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Estimates of U. S.-China Trade Balances in Terms of Domestic Value-Added

by

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An Abstract

The U.S.-China bilateral trade balance in 2005 in terms of gross values of exports has been estimated by the U.S. Government to be US$201.6 billion, by the Chinese Government to be US$114.2 billion, and by Fung, Lau and Xiong (2006) to be US$172.3 billion. However, the domestic value-added generated by exports provides a more accurate measurement of the economic benefits to the exporting country than the gross value of exports. On the basis of a recent study by Lawrence Lau, et al, "The Estimation of Domestic Value-Added and Employment Generated by U.S.-China Trade," the U.S.-China bilateral trade balance is estimated in terms of the total domestic value-added generated in each country by its exports to the other country respectively rather than the gross value of exports.

It is found that in 2002, US$1,000 of Chinese exports to the United States would generate a direct Chinese domestic value-added, or Chinese GDP, of US$177 and an indirect Chinese domestic value-added of US$191, resulting in a total Chinese domestic value-added of US$386. It is also found that US$1,000 of U.S. exports to China would generate a direct U.S. domestic value-added, or U.S. GDP, of US$440 and an indirect U.S. domestic value-added of US$433, with a total U.S. domestic value-added of US$873. The domestic value-added content of U.S. exports to China is thus more than twice that of Chinese exports to the U.S.

On the basis of these estimates of total domestic value-added content, and the adjusted export data compiled by Fung, Lau and Xiong (2006), an estimate of U. S.-China bilateral trade balance in 2005 in terms of domestic value-added would be US$39.6 billion in China's favor.

Keywords: China, United States, bilateral trade balance, adjusted estimates, measuring surplus

JEL Codes: E01, F14

Estimates of U. S.-China Trade Balances in Terms of Domestic Value-Added

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1. Introduction

The bilateral trade between the United States and China has been growing rapidly. At the same time, the U.S. trade deficit vis-à-vis China has also been growing rapidly. Since 2000, U.S. exports to China have been rising at approximately 16% per annum, whereas Chinese exports to the U.S. have been rising at approximately 20% per annum. As a result, the U.S.-China trade deficit for goods and services combined has been growing at approximately 23% per annum. In terms of absolute numbers, the merchandise trade deficit in 2005 has been estimated by the U.S. Government to be US$201.6 billion, by the Chinese Government to be US$114.2 billion, and by Fung, Lau and Xiong (2006) to be US$172.3 billion after a series of adjustments aimed at making the trade data comparable. Whichever estimate of the bilateral trade balance one adopts, the conclusion that it is large and growing is inescapable.

However, while China has been running large overall trade surpluses with the United States, its overall trade surpluses vis-à-vis the World as a whole have been quite modest, reflecting the fact that China has been running large trade deficits in

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goods and services with many other economies. In the five years prior to 2005, the average Chinese overall trade surplus, goods and services combined, was on the order of US$ 30 billion per year, a very small percentage of the total Chinese international trade in goods and services. While China's overall trade surplus for goods and services surged to US$ 92.5 billion in 2005, partly due to the lifting of restrictions on Chinese textile exports with the expiration of the worldwide Multi-Fibre Agreement, it was still less than six percent of China's total international trade in goods and services of US$1.58 trillion.

Traditionally, the focus of public interest (not shared by most professional economists) is on the bilateral trade balance. A country with a trade surplus vis-a-vis its trading partner country is presumed to have derived a greater benefit from the bilateral trade. However, the gross value of exports is a very poor indicator of the domestic economic benefits of exports to the exporting country. In order to reach a more objective assessment of the relative distribution of economic benefits from trade between two trading partner countries, it is necessary to go beyond the gross value of exports to each other and instead to look at the domestic value-added[11] (or GDP) and employment generated by such exports in the respective home countries. Thus, in this study, instead of, or in addition to, the bilateral trade balance, the relative economic benefits derived from the bilateral trade between two trading partner countries are compared in terms of the domestic value-added and employment generated in the home countries by their respective exports to each other.

China is often the last link in the global supply chain—it is engaged in the final processing and assembly of many products before they are exported to final

[11] Value-added is defined as the difference between the value of output and the total value of purchased intermediate inputs. It includes, in particular, the total compensation for labor (wages, salaries, bonuses, pension contributions, etc.), gross capital income (profit before depreciation allowances and interest payments) and indirect taxes.

consumers in the rest of the world. The total domestic value-added content of such exports is normally quite low. For example, the direct domestic value-added of a notebook computer worth US$1,000 exported from China is approximately US$50, with the bulk of the value-added being captured by Intel (the microprocessor), Microsoft (the operating system) and Japanese, South Korean and Taiwanese manufacturers of the liquid crystal screen and memory chips. In contrast, the domestic value-added content of U.S. exports to China is relatively high. For example, the domestic value-added of U.S. beef exports to China is almost 100 percent and that of aircrafts produced by Boeing using General Electric engines is approximately 80 percent. Thus, the imbalance in the gross value of trade flows between the U.S. and China may have greatly overstated the imbalance in the domestic economic benefits resulting from such trade.

Chen, Cheng, Fung and Lau (2001) have developed a methodology to estimate the direct and indirect domestic value-added and employment generated by exports and applied it to Chinese data to obtain an estimate of the direct domestic value-added content of Chinese exports to the U.S. in 1995 of 20 percent and an estimate of the indirect domestic value-added content of a similar magnitude. In this study, we update the earlier study for Chinese exports to the U.S. to the year 2002 and at the same time extend it to cover U.S. exports to China in the same year. The choice of the year 2002 is dictated by data availability: The latest input-output data available for both China and the U.S. are for the year 2002.[12]

[12] See the discussion on data in Section 2 below.

2. The Methodology and Data

Chen, Cheng, Fung and Lau (2001) develop a methodological framework, based on an input-output table, for estimating the direct and indirect domestic value-added and employment generated in a country by its exports in the aggregate as well as disaggregated by commodity and by destination. By applying this framework to two countries that trade with each other, it is possible to assess the relative economic benefits of the bilateral trade, in terms of value-added and employment, generated in each of the two trading partner countries. The framework takes into account the differences in the measurement conventions between international trade and input-output statistics as well as the possibility of non-perfect substitution between domestically produced and imported intermediate inputs (as was in the case of China but not so in the case of the U.S.).

Exports, just like any other final demands, generate domestic value-added and employment directly in the exporting sectors, and, in addition, also generate domestic value-added and employment indirectly through its derived demands for domestically supplied intermediate inputs. The exporting sector purchases intermediate inputs, both imported and domestic, and employs capital and labor, to produce the output, and pays indirect taxes. Total value-added generated by the exports is the sum of direct value-added and indirect value-added. Total employment is the sum of direct and indirect employment generated. For example, in the case of exports of garments, direct value-added and employment refer to the value-added and employment generated in the garment industry itself. As the manufacture of garments requires inputs that may be domestically produced (e.g., cloth), the production of these intermediate inputs also generates additional domestic value-added and employment in the cloth industry. This is indirect value-added generated in the first round by

garment exports. As the production of these domestic intermediate inputs may in turn require other domestically produced intermediate inputs (as well as imported intermediate inputs), there is additional indirect domestic value-added and employment generated in the second round (e.g., the production of cloth requires yarn), the third round, fourth round (e.g., the production of yarn requires cotton which in turn requires chemical fertilizers, both of which can be either domestically supplied or imported), and so on indefinitely. Total domestic value-added is the sum of the direct domestic value-added and all the indirect domestic value-added thus generated. Similarly, total employment generated by exports is the sum of the direct employment and all the indirect employment generated.

The point of departure of the methodology developed by Chen, Cheng, Fung and Lau (2001) is the input-output analysis introduced and developed by Wassily W. Leontief (1953). In order to estimate the indirect (and hence the total) value-added and employment generated, we require a comprehensive picture of the input requirements of all sectors, which is provided by the input-output tables of China and the U.S. respectively. The Chinese input-output table used in this study is the recently released table for 2002, constructed by the National Bureau of Statistics of China. It consists of 42 production sectors.[13] The list of the 42 production sectors distinguished is presented in Appendix Table 1. The U.S. input-output table used is constructed by the Bureau of Economic Analysis, United States Department of Commerce, also for 2002. It consists of 69 sectors.[14] However, the table itself will be published only at end of the year 2007. The input-output table actually employed in this study has been synthesized from the "Make Table" and "Use Table" for 2002, published on the WebPage of the Bureau of Economic Analysis, U.S. Department of

[13] There is a more disaggregated input-output table of China consisting of 122 sectors.
[14] There is also a more disaggregated input-output table of the United States consisting of more than 500 sectors.

Commerce. The list of the 69 production sectors distinguished is presented in Appendix Table 2.

However, a number of extensions of conventional input-output analysis have to be made in order to accomplish our purposes at hand. They include:

(1) Expansion of the input-output table into an input-occupancy-output table (Chen 1990 and 1999). In an input-occupancy-output table, there are explicit input-output coefficients for the primary inputs (capital, labor and natural resources (including land)). One can address the questions of value-added and employment only if these additional rows of coefficients are included in the input-output table.

(2) Disaggregation of the net exports final demand in the input-output table into separate exports and imports final demands. This is motivated in part by the consideration that domestic production (for exports) and imports may not be perfect substitutes, and in part by the fact that our interest is in the effects on domestic value-added and employment of an increase of say US$1,000 of gross exports, and not US$1,000 of net exports.

(3) Further disaggregation of exports final demand by destination of the exports. It is assumed that exports of the same sector are perfect substitutes in production across destinations, that is, for example, textile exports destined for the U.S. and the European Union are produced in the same way (specifically, with the same input-output coefficients). However, the composition of the exports final demand vector may be different across countries, e.g., between the U.S. and the European Union. Thus, in order to estimate the domestic value added induced by an increase of US$1,000 of Chinese exports to the U.S., the composition of Chinese exports to the U.S. must be known and taken into account.

(4) Conversion of international trade statistics into input-out statistics and vice versa. The definitions, conventions and methods of measurements of exports and imports in international trade statistics are different from those used in input-output analysis. These differences necessitate the following adjustments and conversions of the international trade data to make them compatible with the input-output table:

(i) The commodity/sector classifications of international trade statistics and input-output data are different. It is necessary to match the sectors distinguished in the input-output tables to the international trade data, which are reported under the "Harmonized Systems (HS)" of merchandise trade classification. For this study, concordances between the HS classification and the sectors distinguished in the input-output tables of respectively the Chinese and U.S. economies of 2002 are created.

(ii) While the input-output tables measure the quantities of the commodities in terms of producers' prices on an "ex factory" basis, exports as reported in international trade statistics are measured in market prices on an FOB (free on board), in the case of China, or FAS (freight along side), in the case of the U.S., basis and imports are measured in market prices on a CIF (cost, insurance and freight) basis. To maintain consistency between the international trade data and the input-output tables, exports and imports as measured in the international trade statistics must be converted into vectors of equivalent final demands in accordance with the conventions and definitions used in input-output analysis. For example, suppose China exports US$1,000 of textiles. In its international trade statistics, it is entered as US$1,000 of textiles exports (FOB). In the input-output table, the US$1,000 of textiles exports final demand is represented as a vector of exports final demands that includes positive elements not only for the textiles sector, but also for the related service sectors of freight transport and communication, commerce, restaurants,

passenger transport, public utilities, and finance and insurance, the inputs of which are necessary for the exports of textiles to take place, all measured at "producers' prices". Thus, US$1,000 of textiles exports (FOB) will generate exports final demand (and hence direct value-added) in not only the textiles sector but also six other service sectors as well. Conversion matrices transforming the FOB market prices exports data from international trade statistics into vectors of exports final demands in "producers' prices" have to be constructed for the exports of all the individually distinguished sectors. Similarly, imports measured in CIF market prices need to be converted to an equivalent domestic "producers' prices" basis.

(5) Account must also be taken of conditions peculiar to the international trade of China, namely, the high proportion of Chinese exports that are re-exported through Hong Kong (and elsewhere) and the dualistic nature of production in the Chinese economy, which implies that outputs produced for domestic use may not be perfect substitutes for outputs produced for export and domestically produced intermediate inputs may not be perfect substitutes for imported intermediate inputs.

(i) First, a significant proportion of Chinese exports are first shipped to Hong Kong, and then re-exported to other ultimate destinations. Such re-exports through Hong Kong account for a very significant proportion of Chinese exports to the United States. For 2002, Fung, Lau and Xiong (2006) estimates indicate that re-exports through Hong Kong of Chinese goods to the United States constituted 45 percent of direct Chinese exports to the United States.[15] Similarly, re-exports through Hong Kong of U.S. goods to China constituted 25 percent of direct U.S. exports of goods to China. Thus, in order to assess the U.S.-China bilateral trade balance, re-exports through Hong Kong, appropriately disaggregated in accordance with the commodity

[15] See Table 2.4.

classification of the input-output tables of China and the U.S. respectively, must be included. It is therefore necessary to reallocate part of the Chinese exports final demands destined for Hong Kong to the Chinese exports final demand for United States and to reallocate part of the U.S. exports final demand destined for Hong Kong to the U.S. exports final demand for China.

(ii) Second, the degree of competitiveness between the imported intermediate inputs with domestically produced intermediate inputs. Input-output tables with "competitive imports" lump domestically produced inputs and imported inputs together, while tables with "non-competitive imports" treat them as differentiated inputs. Since we are interested in estimating the extent of domestic value-added due to Chinese exports, we need an input-output table for China that distinguishes between domestically produced and imported intermediate inputs, that is, one with "non-competitive imports". The distinction between domestically produced and imported intermediate inputs is important because the use of imported intermediate inputs does not generate a second-round domestic value-added whereas the use of domestically produced intermediate inputs generates a second-round and further rounds of domestic value-added. For the highly integrated U.S. economy, in which domestically produced intermediate inputs are directly competitive with imported intermediate inputs, it is not necessary to distinguish between the two types of intermediate inputs.

(iii) Third, the dualistic nature of production implies differences in the input-output coefficients between production for export and production for domestic use and further differences amongst exports between "processing" exports and "non-processing" exports. Production for export uses much more imported intermediate inputs than production for domestic use; and production for "processing exports" uses

much more imported intermediate inputs than "non-processing" exports. Nearly 78 percent of Chinese exports to the U.S. in 2002 consisted of processing exports. Under export processing activities, all the intermediate inputs and sometimes the equipment are imported and the entire production is exported. Processing exports and non-processing exports have very different characteristics, require different primary, intermediate, and imported inputs, and therefore potentially have different direct and indirect impacts on value-added and employment. Thus, it is necessary to distinguish between the production for domestic use and exports as well as between the two types of exports in the input-output table. For this reason, the input-output table of the non-competitive imports type is further disaggregated to allow three separate sectors for each commodity classification, one for production for domestic use, one for ordinary (non-processing) export activities and one for processing export activities. The "processing exports" sector and the "non-processing exports" sector for the same commodity are allowed to have different input-output coefficients. With the assistance of three government organizations in the People's Republic of China--Ministry of Commerce, the General Administration of Customs and the National Bureau of Statistics--we constructed from unpublished raw data separate matrices of input-output coefficients for production for domestic use and for processing and non-processing export activities. Moreover, the exports final demands are further distinguished by whether they are produced from the processing sector or the non-processing sector. Thus, three separate input-output sub-tables have been constructed for China: the first for production for domestic use, the second for processing exports, and the third for non-processing exports. In the case of the U.S., a single input-output table suffices as the production of exports is generally similar to production for domestic use.

The bilateral U.S.-China trade data are obtained from data published by the U.S. Department of Commerce, Bureau of Economic Analysis, and the National Bureau of Statistics of the People's Republic of China, and supplemented with data from the Hong Kong Census and Statistics Department.

3. The Results

It is found, using the framework described above, that in 2002, US$1,000 of Chinese exports to the United States would generate Chinese domestic value-added, or Chinese GDP, of approximately US$177 directly. US$1,000 worth of exports would also generate, through the derived demand for domestically supplied intermediate inputs from other sectors, an indirect domestic value-added of approximately US$191, resulting in a total domestic value-added of approximately US$368. Out of the total direct domestic value-added of US$177, total gross capital income generated is US$117, total labor income is US$36, and total indirect taxes is US$24. Out of the total indirect domestic value-added of US$191, total gross capital income generated is US$129, total labor income is US$32, and total indirect taxes is US$29.[16]

It is also found that in 2002, US$1,000 of U.S. exports to China would generate U.S. domestic value-added, or U.S. GDP, of approximately US$440 directly and US$433 indirectly, resulting in a total domestic value-added of approximately US$873. Out of the total domestic value-added of US$873, total gross capital income

[16] Since approximately 60 percent of Chinese exports to the U.S. is conducted by foreign-invested enterprises, a similar percentage of the direct gross capital income generated, US$70, accrues to foreign rather than Chinese nationals. Thus the total Chinese GNP generated by US$1,000 of Chinese exports to the U.S. may be estimated to be US$368 less US$70, or US$298, or 29.8 percent.

generated is US$270, total labor income is US$549, and total indirect taxes are US$46.[17]

The total domestic value-added content of U.S. exports to China, 87.3 percent, is thus more than twice that of Chinese exports to the U.S., 36.8 percent. On the assumption that the domestic value-added contents of the exports of goods are relatively stable in both countries, the domestic value-added embodied in the exports of goods by the U.S. and China to each other for the years 2002 through 2005, are estimated using the adjusted export data compiled by Fung, Lau and Xiong (2006), which also include re-exports (See Appendix Table 3). The results are presented in Table 1, which shows that while in terms of gross value, Chinese exports of goods to the U.S. have in recent years become almost four times U.S. exports to China, in terms of domestic value-added, Chinese exports are less than two times those of U.S.[18]

[17] It is possible that some U.S. exports to China are conducted by foreign direct investors in the U.S. However, it is unlikely to be anywhere near the large proportion, 60 percent, of Chinese exports to the U.S. conducted by foreign-invested enterprises in China.

[18] If we consider national value-added rather than domestic value-added, then the corresponding estimates of Chinese total national value-added from Chinese exports to the U.S. become US$32.6 billion, US$40.4 billion, US$52.3 billion and US$65.4 billion respectively from 2002 through 2005.

Table 1:

Estimates of U.S.-China Merchandise Trade
In Gross Value and Value-Added
FOB Adjusted for Re-Exports and Markups (billion US$)

Year	Estimates of U.S. Exports to China FOB U.S. Adjusted for Re-Exports and Markups (Adjusted U.S. Data)	Estimates of Chinese Exports to U.S. FOB China Adjusted for Re-Exports and Markups (Adjusted U.S. Data)	Estimates of Value-Added Generated by U.S. Exports of Goods to China (Adjusted U.S. Data)	Estimates of Value-Added Generated by Chinese Exports of Goods to the U.S. (Adjusted U.S. Data)
2002	27.3	109.5	23.8	40.3
2003	33.7	135.6	29.4	49.9
2004	39.8	175.4	34.7	64.5
2005	47.2	219.5	41.2	80.8

Source: K. C. Fung, L. J. Lau and Y. Xiong, (2006).
Column 4 = 0.873 times column 2; column 5 = 0.368 times column 3.

In Table 2, the bilateral U.S.-China trade balances, based on the adjusted U.S. data of Fung, Lau and Xiong (2006), are presented in terms of both gross value of exports and domestic value-added. We note that even though the gross value of the U.S.-China trade deficit may be estimated as US$172.3 billion in 2005, the U.S.-China trade deficit in terms of domestic value-added may be estimated to be only US$39.6 billion, reflecting the fact that U.S. exports to China have a much higher domestic value-added content than Chinese exports to the U.S. In order to close the value-added trade deficit, an increase of U.S. annual gross exports to China of approximately US$45.4 billion (=39.6 billion/0.873) will suffice.[19]

[19] Again, if we focus on national value-added rather than domestic value-added, then the corresponding U.S.-China bilateral trade balances in terms of national value-added, assuming that almost all U.S.

Table 2:

Estimates of U.S.-China Merchandise Trade Balance
in Gross value and Value-Added
FOB Adjusted for Re-Exports and Markups (billion US$)

Year	Estimates of U.S.-China Trade Balance in Gross Value FOB Adjusted for Re-Exports and Markups (Adjusted U.S. Data)	Estimates of U.S.-China Trade Balance In Value-Added Adjusted for Re-Exports and Markups (Adjusted U.S. Data)
2002	-82.2	-16.5
2003	-101.8	-20.5
2004	-135.5	-29.8
2005	-172.3	-39.6

Source: Table 1.

In terms of employment, US$1,000 of Chinese exports to the United States would generate direct and indirect Chinese employment totaling approximately 0.1642 person-year. It is also found that US$1,000 of U.S. exports to China would generate U.S. employment of approximately 0.0094 person-year directly and indirectly. The domestic employment generated by US$1,000 of Chinese exports to the U.S. is over 17 times that by U.S. exports to China. This is consistent with the much lower real wage rate in China in comparison with the U.S. and the resulting much more labor-intensive nature of production in China.

Again, on the assumption that the employments generated by the exports of goods are relatively stable, we calculate the employments generated in the exports of

exports are conducted by domestic U.S. firms, may be estimated as US$9.2 billion, US$11.3 billion, US$18.0 billion and US$24.8 billion respectively from 2002 through 2005.

goods of the U.S. and China to each other for the years 2002 through 2005. The results are presented in Table 3, which shows that in 2005, U.S. exports of goods to China generate 0.44 million person-years of employment, whereas Chinese exports of goods to the U.S. generate 36 million person-years of employment.

Table 3:

Estimates of Domestic Employment in U.S. and China
Generated by U.S.-China Bilateral Merchandise Trade
FOB Adjusted for Re-Exports and Markups (million person-years)

Year	Estimates of U.S. Employment Generated by U.S. Exports of Goods to China (Adjusted U.S. Data)	Estimates of Chinese Employment Generated by Chinese Exports of Goods to the U.S. (Adjusted U.S. Data)
2002	0.26	17.98
2003	0.32	22.27
2004	0.37	28.80
2005	0.44	36.04

Source: K. C. Fung, L. J. Lau and Y. Xiong (2006) and Lawrence J. Lau, Xikang Chen, Leonard K. Cheng, K. C. Fung, Jiansuo Pei, Yun-Wing Sung, Zhipeng Tang, Yanyan Xiong, Cuihong Yang and Kunfu Zhu (2006).

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Appendix

Appendix Table 1:

Sector Classification of 2002 Input-Output Table of China with 42 Sectors

Code of IO Sector	Name
01	Agriculture
02	Coal mining, washing and processing
03	Crude petroleum and natural gas products
04	Metal ore mining
05	Non-ferrous mineral mining
06	Manufacture of food products and tobacco processing
07	Textile goods
08	Wearing apparel, leather, furs, down and related products
09	Sawmills and furniture
10	Paper and products, printing and record medium reproduction
11	Petroleum processing, coking and nuclear fuel processing
12	Chemicals
13	Nonmetal mineral products
14	Metals smelting and pressing
15	Metal products
16	Common and special equipment
17	Transport equipment
18	Electric equipment and machinery
19	Telecommunication equipment, computer and other electronic equipment
20	Instruments, meters, cultural and office machinery
21	Other manufactured products
22	Scrap and waste
23	Electricity and heating power production and supply
24	Gas production and supply
25	Water production and supply
26	Construction
27	Transport and warehousing
28	Post
29	Information communication, computer service and software
30	Wholesale and retail trade
31	Accommodation, eating and drinking places
32	Finance and insurance
33	Real estate
34	Renting and commercial service
35	Tourism
36	Scientific research

37	General technical services
38	Other social services
39	Education
40	Health service, social guarantee and social welfare
41	Culture, sports and amusements
42	Public management and social administration

Appendix Table 2:

Sector Classification of 2002 Input-Output Table of the U.S. with 69 Sectors

Sector	Code	Name
1	111CA	Farms
2	113FF	Forestry, fishing, and related activities
3	211	Oil and gas extraction
4	212	Mining, except oil and gas
5	213	Support activities for mining
6	22	Utilities
7	23	Construction
8	311FT	Food and beverage and tobacco products
9	313TT	Textile mills and textile product mills
10	315AL	Apparel and leather and allied products
11	321	Wood products
12	322	Paper products
13	323	Printing and related support activities
14	324	Petroleum and coal products
15	325	Chemical products
16	326	Plastics and rubber products
17	327	Nonmetallic mineral products
18	331	Primary metals
19	332	Fabricated metal products
20	333	Machinery
21	334	Computer and electronic products
22	335	Electrical equipment, appliances, and components
23	3361MV	Motor vehicles, bodies and trailers, and parts
24	3364OT	Other transportation equipment
25	337	Furniture and related products
26	339	Miscellaneous manufacturing
27	42	Wholesale trade
28	44RT	Retail trade
29	481	Air transportation
30	482	Rail transportation
31	483	Water transportation
32	484	Truck transportation
33	485	Transit and ground passenger transportation
34	486	Pipeline transportation
35	487OS	Other transportation and support activities
36	493	Warehousing and storage
37	511	Publishing industries (includes software)
38	512	Motion picture and sound recording industries
39	513	Broadcasting and telecommunications

40	514	Information and data processing services
41	521CI	Federal Reserve banks, credit intermediation, and related activities
42	523	Securities, commodity contracts, and investments
43	524	Insurance carriers and related activities
44	525	Funds, trusts, and other financial vehicles
45	531	Real estate
46	532RL	Rental and leasing services and lessors of intangible assets
47	5411	Legal services
48	5412OP	Miscellaneous professional, scientific and technical services
49	5415	Computer systems design and related services
50	55	Management of companies and enterprises
51	561	Administrative and support services
52	562	Waste management and remediation services
53	61	Educational services
54	621	Ambulatory health care services
55	622HO	Hospitals and nursing and residential care facilities
56	624	Social assistance
57	711AS	Performing arts, spectator sports, museums, and related activities
58	713	Amusements, gambling, and recreation industries
59	721	Accommodation
60	722	Food services and drinking places
61	81	Other services, except government
62	GFE	Federal government enterprises
63	GFG	Federal general government
64	GSLE	State and local government enterprises
65	GSLG	State and local general government
66	S001	Noncomparable imports
67	S002	Scrap, used and secondhand goods
68	S003	Rest of the world adjustment
69	S004	Inventory valuation adjustment

Appendix Table 3:

Estimates of U.S.-China Bilateral Trade Balance
FOB Adjusted for Re-Exports and Markups (billion US$)

Year	Estimates of U.S. Exports to China FOB U.S. Adjusted for Re-Exports and Markups (Adjusted U.S. Data)	Estimates of U.S. Exports to China FOB U.S. Adjusted for Re-Exports and Markups (Adjusted Chinese Data)	Estimates of Chinese Exports to U.S. FOB China Adjusted for Re-Exports and Markups (Adjusted U.S. Data)	Estimates of Chinese Exports to U.S. FOB China Adjusted for Hong Kong Re-Exports and Markups (Chinese Data)	Estimates of U.S.-China Trade Balance FOB Adjusted for Re-Exports and Markups (Adjusted U.S. Data)	Estimates of U.S.-China Trade Balance FOB Adjusted for Re-Exports and Markups (Adjusted Chinese Data)
2000	21.4	19.6	86.0	77.8	-64.6	-58.2
2001	24.5	22.9	88.3	77.8	-63.8	-54.9
2002	27.3	24.3	109.5	94.5	-82.2	-70.3
2003	33.7	30.4	135.6	116.5	-101.8	-86.1
2004	39.8	39.6	175.4	149.9	-135.5	-110.2
2005	47.2	43.9	219.5	189.7	-172.3	-145.8

Source: K. C. Fung, L. J. Lau and Y. Xiong, "Adjusted Estimates of United States-China Bilateral Trade Balances: An Update," Pacific Economic Review, Vol. 11, No. 3, 2006, pp. 299-314, originally issued as Working Paper No. 278, Stanford Center for International Development, Stanford University, May 2006 and Working Paper No. 1, Institute of Economics, The Chinese University of Hong Kong, May 2006.