWAN	8.40%	MEXICO	7.98%	MEXICO	8.20%
TAIWAN	7.22%	MEXICO	5.79%	UK	5.61%	TAIWAN	6.77%	CHINA	7.73%
OTHER MANUFACTURING									
HK	13.68%	TAIWAN	13.51%	HK	19.43%	HK	22.41%	HK	23.45%
S. AFRICA	11.10%	HK	13.39%	TAIWAN	11.86%	CHINA	8.68%	CHINA	11.47%
TAIWAN	11.01%	JAPAN	11.33%	JAPAN	8.80%	TAIWAN	7.90%	ISRAEL	8.51%
UK	10.18%	ITALY	10.12%	ISRAEL	7.47%	ISRAEL	7.89%	TAIWAN	6.07%
BELGIUM	8.52%	ISRAEL	8.09%	ITALY	7.28%	ITALY	6.80%	BELGIUM	5.94%

Source: World Trade Database, Statistics Canada.

For Method B, the same formula is used, except that the unit-value of Hong Kong re-exports to the United States PX_i is *replaced* by the unit-value of Hong Kong re-exports to the *world.*

For Method C, we make use of the Chinese export data. In particular, let PUS_i and QUS_i denote the unit-value and quantity of Chinese goods that are exported to the United States via Hong Kong, and let PHK_i and QHK_i denote the unit-value and quantity of all Chinese exports to Hong Kong within this SITC or HS category. Both these unit-values are obtained from the Chinese export data. On average, we tend to observe that the unit-value of the products exported to the United States via Hong Kong are *higher* than the overall unit-value of this product exported from China to Hong Kong.

We continue to let PM_i denote the unit-value and QM_i the quantity of Hong Kong imports from China, while PX_i denotes the unit-value and QX_i the quantity of Hong Kong re-exports from China to the U.S. These are obtained from the Hong Kong data. Then after merging the Chinese and Hong Kong two data sets, we can estimate the unit-value of Hong Kong imports from China that are destined for the U.S. as,

$$PM_i^* = \left(\frac{QUS_i}{QX_i}\right)\left(\frac{PUS_i}{PHK_i}\right)PM_i + \left(1-\frac{QUS_i}{QX_i}\right)PM_i. \qquad (2)$$

To interpret this formula, the term $(PUS_i/PHK_i)PM_i$ takes the unit-value of Hong Kong imports from China (PM_i), and increases it by the ratio of the Chinese unit-value of exports to Hong Kong destined for the United States, relative to the unit-value of total exports to Hong Kong (PUS_i/PHK_i). The latter ratio is computed from the Chinese data, which may be incomplete in its reporting of goods bound for Hong Kong. Because of this, we weighted the

first term by the ratio of the quantity of Chinese exports to Hong Kong destined for the United States (QUS_i) to the total Hong Kong re-exports from China to the U.S. (QX_i).[24] The final term in (2) reflects the remainder of the quantity weighting, and for these goods we simply use the unit-value of Hong Kong imports from China (PM_i) as the estimate of the unit-value for Hong Kong imports from China that are bound for the United States.

To conclude, the Method C margin is obtained as:

$$\text{Method C } M_1 = \frac{\sum_i PX_i QX_i - PM_i^* QX_i}{\sum_i PM_i^* QX_i} = \sum_i \left(\frac{PX_i}{PM_i^*} - 1 \right) \left(\frac{PM_i^* QX_i}{\sum_j PM_i^* QX_j} \right), \qquad (3)$$

where PX_i denotes the unit-value of Hong Kong re-exports from China to the United States.

In Appendix Table A2, we report the markups $M_2=M_1(1+M_1)$ obtained from these calculations, where N is the number of observations that were used in each case. The value of QRATIO equals the quantity of Hong Kong re-exports in each SITC or HS category, relative to the quantity of Hong Kong imports. Observing how N falls as observations with QRATIO>2 or QRATIO>1 are omitted shows how many observations have these outlying values.

The markups for Method A and Method B were initially done at the six-digit SITC level for 1988-1991, the five-digit SITC level for 1992-1993, and the eight-digit Harmonized System level for 1994-1995, using the Hong Kong data. The unit-value were then aggregated to five-digit SITC level for 1988-1991, and to the six-digit Harmonized System level for 1994-1995, so that they could be merged with the Chinese data. This aggregation did not affect the results for Methods A and B. The Chinese data used the five-digit SITC level for 1988-1991 and the six-

[24] If this ratio ever exceeded unity, then we replaced it with the value of unity.

digit Harmonized System level for 1992-1995, so that in 1993 and 1994 a concordance between the SITC and the HS had to be used. The number of observations N reported above are relative to the five-digit SITC level for 1988-1993, and the six-digit HS level for 1994-1995.

Westbound Trade (United States to China via Hong Kong)

Let the unit-value and quantity of Hong Kong imports from the U.S. be denoted by PM_i and QM_i, respectively, and let the unit-value and quantity of Hong Kong re-exports of U.S. goods to the China be denoted by PX_i and QX_i. Then formula (1) is used to obtain the re-export markup for Method A. For Method B, the same formula is used, except that the unit-value of Hong Kong re-exports from the U.S. to the China PX_i is *replaced* by the unit-value of Hong Kong re-exports from the U.S. to the *world.*

In Appendix Table A3, we report the markups $M_2=M_1(1+M_1)$ obtained from these calculations, where N is the number of observations that were used in each case. The markups for Method A and Method B were done at the six-digit SITC level for 1984-1993, and the ten-digit Harmonized System level for 1994-1995, using the Hong Kong data. In this case, Method C was not applied, so the Hong Kong data was not merged with the Chinese data.

Appendix Table A1:

Markups in Hong Kong Re-Exports From China to the United States

Method A

Year	All Observations		Omit QRATIO>2		Omit QRATIO>1	
	Markup	N	Markup	N	Markup	N
1988	30.6	615	31.0	591	33.3	521
1989	31.5	639	32.9	613	35.9	528
1990	31.3	635	31.7	607	34.2	510
1991	28.6	625	29.3	596	32.1	495
1992	29.5	847	30.9	789	37.3	576
1993	30.7	871	31.5	820	38.9	611
1994	23.8	1735	30.1	1646	34.0	1341
1995	27.4	1753	28.4	1667	31.3	1345

Method B

Year	All Observations		Omit QRATIO>2		Omit QRATIO>1	
	Markup	N	Markup	N	Markup	N
1988	9.0	1118	23.1	1055	24.3	955
1989	23.4	1131	24.6	1067	25.1	942
1990	22.9	1145	24.5	1087	24.7	940
1991	23.1	1132	24.5	1064	25.3	919
1992	22.3	1654	23.1	1514	24.6	1189
1993	22.7	1667	23.5	1514	27.0	1211
1994	21.3	2994	23.3	2788	25.2	2361
1995	22.5	2968	23.1	2781	24.4	2383

Method C

Year	All Observations		Omit QRATIO>2		Omit QRATIO>1	
	Markup	N	Markup	N	Markup	N
1988	28.0	615	28.4	591	29.5	521
1989	28.7	639	30.0	613	32.3	528
1990	28.1	635	28.6	607	30.7	510
1991	25.1	625	25.7	596	27.8	495
1992	24.2	847	25.5	789	30.1	576
1993	23.3	871	24.1	820	27.7	611
1994	22.0	1735	26.9	1646	31.5	1341
1995	26.1	1250	27.1	1198	29.4	953

Appendix Table A2:

Markups in Hong Kong Re-Exports From the United States to China

Method A

Year	keep all records		delete QRATIO>2		delete QRATIO>1	
	Markup	N	Markup	N	Markup	N
1984	3.7	820	9.6	756	11.7	694
1985	12.9	851	17.4	776	21.0	722
1986	6.8	899	15.3	826	22.3	752
1987	13.9	946	18.2	876	21.4	803
1988	-249900.0	1122	-0.2	1040	-0.9	931
1989	-4.6	1158	0.0	1049	4.9	938
1990	-166566.7	1162	-1.0	1020	9.4	905
1991	-12.6	1170	-1.6	1038	5.1	932
1992	-7.7	1216	0.1	1097	3.6	984
1993	-291.7	1328	-1.9	1197	5.0	1036
1994	-28.4	2114	-4.1	1877	-1.1	1633
1995	-15.33	2197	-7.49	1922	-2.2	1659

Method B

Year	keep all records		delete QRATIO>2		delete QRATIO>1	
	Markup	N	Markup	N	Markup	N
1984	-9.8	1162	-1.1	1067	-2.0	980
1985	5.7	1139	9.7	1036	10.8	962
1986	7.5	1156	10.2	1061	19.3	969
1987	3.3	1199	14.5	1098	20.2	1008
1988	-124900.0	1343	8.2	1244	7.7	1128
1989	-2.1	1394	2.2	1268	7.7	1145
1990	-66566.7	1411	-1.3	1247	12.0	1121
1991	-10.8	1395	-3.5	1247	0.7	1128
1992	-6.0	1350	-1.2	1217	5.2	1096
1993	-195.7	1447	-4.2	1301	2.3	1134
1994	-22.9	2355	-5.0	2091	-2.6	1823
1995	-11.31	2456	-3.8	2168	0.6	1892

Appendix Table A3:

China's Rank as an Exporter of Various Manufactured Goods to the U.S., 1975-95

	1975	1980	1985	1990	1991	1992	1993	1994	1995
NAME OF PRODUCT									
Grain, Mill and Bakery Products	39	43	49	12	10	25	13	20	16
Beverages	36	22	21	19	17	18	21	26	22
Tobacco Products	NA	41	NA	20	35	10	18	13	15
Other Food and Kindred products	51	35	37	11	15	11	13	12	9
Apparel and other Textile Products	16	5	6	4	4	4	2	2	2
Leather and Leather Products	34	18	15	6	5	3	2	2	2
Pulp, Paper, and Board Mills	43	26	29	34	31	26	21	22	27
Other Paper and Allied Products	27	19	33	27	22	16	7	5	5
Printing and Publishing	55	28	46	37	28	24	16	15	12
Drugs	15	13	11	10	10	10	11	10	12
Soaps Cleaners and Toilet Goods	28	23	34	22	22	18	17	16	15
Agricultural Chemicals	NA	NA	32	21	21	21	26	28	25
Industrial Chemicals and Synthetics	30	17	24	18	18	18	15	16	12
Other Chemicals	21	13	11	14	12	11	11	11	12
Rubber Products	46	37	36	35	29	20	14	13	9
Miscellaneous Plastic Products	26	21	21	15	12	7	5	4	3
Primary Metal Industries, Ferrous	40	56	45	28	25	23	19	24	15
Primary Metal Industries, Nonferrous	30	26	23	22	23	22	20	17	16
Fabricated Metal Products	10	18	14	11	8	7	6	6	6
Farm and Garden Machinery	36	27	25	26	22	22	20	15	18
Construction Mining ,etc.	NA	36	30	15	13	12	11	13	12
Computer and Office Equipment	61	53	90	25	22	18	14	12	12
Other Nonelectric Machinery	49	37	28	19	16	16	16	14	14
Household Appliances	60	35	26	13	11	9	5	3	3
Household Audio and Video, etc.	41	45	28	19	17	16	9	6	7
Electronic Components	50	36	46	26	25	24	21	18	18
Other Electrical Machinery	55	36	40	22	19	18	9	7	7
Motor Vehicles and Equipment	NA	53	35	16	16	20	15	14	14
Other Transportation Equipment	49	68	28	23	22	11	12	12	11
Lumber, Wood, Furniture, etc.	43	23	27	18	10	9	7	6	5
Glass Products	33	27	27	25	19	22	16	11	10
Stone, Clay, Concrete, Gypsum, etc.	24	14	21	13	11	10	10	5	5
Instruments and Apparatus	49	41	32	26	25	17	10	8	8
Other Manufacturing	26	16	17	15	14	10	2	2	2

Notes: Rank is based on China's share of US manufactured imports.

Source: World Trade Database, Statistics Canada.

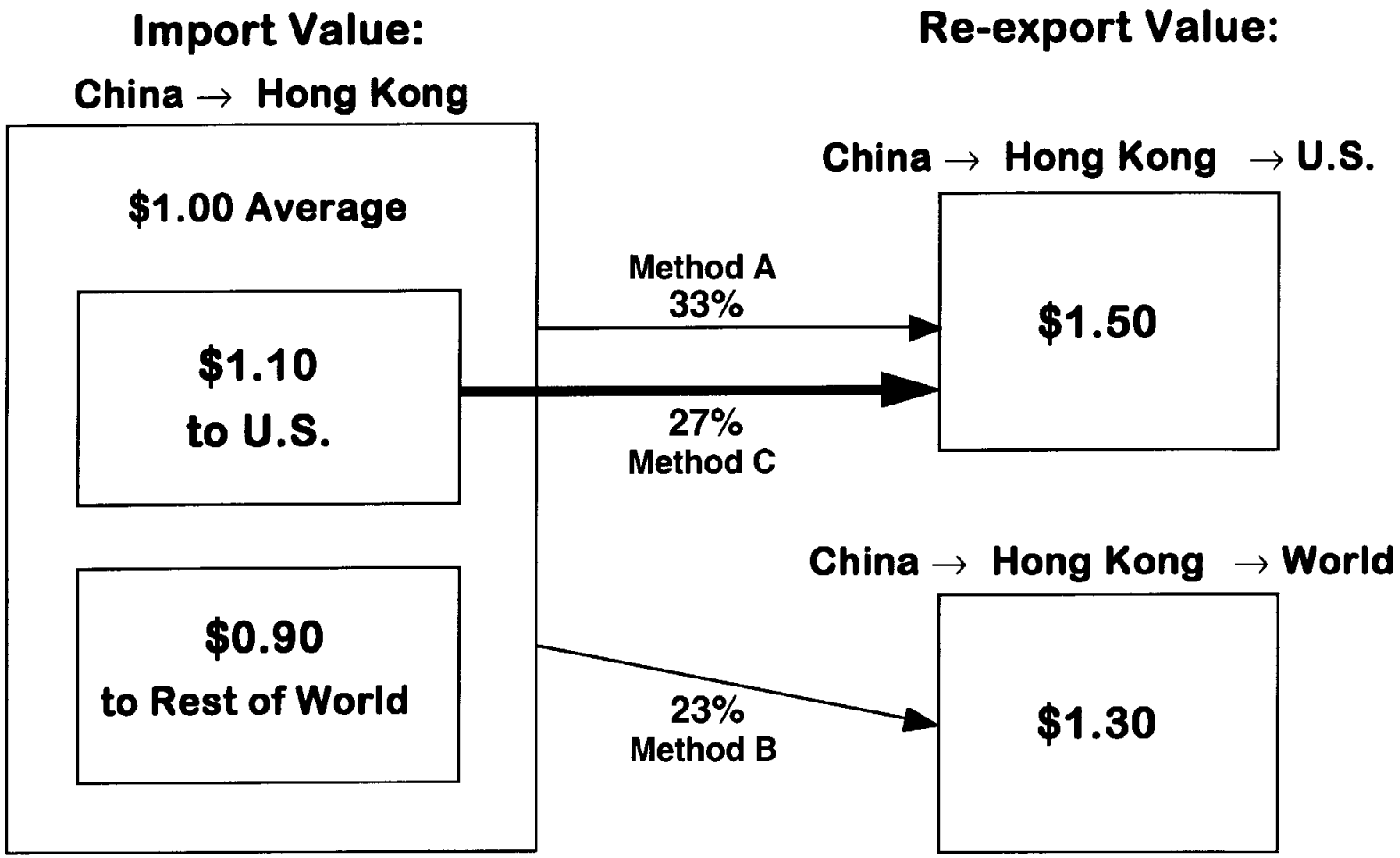

Figure 1: Estimating the Markup

Figure 2: Markups on U.S. to China Trade

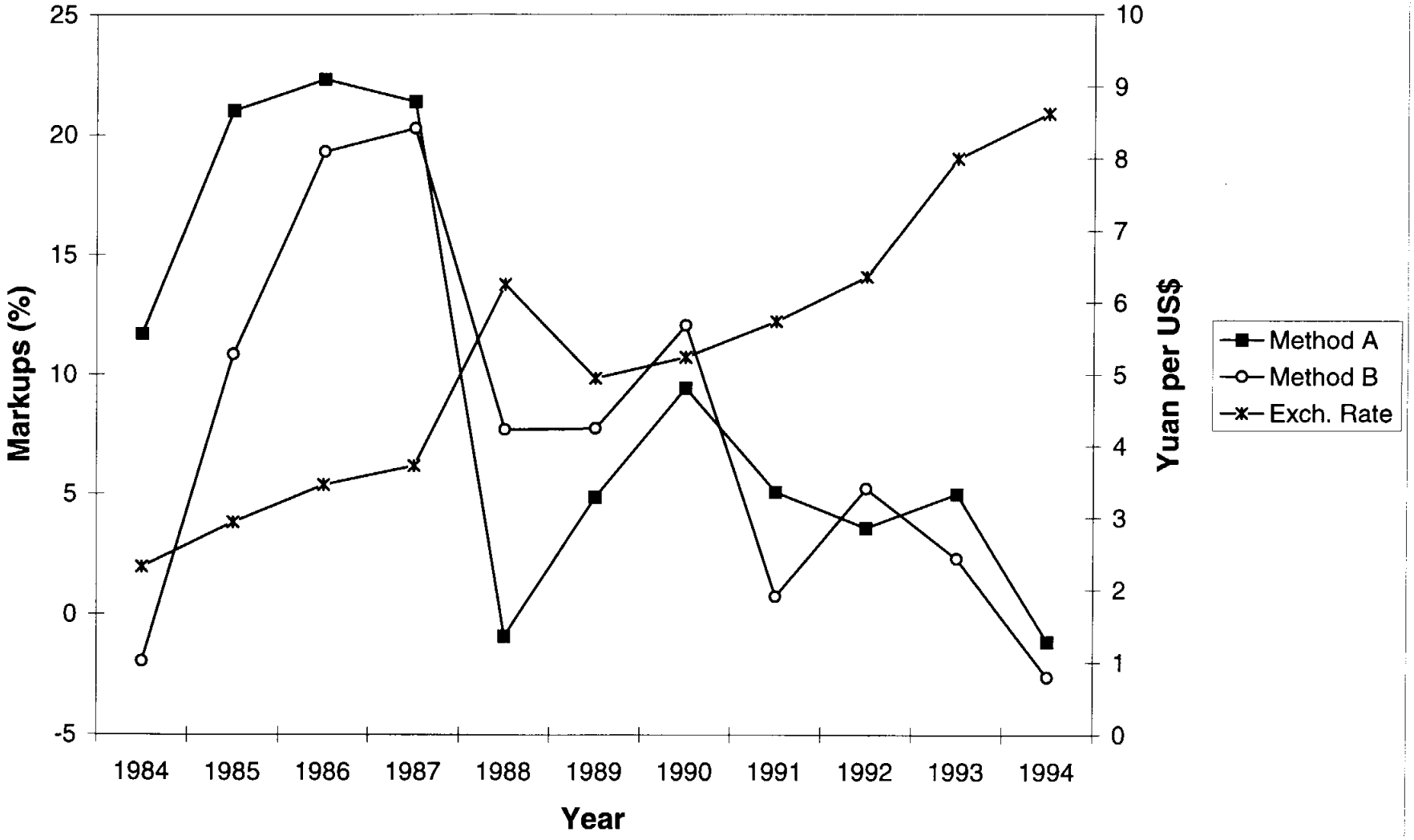

Figure 3: U.S.-China Bilateral Trade Deficit