11B

Estimating Hong Kong's re-export markups

Shunli Yao

11B.1 Introduction

Hong Kong is a regional financial center in East Asia, and also a center for international trade in the Pacific region. However, the understanding of Hong Kong's role as a trading center is made difficult by the lack of information on its re-export activities, especially the magnitude of its re-export markup. Although estimates of this re-export markup have been cited in various studies, they are all based on surveys or interviews with local business people. The table below gives a summary of the sources, the reported re-export markups, and the studies in which these numbers were cited.

These surveys and interviews, however, give only the aggregate markup estimates and no information is available on the country-specific (except China) and industry-specific estimates. They are based on the subjective evaluations of the local business people and we suspect they are under-estimated because of the tendency of the business people to under-report profit. Nevertheless, they serve as our prior knowledge about the possible range of the markups before we embark on the empirical estimation.

Recently, the Hong Kong government has made available its trade data classified at the level of 8-digit Harmonized System (HS) codes in the magnetic tape format for those years since 1992. The data has information on its import, export, re-export statistics and consignment countries. Compared to the previously used Standard International Trade Classification (SITC) codes, the commodity classification is more disaggregate, and the relatively accurate information on the import

and re-export price can be derived. Here we make the first attempt to estimate the re-export markup based on Hong Kong trade statistics.

Sources	Re-export markup	Cited in
1988 Survey by Hong Kong Trade and Development Council	16% for Chinese goods; 14% for non-Chinese goods	Sung 1991; Lardy 1994; Fung 1996; Fung and Lau 1996
1991 Survey by Hong Kong Trade and Development Council	16% for Chinese goods; 17% for non-Asian countries' goods	West 1995
Survey by Hong Kong Census and Statistics Department	13.4% for all re-export in 1990 and much higher for Chinese goods	Fung 1996
K. C. Fung's 1994 Interview	25% for Chinese goods	Fung 1996; Fung and Lau 1996
Report by Hong Kong Census and Statistical Department to GATT Informal Group of Experts on Export Statistics	13% in 1988; 25% in 1993	West 1995

11B.2 The data

We use 1994 Hong Kong annual trade statistics. It includes two files: Hong Kong's import and re-export files. In the import file, each observation has the variables for quantity of import, value of import in Hong Kong dollars, origin countries and 8-digit HS codes. In the re-export file, each observation has the variables of quantity for re-export, value of re-export in Hong Kong dollars, origin countries, destination countries and 8-digit HS codes. The re-export file has a total of 349,269 observations.

11B.3 Estimation procedures

Re-export markup: A first look

The markup is the difference between the import unit value and the re-export unit value for a commodity as a percentage of import unit value. Import unit value is equal to the value of import at 8-digit HS divided by quantity of import at 8-digit HS. Re-export unit value is equal to the value of re-export at 8-digit HS divided by quantity of re-export at 8-digit HS. Therefore, re-export markup = (re-export unit value - import unit value)/import unit value.

To have a brief idea of the re-export markup, with the 1994 data, we calculate the overall average markup, weighted with re-export value, which yields 2.3737576, or 237.4%[1]. Obviously, this is far too different from our prior knowledge of the markup, which is in the range between 13% to 25%. We identify two problems as potential sources for this abnormal value.

(1). *Re-export time lag.* Hong Kong's re-export activities usually involve some processing of the commodities, including packaging, sorting, grading and pre-shrinking The time the goods clear the customs as imports and the time they clear the customs as re-exports may not be in the same calendar year. In our calculation, some of the goods re-exported in 1994 may be imported in 1993. Thus, the import unit value calculated with 1993 import data should be used to estimate the re-export mark-up for this commodity. It is difficult to do so because Hong Kong trade statistics do not give the information on when the re-exports are initially imported. However, it does give the information on the quantity of the import and re-export for the same year. Thus, one indicator of the occurrence of the re-export time lag is that the re-export quantity is more than the import quantity.

(2). *Import retention.* Hong Kong's imports consist of two parts: imports for local consumption and imports for re-export. Obviously, these two groups of imports differ in quality and price. Although Hong Kong's 8-digit HS reporting is more detailed than the internationally accepted 6-digit HS reporting commonly used by many countries world wide, it may not be detailed enough to differentiate the retained imports and imports for re-export[2] and may classify them in the same 8-digit HS category. Thus, the import unit value obtained by dividing the value with quantity and used in above calculation of re-export markup, may not reflect the actual import price of those re-exported

---

[1] In this calculations, the observations with zero re-export or import quantity are excluded.

[2] Only the most advanced countries, including the US, use the most disaggregate 10-digit HS reporting. I thank Mark Gehlhar for helping me to understand the customs reporting levels.

goods. It is reasonable to believe that the higher the local retention rate is, the more likely the import unit value differ from the import price of the re-exported goods.

One way to measure both the re-export time lag and the retention rate is to look at the ratio between the re-export quantity and import quantity. If the ratio is bigger than one, surely there exists a time lag in re-export. If the ratio is close to zero, we suspect there is a high local retention of imported goods.

We now look at the distributions of the calculated re-exported markup over re-export quantity ratio.

The negative re-export markup: tables 11B.1 and 11B.2

Table 11B.1 reports the frequency distribution of the calculated re-export markups over five groups of quantity ratio (re-export quantity/import quantity), excluding the missing markups. The number of negative re-export markups account for 34.58% out of total 129,516 observations. Over five groups of quantity ratio -- (0,0.25], (0.25,0.5], (0.5 0.75], (0.75, 1] and >1-- the percentage of negative re-export markup within each group roughly positively correlated with the quantity ratio. In the case when the quantity ratio is greater than one, the observations with negative markups account for almost 70%. This suggests that the time lag of re-export may play a role in generating negative re-export markups, since the higher quantity ratio means a higher probability of time lag. When the quantity ratio is greater than 1, it is sure that there is re-export time lag. This pattern of correlation holds over to a more detailed breakdown of the quantity ratio group (table 11B.2).

To make economic sense, the first step of the correction is to delete those observations with negative re-export markups.

The extra-large re-export markup: tables 11B.3 and 11B.4

Refer to table 11B.3. First look at column [0,0.5), the normal range for re-export markup. The percentage of re-export markup in this range within each quantity ratio group positively correlates with the quantity ratio when the quantity ratio is in the range (0,1] and declines when the quantity ratio is greater than 1. This suggests that the high retention (low quantity ratio) of import for local use distorts the information on the unit value of the import. When the quantity ratio is greater than 1, however, the effect of re-export time lag dominates. That is, at lower quantity ratio, we have high import retention problem and at a high quantity ratio (>1), we have a re-export time lag problem. These two categories of quantity ratios is what we need to focus on for further correction.

Secondly, look at column '>=1', the likely problematic range. This column shows the negative correlation between the re-export markup and the quantity ratio: over the range of quantity ratio (0,1], the percentage of re-export ratio decreases when quantity ratio increases, and goes up beyond the point where quantity ratio =1. This suggests that the abnormal (>=1) re-export markup is largely caused by high import retention and re-export time lag.

For the less problematic range of re-export markup, (i.e. column '[0.5,1)' this has similar patterns with column '>=1'. For a detailed breakdown of the quantity ratio, the above patterns still hold (table 11B.4).

3.2 Remedy: tables 11B.5 - 11B.9

The above analysis suggests we delete all the observations with negative values of the markups, and those with overly-large positive values. To avoid upward or downward bias in the estimation, we need to find the cutting point to eliminate the observations with positive markups which has the same percentage of re-export values as those with negative markups within a group of re-export quantity ratio.

Table 11B.5 shows the percentage distribution of the re-export value by re-export markup and re-export quantity ratio. For those observations with a quantity ratio >1, more than half (57.2%) have the negative markups. Thus, these observations have to be totally deleted. The observations with a quantity ratio lying in (0.75,1] represent only 9.9% of the total re-export value and 2.36% of the total observations with non-missing re-export markups (table 11B.2). Within this group, the re-export values with negative re-export markups, however, account for almost half (42.3%) of the total re-export values for this group. Therefore, it is safe to assume that deleting all of them will not lead to either upward-biased or downward-biased estimation.

After deleting the observations with a quantity ratio >0.75, we examine those with re-export quantity ratios <=0.75. We divided them into three groups: (0,0.25], (0.25,0.5] and (0.5,0.75]. For the group (0, 0.25], table 11B.6 shows that those observations with markups >= 1.12 have approximately the same percentage (19.4%) of the re-export values as those with negative markups. The markup cutting point for this group of observations is thus set at 1.12, or 112%. Similarly, the cutting points for groups (0.25,0.5] and (0.5,0.75] are set at 0.565 and 0.245 respectively (tables 11B.7 and 11B.8).

The remedy procedures can be summarized by the following SAS program:

```
if ppct<0                                  then delete;
if qratio>0.75                             then delete;
if (qratio<=0.25 and ppct>=1.12)           then delete;
if (0.25<qratio<=0.5 and ppct>=0.565)      then delete;
if (0.5<qratio<=0.75 and ppct>=0.245)      then delete;
```

where *ppct* stands for the percentage re-export markup, and *qratio* stands for the re-export quantity ratio.

After the above procedures are implemented, we obtain a cleansed data set and call it the "seed". The frequency distribution of the re-export markups in the seed data set is given in table 11B.9. The weighted average of re-export markup in the seed data set is 0.3492590, or 34.93%.

For comparison, we have also tried other correction procedures, which produce the weighted average of re-export markups ranging from 33.46% to 36.77%.[3]

11B.4 Estimate the re-export markups

Estimate at 8-digit HS level

So far, we have calculated the re-export markup by deleting the negative and the positive *ppct* with equal re-export values. The observations in the resulting "seed" is only a subset of the 1994 re-export data set. That is, it covers only part of the commodities and countries with which re-export activities have actually occurred. For the remaining observations, we fill them in with the estimates of the closest possible groups of commodities and countries obtained solely from the "seed". The procedures for this " filling-in" process at 8-digit HS level are as follows.

First, after obtaining the "seed" data set, we calculate the average markup at 7-digit HS level, weighted with re-export values and keeping the same information on the origin and destination

---

[3]These alternative corrections are summarized by the following SAS programs:

(1) if ppct < 0 then delete;
if ppct > 10 then delete;
if (quantity ratio < 0.5 and ppct>1) then delete;
if (quantity ratio > 1 and ppct >1) then delete;
The weighted average of re-export markup = 0.3346006.

(2) if ppct < 0 then delete;
if ppct > 10 then delete;
if (quantity ratio < 0.25 and ppct>1) then delete;
if (quantity ratio > 1 and ppct >1) then delete;
The weighted average of re-export markup = 0.3676509.

(3) if ppct < 0 then delete;
if ppct > 10 then delete;
if (quantity ratio<0.5 and ppct>1 and (quantity ratio/ppct)<0.25) then delete;
if (quantity ratio > 1 and ppct >1) then delete;
The weighted average of re-export markup = 0.3493300.

country. The resulting weighted average markups are then filled into the deleted observations with the same 7-digit HS codes, origin and destination countries. This procedure is repeated until the weighted average of markups are achieved at 1-digit HS codes.

Then, we fill in the blanks with the weighted average of markups over *origin country* and *HS codes* at 8-digit level. The information on the destination countries is ignored. This procedure is repeated from 7 to 1-digit HS levels.

Next, we keep the information on the *destination countries* and the *HS codes*, and ignore the origin country information. The weighted average is done repeatedly over various levels of HS codes, from 8 to 1-digit.

Finally, the remaining blanks are filled in with the weighted average of markups over various level of *HS codes only*, from 8 to 1-digit, regardless of the information on origin or destination countries.

So far, all the 349,269 observations in original 1994 re-export data set have been filled in with estimated re-export markups. The final, weighted average of the estimated markups is 37.08%. We use this number, instead of the one obtained from the "seed" data set (34.93%), as the estimate of Hong Kong's overall re-export markup.

Estimate based on sector codes for Global Trade Analysis Project (GTAP)

Using the final estimated markup, and the concordance between the GTAP sector codes and 6-digit HS codes, we estimate the re-export markup on the basis of GTAP sector codes, and origin and destination countries. For each group of observations classified by the GTAP code, origin country and destination country, with at least one non-zero re-export value, we do the weighted average. For those groups within which all re-exports have zero value, we do the regular average. (See the glossary at the front of the document for a complete list of GTAP sectors).

11B.5 The estimated markups: A final look

Besides the overall weighted average of the markups, we are also interested in the sector and country-specific information on the estimated re-export markups. Ten countries are selected based on the re-export value of their goods. The top ten source countries with the highest re-export volumes are: China, Japan, Taiwan, USA , Korea, Singapore, Germany, Malaysia, UK, and France. As for the sector classification, we use the commodity grouping based on 2-digit HS codes suggested by Hong Kong Government (1992) (table 11B.10), as well as the GTAP sector codes.

The distribution by sector and country: tables 11B.11 - 11B.12

Distributions of the re-export markup by sector and origin country are listed in table 11B.11 (for HS commodity group) and table 11B.12 (for GTAP sector code). The tables report the re-export markup for each country and sector, and also give the overall re-export markup for each country (the last row) and the world overall re-export markup for each sector (the last column). It is shown that the overall re-export markup for goods originally from China is 44.31%. This is the highest among all the countries and it is well above the world average 37.08%. China is followed by France, 37.52%, and Malaysia, 37.22%. The re-export markup for the US goods, however, is 31.08%, which is considerably below the world average 37.08%.

The US-China trade: tables 11B.13 - 11B.16

The re-export markups for US-China trade are particularly interesting. US official statistics of its trade deficit with China are believed to be exaggerated by including the re-export markup earned by Hong Kong trading companies into its import statistics, and excluding the markup from its export statistics. This deficit is an important political issue, and any insight that can be shed on it is welcome. Tables 11B.13 and 11B.14 give the markup distribution for the US goods re-exported to China. Tables 11B.15 and 11B.16 give the markup distribution for the Chinese goods re-exported to the US. The tables show that the US goods re-exported to China have an average markup of 27.54%, below the US overall average of 31.08%. The Chinese goods re-exported to the US, however, have an average markup of 45.81%[4], somewhat above China's overall average of 44.31%.

There are several groups of US commodities re-exported to China with particularly high markups. The number 2 and 3 HS commodity groups (vegetable products, and animal and vegetable oils) have markups as high as 46.42% and 37.35% respectively, followed by groups 16 and 17 (machinery and transportation equipment) with 34.23% and 33.82% markups respectively. As for the Chinese goods re-exported to the US, group 13 (stone, plaster and ceramic articles) and group 20 (misc. manufactured goods, including toys) top the list with the highest markups, 74.64% and 73.24% respectively. The markups for animal oils and fats (group 3), mineral products (group 5)

[4] The numbers reported in tables 11B.15 and 11B.16 differ slightly, because the HS codes 271600 and 980100 do not have their matches in the GTAP sector codes. Therefore, the GTAP data set does not include commodities with these two HS codes, which account for total HK$8,236,241,477 imports (162 observations) and HK$2,932,764,639 re-exports (3577 observations).

and the plastics and rubber goods (group 7) are all above 50%. The distribution of markups by GTAP sector codes display the same patterns.

11B.6 Summary

This chapter makes the first attempt to estimate the Hong Kong re-export markups, using Hong Kong's re-export and import statistics. It identifies two problems which may distort the calculation by generating negative and overly-large markups: re-export time lag and the local retention of imports.

Procedures to correct the abnormal markups are applied and the estimation of the markups for the occurrences of all 1994 re-export activities is made. The estimation confirms the conclusion from previous surveys and interviews that Chinese goods bear higher re-export markups than non-Chinese goods. From table 11B.11, the estimated Hong Kong's overall re-export markup is 37.08%. The average markup for Chinese goods is 44.31%, the highest among the top ten source countries with the highest re-export volumes. Both figures are above the range of previously reported markups 15% -33.3%[5]. For the Chinese goods re-exported to the US, the markup is as high as 45.81% (table 11B.15), above its overall average of 44.31%. US goods re-exported to China, however, have a lower markup of 27.54% (table 11B.13), which lies below the US overall average of 31.08%.

[5] Previously reported markups (see the table in section 11B.1) are based on the definition of "markup" as re-export unit value-added over re-export unit value (markup 1). To convert this definition to the equivalent definition used in this paper (markup 2 = re-export unit value over import unit value) the following formula is used: *markup2 = markup1 /(1-markup 1)*.

References

Fung, K. C. 1996. *Accounting for Chinese Trade: Some National and Regional Considerations*, NBER Working Paper 5595.

Fung, K. C. and Lawrence Lau. 1996. *The China-United States Bilateral Trade Balance: How Big Is It Really?*, Asia/Pacific Research Center, Institute for International Studies, Stanford University.

Hong Kong Government. 1992. *Hong Kong Imports and Exports Classification List (Harmonized System), 1992 edition*.

----------. 1994. *Hong Kong Trade Data 1994: Imports by Origin Country by HS Commodity, and Re-exports by Origin Country by Destination Country by HS Commodity* (in magnetic tape format).

Lardy, Nicholas R. 1994. *China in the World Economy*, Institute for International Economics, Washington DC.

Sung, Yun-Wing. 1991. *The China-Hong Kong Connection: The Key to China's Open Door Policy*, Cambridge University Press.

West, Loraine A. 1995. *Reconciling China's Trade Statistics*, IPC Staff Paper No. 76, International Program Center, Population Division, U.S. Bureau of the Census.

Table 11B.1 Frequency Distribution of re-export markups over re-export quantity ratio (raw data)*

	Frequency percent row pct col pct	Re-export markup				
		<0	[0, 0.5)	[0.5, 1)	> = 1	Total
Quantity ratio	(0, 0.25]	32913 25.41 30.28 73.49	27945 21.58 25.71 82.71	15158 11.70 13.95 91.60	32662 25.22 30.05 94.96	108678 83.91
	(.25, .5]	3127 2.41 47.98 6.98	2042 1.58 31.33 6.04	609 0.47 9.34 3.68	739 0.57 11.34 2.15	6517 5.03
	(.5, .75]	1891 1.46 52.90 4.22	1198 0.92 33.51 3.55	250 0.19 6.99 1.51	236 0.18 6.60 0.69	3575 2.76
	(0.75, 1]	1510 1.17 49.43 3.37	1218 0.94 39.87 3.60	156 0.12 5.11 0.94	171 0.13 5.60 0.50	3055 2.36
	>1	5346 4.13 69.51 11.94	1384 1.07 18.00 4.10	375 0.29 4.88 2.27	586 0.45 7.62 1.70	7691 5.94
	Total	44787 34.58	33787 26.09	16548 12.78	34394 26.56	129516 100.00

* 1994

Table 11B.2 Frequency Distribution of re-export markups over re-export quantity ratio (Raw data) - A detailed breakdown

	Frequency percent row pct col pct	Re-export markup				
		<0	[0, 0.5)	[0.5, 1)	> = 1	Total
Quantity ratio	(0, 0.05]	25865 19.97 28.23 57.75	22911 17.69 25.00 67.81	13041 10.07 14.23 78.81	29811 23.02 32.53 86.68	91628 70.75
	(.05, .1]	3231 2.49 39.56 7.21	2393 1.85 29.30 7.08	1057 0.82 12.94 6.39	1487 1.15 18.21 4.32	8168 6.31
	(.1, .15]	1715 1.32 42.01 3.83	1216 0.94 29.79 3.60	504 0.39 12.35 3.05	6.47 0.50 15.85 1.88	4082 3.15
	(.15, .2]	1165 0.90 42.93 2.60	810 0.63 29.85 2.40	339 0.26 12.49 2.05	400 0.31 14.74 1.16	2714 2.10
	(.2, .25]	937 0.72 44.92 2.09	615 0.47 29.48 1.82	217 0.17 10.40 1.31	317 0.24 15.20 0.92	2086 1.61
	(.25, .5]	3127 2.41 47.98 6.98	2042 1.58 31.33 6.04	609 0.47 9.34 3.68	739 0.57 11.34 2.15	6517 5.03
	(.5, .75]	1891 1.46 52.90 4.22	1198 0.92 33.51 3.55	250 0.19 6.99 1.51	2.36 0.18 6.60 0.69	3575 2.76
	(0.75, 1]	1510 1.17 49.43 3.37	1218 0.94 39.87 3.60	156 0.12 5.11 0.94	171 0.13 5.60 0.50	3055 2.36
	>1	5346 4.13 69.51 11.94	1384 1.07 18.00 4.10	375 0.29 4.88 2.27	586 0.45 7.62 1.70	7691 5.94
	Total	44787 34.58	33787 26.09	16548 12.78	34394 26.56	129516 100.00

Table 11B.3 Frequency distribution of re-export markups after deleting the negative values

	Frequency percent row pct col pct	Re-export markup			
		[0,0.5)	[0.5, 1)	> = 1	Total
Quantity ratio	(0, 0.25]	27945 32.98 36.88 82.71	15158 17.89 20.01 91.60	32662 38.55 43.11 94.96	75765 89.42
	(.25, .5]	2042 2.41 60.24 6.04	609 0.72 17.96 3.68	739 0.87 21.80 2.15	3390 4.00
	(.5, .75]	1198 1.41 71.14 3.55	250 0.30 14.85 1.51	236 0.28 14.01 0.69	1684 1.99
	(0.75, 1]	1218 1.44 78.83 3.60	156 0.18 10.10 0.94	171 0.20 11.70 0.50	1545 1.82
	>1	1384 1.63 59.02 4.10	375 0.44 15.99 2.27	586 0.69 24.99 1.70	2345 2.77
	Total	33787 39.88	16548 19.53	34394 40.59	84729 100.00

Table 11B.4 Frequency distribution of re-export markups after feleting the negative values: A detailed breakdown

	Frequency percent row pct col pct	Re-export markup			
		<0	[0.5, 1)	> = 1	Total
Quantity ratio	(0, 0.05]	22911 27.04 34.84 67.81	13041 15.39 19.83 78.81	29811 35.18 45.33 86.68	65763 77.62
	(.05, .1]	2393 2.82 48.47 7.08	1057 1.25 21.41 6.39	1487 1.76 30.12 4.32	4937 5.83
	(.1, .15]	1216 1.44 51.37 3.60	504 0.59 21.29 3.05	647 0.76 27.33 1.88	2367 2.79
	(.15, .2]	810 0.96 52.29 2.40	339 0.40 21.89 2.05	400 0.47 25.82 1.16	1549 1.83
	(.2, .25]	615 0.73 53.52 1.82	217 0.26 18.89 1.31	317 0.37 27.59 0.92	1149 1.36
	(.25, .5]	2042 2.41 60.24 6.04	609 0.72 17.96 3.68	739 0.87 21.80 2.15	3390 4.00
	(.5, .75]	1198 1.41 71.14 3.55	250 0.30 14.85 1.51	236 0.28 14.01 0.69	1684 1.99
	(0.75, 1]	1218 1.44 78.83 3.60	156 0.18 10.10 0.94	171 0.20 11.07 0.50	1545 1.82
	>1	1384 1.63 59.02 4.10	375 0.44 15.99 2.27	586 0.69 24.99 1.70	2345 2.77
	Total	33787 39.88	16548 19.53	34394 40.59	84729 100.00

Table 11B.5 Percentage distribution of re-export value

Percentage distribution of re-export value		Re-export markup				
		<0	[0,0.5)	[0.5, 1)	> = 1	Total
Re-export quantity ratio						
(0, 0.25]	pct	9.3	18.4	9.0	11.1	47.8
	row pct	19.5	38.4	18.9	23.1	100.0
	col pct	35.5	40.1	63.8	80.6	47.8
(.25, .5]	pct	4.1	9.9	2.7	2.0	18.8
	row pct	22.1	52.8	14.5	10.6	100.0
	col pct	15.7	21.6	19.3	14.5	18.8
(.5, .75]	pct	4.0	9.4	1.7	0.3	15.4
	row pct	25.8	61.1	10.8	2.2	100.0
	col pct	15.1	20.5	11.8	2.5	15.4
(0.75, 1]	pct	4.2	5.1	0.5	0.1	9.9
	row pct	42.3	52.1	4.9	0.7	100.0
	col pct	15.9	11.2	3.4	0.5	9.9
>1	pct	4.7	3.0	0.2	0.3	8.2
	row pct	57.2	36.6	2.9	3.3	100.0
	col pct	17.8	6.5	1.7	2.0	8.2
Total	pct	26.3	45.8	14.1	13.7	100.0
	row pct	26.3	45.8	14.1	13.7	100.0
	col pct	100.0	100.0	100.0	100.0	100.0

Table 11B.6 Cutting point for quality ratio group (0, 0.25]

Percentage distribution of re-export value		Re-export markup					
		<0	[0, 0.5)	[0.5, 1)	[1, 1.12)	> = 1.12	Total
Re-export quantity ratio							
(0, 0.25]	pct	19.5	38.4	18.9	3.7	19.4	100.0
	row pct	19.5	38.4	18.9	3.7	19.4	100.0
	col pct	100.0	100.0	100.0	100.0	100.0	100.0
Total	pct	19.5	38.4	18.9	3.7	19.4	100.0
	row pct	19.5	38.4	18.9	3.7	19.4	100.0
	col pct	100.0	100.0	100.0	100.0	100.0	100.0

Table 11B.7 Cutting point for quality ratio group (0.25, 0.5]

Percentage distribution of re-export value		Re-export markup				
		<0	[0, 0.5)	[.5, .565)	> = 0.565	Total
Re-export quantity ratio						
(.25, .5]	pct	22.1	52.8	3.7	21.4	100.0
	row pct	22.1	52.8	3.7	21.4	100.0
	col pct	100.0	100.0	100.0	100.0	100.0
Total	pct	22.1	52.8	3.7	21.4	100.0
	row pct	22.1	52.8	3.7	21.4	100.0
	col pct	100.0	100.0	100.0	100.0	100.0

Table 11B.8 Cutting point for quality ratio group (0.5, 0.75]

Percentage distribution of re-export value		Re-export markup			
		<0	[0, 0.245)	>= 0.245	Total
Re-export quantity ratio					
(.25, .5]	pct	25.8	48.4	25.8	100.0
	row pct	25.8	48.4	25.8	100.0
	col pct	100.0	100.0	100.0	100.0
Total	pct	25.8	48.4	25.8	100.0
	row pct	25.8	48.4	25.8	100.0
	col pct	100.0	100.0	100.0	100.0

Table 11B.9 Frequency distribution of re-export markup over te-export quantity ratio

	Frequency percent row pct col pct	Re-export markup				
		[0, 0.5)	[0.5, 1)	= 1	> 1	Total
Quantity ratio	(0, 0.25]	27919	15142	1	2455	45517
		57.46	31.16	0.00	5.05	93.68
		61.34	33.27	0.00	5.39	
		90.51	99.08	20.00	100.00	
	(.25, .5]	2011	138	4	0	2153
		4.14	0.28	0.01	0.00	4.43
		93.40	6.41	0.19	0.00	
		6.52	0.90	80.00	0.00	
	(.5, .75]	907	2	0	0	909
		1.87	0.00	0.00	0.00	1.87
		99.78	0.22	0.00	0.00	
		2.94	0.01	0.00	0.00	
	(0.75, 1]	8	0	0	0	8
		0.02	0.00	0.00	0.00	0.02
		100.00	0.00	0.00	0.00	
		0.03	0.00	0.00	0.00	
	Total	30845	15282	5	2455	48587
		63.48	31.45	0.01	5.05	100.00

Table 11B.10 HS commodity groups

HS group #	2-digit HS	Brief description
1	01,...,05	live animals; animal products
2	06,...,14	vegetable products
3	15	animal or vegetable fats and oils and their cleavage products;.....
4	16,...24	prepared foodstuffs; beverages, spirits and vinegar; tobacco and ...
5	25,...27	mineral products
6	28,...38	products of the chemical or allied industries
7	39,40	plastics and articles thereof; rubber and articles thereof
8	41,...,43	raw hides and skins, leather, furskins and articles thereof; ...
9	44,...,46	wood and articles of wood; wood charcoal; cork and articles of cork; ...
10	47,...,49	pulp of wood or of fibrous cellulosic material; waste and scrap of paper or ...
11	50,...,63	textile and textile articles
12	64,...,67	footwear, headgear, umbrellas, sun umbrellas, walking sticks, seat sticks, ...
13	68,...,70	articles of stone, plaster, cement, asbestos, mica or similar materials; ...
14	71	natural or cultured pearl, precious or semi-precious stones, precious metals, ...
15	72,...,83	base metals and articles of base metal
16	84,85	machinery and mechanical appliances; electrical equipment; parts thereof; ...
17	86,...,89	vehicles, aircraft, vessels and associated transport equipment
18	90,...,92	optical, photographic, cinematographic, measuring, ..., instru. & apparatus; ...
19	93	arms and ammunition; parts and accessories thereof
20	94,...,96	misc. manufactured articles
21	97	works of art, collectors' pieces and antiques
22	98	commodities and transactions not classified according to kind

Table 11B.11 Distribution of re-export markup (%) by source country and HS commodity group

HS commodity group	China	Japan	Taiwan	USA	Korea	Singapore	Germany	Malaysia	UK	France	Other	World
1	35.12	52.88	43.31	11.48	51.16	17.25	24.82	10.51	23.52	25.92	30.97	29.22
2	33.10	26.08	20.28	49.07	27.44	35.28	15.60	44.87	25.10	36.32	27.54	34.15
3	31.48	16.67	11.78	38.15	5.65	7.55	28.08	14.84	28.05	82.05	18.21	16.75
4	21.97	30.73	27.59	29.85	17.45	31.94	34.85	35.56	26.55	38.19	33.54	29.09
5	34.44	28.33	23.12	22.03	35.20	12.14	40.25	18.34	73.70	27.51	55.62	20.60
6	34.56	21.50	27.55	37.08	14.68	26.51	36.12	26.98	36.11	26.71	24.22	29.52
7	40.87	19.42	11.25	19.29	10.83	12.72	26.31	12.46	19.12	25.59	25.81	25.98
9	39.08	15.96	26.26	32.54	1.56	19.07	22.17	15.49	21.59	50.84	23.47	35.42
10	28.30	19.02	20.35	17.33	34.84	6.54	21.59	40.26	21.06	34.97	20.11	25.29
11	38.30	21.11	42.52	8.82	9.40	25.29	15.15	27.67	14.07	29.91	23.65	26.64
12	45.19	19.70	14.64	21.26	21.65	32.68	24.35	25.60	22.19	33.59	21.42	37.37
13	58.22	31.47	18.22	13.53	27.63	54.60	27.50	20.58	25.85	63.99	31.48	46.00
14	40.22	24.34	13.65	8.26	7.50	17.15	31.55	18.10	18.50	13.83	18.38	22.65
15	38.77	17.26	23.10	37.48	12.72	26.90	18.76	20.02	24.98	15.21	17.49	27.31
16	42.83	33.54	30.41	36.77	35.86	32.06	28.22	45.40	50.26	33.06	32.98	38.55
17	37.49	17.50	9.33	35.99	26.76	13.17	18.65	70.17	21.81	18.87	45.66	21.14
18	44.44	41.12	39.24	34.10	25.82	44.58	43.21	28.07	48.71	56.03	45.23	42.63
19	38.77	23.17	26.69	54.72	47.39	.	24.29	.	22.85	99.52	38.93	48.50
20	63.72	48.25	39.79	27.47	25.85	18.75	37.83	42.45	58.88	51.59	39.32	62.60
21	45.37	74.33	34.84	60.38	16.53	56.36	49.34	.	67.23	38.67	40.49	47.75
22	31.30	25.79	23.42	25.20	28.19	36.76	35.97	38.10	49.92	53.67	31.60	31.09
All	44.31	29.30	21.51	31.08	22.22	20.93	28.06	37.22	34.13	37.52	27.05	37.08

Note: ‘ . ‘ = n.a.

Table 11B.12 Distribution of re-export markup (%) by source country and GTAP sector code

GTAP	China	Japan	Taiwan	USA	Korea	Singapore	Germany	Malaysia	UK	France	Other	World
1	78.64	.	.	25.62	.	.	.	.	.	.	3.78	3.78
2	55.62	.	.	25.62	.	.	.	.	.	.	25.26	31.33
3	58.63	.	.	40.87	.	.	21.74	43.54	31.64	36.61	41.73	56.57
4	28.67	19.49	81.26	36.43	70.78	29.02	8.12	82.44	21.93	11.79	31.73	31.76
5	18.39	78.40	9.91	65.81	.	52.22	21.74	54.83	24.34	.	43.37	25.77
6	18.21	.	.	.	.	.	.	.	24.34	.	25.46	18.61
7	17.36	8.74	82.99	.	25.60	65.21	.	1.47	.	.	24.44	20.01
8	36.41	28.73	18.69	66.32	24.71	25.20	16.52	7.88	24.25	34.69	22.06	34.41
9	19.22	.	.	5.70	.	.	.	.	47.69	5.72	53.71	5.70
10	40.95	19.97	29.18	11.19	11.54	24.16	39.00	19.36	17.67	15.76	28.80	31.50
12	19.75	16.90	16.19	7.19	30.96	.	.	.	.	10.27	14.46	18.65
13	49.01	18.87	18.34	1.63	.	14.18	40.38	72.00	17.92	.	44.12	46.48
14	22.95	64.95	37.71	12.51	71.28	12.29	7.04	9.59	69.37	48.49	34.70	35.50
15	33.72	53.84	50.25	18.17	.	33.87	53.23	.	.	.	43.73	35.28
17	38.18	43.17	5.11	17.80	44.65	13.58	.	.	89.74	8.02	18.51	16.92
18	32.12	23.57	13.78	6.48	7.95	16.27	43.85	18.15	22.65	12.49	18.34	18.91
19	24.73	31.65	28.84	18.70	15.11	7.12	9.49	4.49	15.42	29.45	18.61	16.76
20	20.85	39.95	14.45	8.84	34.76	31.17	11.22	7.55	6.11	5.59	9.20	9.93
21	32.44	20.38	11.02	52.25	3.86	7.34	28.06	15.12	12.08	82.01	20.51	18.10
22	24.30	29.59	35.95	28.12	72.54	11.93	32.65	9.79	25.05	30.36	26.18	25.29
24	14.21	7.36	9.91	13.68	7.70	46.51	2.18	2.98	34.19	28.39	36.40	10.83
25	35.16	43.58	29.85	29.10	14.29	46.58	33.00	36.03	36.25	65.62	34.04	34.32
26	13.82	28.69	29.09	29.98	34.64	22.94	36.26	16.93	26.18	37.28	36.54	27.53
27	31.51	19.18	12.17	23.97	22.07	25.31	23.75	26.31	17.07	20.91	17.87	23.47
28	51.73	36.44	37.09	50.08	44.95	56.82	39.19	53.73	53.93	42.59	44.35	51.55

contd

Table 11B.12 Distribution of re-export markup (%) by source country and GTAP sector code (continued)

GTAP	China	Japan	Taiwan	USA	Korea	Singapore	Germany	Malaysia	UK	France	Other	World
29	33.34	15.65	25.07	34.08	2.85	17.65	24.15	21.29	28.77	50.87	22.87	31.92
30	34.09	62.15	25.32	20.43	44.60	6.82	21.40	38.30	54.10	32.41	17.50	29.65
31	38.30	21.11	42.52	8.82	9.40	25.29	15.15	27.67	14.07	29.91	23.65	26.64
32	31.95	32.88	27.71	23.08	24.04	12.14	32.23	18.32	86.48	28.47	68.88	19.71
33	34.74	20.18	18.27	25.91	11.39	20.43	30.73	19.03	34.30	26.54	24.84	27.91
34	58.15	29.46	18.18	14.56	32.29	53.24	27.54	20.60	25.46	63.98	31.54	45.80
35	23.57	15.51	16.34	43.67	6.85	44.79	11.54	16.33	18.16	9.06	14.24	15.26
36	24.33	17.81	27.80	31.07	18.91	18.51	22.99	21.84	14.59	24.23	20.41	22.92
37	42.12	33.68	25.60	39.90	27.79	34.16	44.58	21.76	34.13	30.59	21.92	39.01
38	34.32	17.12	73.62	36.10	26.63	18.89	18.61	68.32	14.95	13.45	39.79	19.31
39	37.02	21.19	4.35	28.63	22.67	14.81	26.43	69.85	50.53	19.50	41.63	23.88
40	40.38	35.27	40.92	35.55	37.41	33.94	32.75	45.31	49.47	39.16	32.96	38.69
41	44.41	35.10	26.28	39.28	29.69	31.23	32.49	43.20	49.74	37.66	38.18	39.42
42	63.10	40.37	26.51	22.74	23.01	29.19	35.06	30.33	40.85	21.75	27.39	61.19
All	44.31	29.31	21.46	31.06	22.23	20.90	28.04	37.48	34.05	37.22	27.00	37.08

Note: ‘ . ‘ = n.a.

Distribution of Re-export Markup (%)

Table 11B.13 US export to China by HS commodity group

HS commodity group	US - > China
1	9.70
2	46.42
3	37.35
4	26.84
5	21.74
6	32.21
7	16.33
9	31.90
10	16.62
11	6.09
12	18.64
13	12.07
14	25.64
15	32.74
16	34.23
17	33.82
18	24.28
19	12.31
20	22.36
21	29.44
22	21.24
All	27.54

Table 11B.14 US export to china by GTAP sector code

HS commodity group	US - > China
3	84.01
4	19.16
5	65.84
8	73.27
9	5.70
10	8.69
12	7.19
13	1.63
14	3.96
17	17.80
18	12.09
19	17.27
20	8.08
21	52.99
22	21.97
24	10.50
25	19.28
26	29.27
27	22.47
28	36.38
29	34.05
30	19.06
31	6.09
32	23.08
33	20.92
34	13.08
35	44.92
36	31.83
37	28.30
38	36.28
39	13.86
40	31.44
41	36.82
42	17.04
All	27.53

Table 11B.15 Chinese export to US by HS commodity group

HS commodity group	China - > US
1	36.78
2	49.60
3	52.96
4	37.21
5	51.11
6	33.10
7	52.41
9	37.97
10	16.98
11	33.74
12	46.84
13	74.64
14	42.28
15	38.67
16	39.45
17	32.08
18	34.15
19	35.58
20	73.24
21	35.58
22	28.20
All	45.81

Table 11B.16 Chinese export to US by GTAP sector code

GTAP	China - > US
4	43.01
5	25.38
7	41.81
8	53.43
10	47.25
12	17.89
14	27.82
18	42.40
20	60.89*
21	54.81
22	52.44*
24	99.93
25	37.08
26	52.60
27	32.82
28	47.98
29	29.77
30	23.63
31	33.74
32	31.92
33	39.14
34	74.65
35	29.85
36	21.96
37	40.42
38	35.47
39	32.08
40	36.11
41	38.62
42	74.04
All	45.83