

U.S.-CHINA TRADE: A DISAGGREGATED ANALYSIS, 1996-2006*

1. INTRODUCTION

This paper aims first and foremost at providing a multi-dimensional analysis of the trade structure between China and the U.S., in order to get an informed view of what lies beyond the headline ‘rising U.S. trade deficit with China’ and eventually understand why China has become so special to the U.S. economy.

Between 1996 and 2006, total U.S. non-energy¹ trade deficit increased from \$108 to \$519 billion, (from 1.4 to 3.9 percent as a ratio to GDP), while trade deficit with China increased by a factor of 6, from \$39 to over \$230 billion (from 0.5 to 1.7 percent as a ratio to GDP). The role of China as a major trading partner to the U.S. has significantly increased following its entry into the WTO in December 2001. Indeed, while between 1996 and 2001 China accounted for 23 percent of the increase in the overall U.S. trade deficit, over the years 2001 through 2006 China’s contribution to the increase in the U.S. trade deficit shot up to 68 percent.

Against this background, it is no wonder the ever rising U.S. trade deficit with China makes headlines almost every day, most recently in Secretary Paulson’s words²:

“The relationship between the U.S. and China is the most important bilateral economic relationship in the world today. It’s different from all the others”.

Other than being different, the trade relationship between the U.S. and China is also controversial, to say the least.

* The views expressed are the author’s only and do not involve the responsibility of the Bank of Italy.

¹ In order to avoid any distortion arising from the most recent price fluctuations, we exclude energy products (SITC category no. 3: mineral fuels, lubricants and related materials) from the analysis.

² News conference, public launch of the U.S.-China Strategic Economic Dialogue, Beijing, September 20th, 2006.

On the one hand, some commentators underline that China's entry into the WTO has first proved to be a major boost for U.S. exports, which since then have grown 3.7 times faster than exports to the rest of the world. This rapid growth has made China ascend from the 9th to the 4th largest export market for U.S. goods, after Canada, Mexico and Japan.

Other China advocates emphasize the positive effect to the U.S. consumers' purchasing power arising from lower import prices. In this regard, it has been suggested that China's low-price imports into the U.S. may have contributed to the so-called '*Wal-Mart effect*', according to which the retailer's low prices are supposed to be as important as the Federal Reserve's monetary policy in holding down inflation (London, 2005).

On the other hand, many claim that the positive effects enjoyed by the U.S. economy from trading with China are greatly overshadowed by the negative consequences related to the displacement of U.S. domestic productions and the ensuing decrease of employment allegedly associated with rising imports from China, notably in the high-wage manufacturing sector (almost 3.2 million job losses between 1996 and 2006).

In parallel to the discussion on its effects on the real side of the economy, the widening deficit between China and the U.S. also takes on a financial dimension, as it has brought the revaluation of the yuan/renminbi to take center stage in the debate on how to rebalance the U.S. trade deficit and, more generally, on China's need to comply with the rules of the global financial system.

Moreover, from a political perspective the growth in the U.S. trade deficit has quite worryingly contributed to fuel a new wave of protectionist sentiment, which continues to grow: ongoing concerns in this regard within the U.S. Congress lie at the root of a few well-known bills, namely those by Senators Schumer and Graham (imposing a 27.5 percent tariff on imports from China) and by Senators Grassley and Baucus (threatening to bar China from gaining some of its sought-after economic privileges, including the increase of its voting powers at the International Monetary Fund). More recently, following the Democratic victory in the mid-term elections in November 2006, the above four Senators have joined forces and introduced a new bill which requires the Treasury to identify 'fundamentally' misaligned currencies to Congress twice a year and take 'priority action' against those currencies whose misalignment is clearly caused by a foreign government's economic policies.

In this complex context, the paper provides a data-grounded analysis that is useful to clear up misconceptions and ascertain in a non-judgmental way some of the most significant changes and current features of trade between China and the U.S.

This is all the more important in light of some of the aforementioned aspects of the current debate on the U.S.-China trade relationship, which often displays a superficial (as well as politically charged) attitude to blame China for U.S. job losses and invoke correction of the country's exchange rate policy as a quick-fix solution to the U.S. trade balance.

In fact, no such clear consensus exists as to whether a revaluation of China's currency against the U.S. dollar could really be a fix to the U.S. trade deficit. Given the changes in the patterns of industrial specialization for the U.S. economy, the textbook effect of a devalued currency, namely a switch of overall demand from foreign to domestic goods and a resulting boost to domestic production, is indeed far from being taken for granted, as it depends on the existence of domestic producers who are able to supply previously imported goods.

In this regard, some observers question that this will be the case should the yuan/renmimbi be revalued against the dollar, on the grounds that part of the recent surge in imports from China is actually displacing productions previously imported from other Asian economies, first and foremost Japan, rather than U.S. domestic production³. Accordingly, even an unlikely large (i.e., 20 to 40 percent) revaluation of the yuan/renmimbi might prove ineffective, as the goods that currently dominate China's exports to the U.S., namely electronics, furniture, apparel and toys, would probably be supplied by other low-cost producers in Asia (or Latin America), not by U.S. producers.

This 'replacement view' to explain the evolution of trade patterns between China and the U.S. is the core argument of those who dispute the very criticism that China is displacing U.S. production and employment and lends strong support to the need of the multi-dimension approach used in the paper to assess in comprehensive way the evolution of the trade relationship between China and the U.S.

In fact, focusing only on the bilateral trade between the two countries may lead to misleading conclusions as to the impact of China on the U.S. economy and, most notably, on manufacturing

³ Holtz-Eakin (2005).

production and employment. For example, such a partial analysis would omit to take into consideration the possibility that China's exports into the U.S. are substituting goods previously imported from other Asian economies (i.e., the relevance of the above-mentioned 'replacement view').

Against this background, using a very detailed database maintained by the U.S. Bureau of Census, we carry out a disaggregated analysis of the U.S.-China trade balance along the following dimensions: i) a temporal dimension, looking at a time span centered on 2001, the year that sees China joining the WTO, to check the impact of this event on the trade structure between China and the U.S.; ii) a cross-country dimension, putting the U.S.-China trade in the much broader context of the evolution of the overall U.S. trade balance. In this context, and to strike a balance between making meaningful comparisons while keeping the data manageable, we adopt a grouping of the U.S. trading partners made up of six entries: NAFTA (Canada and Mexico), EU-5 (the 5 largest EU countries: France, Germany, Italy, Spain and the U.K.), Japan, China, Asia (Korea, Singapore, Hong Kong, the Philippines, Indonesia, Malaysia, Taiwan and Thailand plus India), and Rest of the World. This grouping allows us, among other things, to assess the effects of China's product competition on other Asian countries' exports to the U.S.; iii) a sectoral dimension, breaking down the overall U.S. trade deficit into its industry components. This allows us to pin down the evolution of China's exports across different industrial sectors, and assess the potential changes in the nature of competition, namely from low- to high-tech products.

To the best of our knowledge, no such multi-dimensional analysis has ever been carried out in the literature before.

The main findings of our descriptive study can be summarized as follows. The role of China as a provider of goods to the U.S. has evolved not only from a quantitative but also from a qualitative viewpoint, moving its exports up the value chain, from lower value-added to higher value-added products. The most dramatic example of this evolution can be gauged in the office machines sector: in 2006, China provided 46 percent of total U.S. imports of such products, up from only 5 percent in 1996. Besides, we found that the evolution of net imports in the computer and peripheral equipment sector lends some support to the 'replacement view' of trade between China and the U.S., as a huge increase in net imports from China is mirrored by a shrinking U.S. deficit with non-China countries, which eventually turns into a surplus.

This result is further discussed in the final part of the paper, where we briefly survey perhaps the most sensitive and controversial question arising in the context of the U.S.-China trade relationship: whether imports from China are hurting U.S. production and employment in the manufacturing sector.

The remainder of the work is structured as follows. Section 2 reviews the evolution of the U.S. trade balance from a cross-country point of view, while Section 3 adds a sectoral perspective. Section 4 shows a ranking of U.S. net imports sorted by their contribution (or share) to the total U.S. deficit, to provide a better understanding of its evolution overtime. In Section 5, the rising importance of China as a supplier to the U.S. is gauged, in a complementary way, by looking at the evolution of imports only, instead of net imports, while Section 6 introduces the main terms of the debate on the relationship between imports from China, on one hand, and U.S. manufacturing production and employment, on the other hand. The main conclusions of the present study are outlined in Section 7.

2. EVOLUTION OF THE U.S. INTERNATIONAL TRADE BY MAJOR TRADING PARTNERS

In order to highlight the growing importance of China for the international trade of the U.S., we first analyze separately the evolution of exports, imports and the trade deficit by breaking down the totals by major country/area.

Starting with exports (Table 1), NAFTA is currently the largest recipient market for U.S. products, receiving 35.0 percent of the total in 2006, an increase of 4.5 percentage points since 1996. Besides, while the shares of EU-5 and Rest of the World groups have remained virtually unchanged from 1996 to 2006, Japan and Asia both show a decline in their quotas of U.S. exports, by 5 and 3.3 percentage points respectively. Moreover, Japan is the only country to display a decline in the absolute value of U.S. exports (from 66 billion in 1996 to 59 billion in 2006).

Except for NAFTA, China marks the largest increase (3.5 percentage points) in the share of total U.S. exports within our grouping, and now receives almost as much U.S. products (by value) as Japan. Most importantly, 80 percent of the gain in China's share took place after the country's entry into the WTO.

To highlight the rising importance of China as an export market for U.S. products, it suffices to take a look at the market

TABLE 1 - U.S. Exports and Imports

(Billions of U.S. dollars; SITC classification; custom value)

	Exports					Imports				
	1996	2001	2006	change 1996 - 2006	change 2001 - 2006	1996	2001	2006	change 1996 - 2006	change 2001 - 2006
Total	623	731	1,037	414	306	791	1,142	1,855	1,064	713
<i>as a percentage of GDP</i>	8.0	7.2	7.8	-0.1	0.6	10.1	11.3	14.0	3.9	2.7
Total ex energy	611	718	1,002	392	284	718	1,019	1,522	803	503
<i>as a percentage of GDP</i>	7.8	7.1	7.6	-0.2	0.5	9.2	10.1	11.5	2.3	1.4
NAFTA	186	258	350	164	92	206	304	395	189	91
<i>as a percentage of total ex energy</i>	30.4	35.9	34.9	4.5	-1.0	28.7	29.8	26.0	-2.7	-3.9
EU-5	82	106	128	47	23	105	155	208	103	54
<i>as a percentage of total ex energy</i>	13.4	14.7	12.8	-0.6	-1.9	14.7	15.2	13.7	-1.0	-1.5
Japan	66	57	59	-7	2	115	126	147	32	21
<i>as a percentage of total ex energy</i>	10.9	8.0	5.9	-5.0	-2.1	16.0	12.4	9.7	-6.4	-2.7
China	12	19	55	43	36	51	102	287	236	185
<i>as a percentage of total ex energy</i>	2.0	2.7	5.5	3.5	2.8	7.1	10.0	18.8	11.7	8.8
Asia	103	100	137	34	36	134	159	209	75	49
<i>as a percentage of total ex energy</i>	16.9	14.0	13.6	-3.3	-0.4	18.6	15.6	13.7	-4.9	-1.9
Rest of the World	162	178	273	111	95	107	173	276	169	103
<i>as a percentage of total ex energy</i>	26.5	24.7	27.2	0.7	2.5	14.9	17.0	18.1	3.2	1.1

Source: author's elaboration on U.S. Census data.

for transport equipment. While in 1996 China did not appear at all among the largest buyers of U.S. products, by 2001 the country had emerged as a net buyer of transport equipment (mostly aircrafts), with expenditures of 2.3 billion dollars. More significantly, over the next five years, China strengthened its role as an export market for U.S. transport equipment and by 2006 its purchases had more than doubled to 5.9 billion (the 12th largest U.S. net export). With particular reference to U.S. sales of aircrafts, while in 1996 China bought 5.3 percent of total exports (by value) of such products, by 2006 this number had gone up to 9.1 percent.

U.S. sales of semiconductors to China mark another major advancement, as the country's share rose from negligible values in 1996 to over 11 percent (almost \$6.0 billion) of total U.S. exports by 2006, making these products the second largest seller to China.

Turning to the import side, it allows us to underlie the most dramatic changes within the ranking of the largest U.S. trading partners.

It is first striking to note that imports from China show the largest increase (236 billion) within the groups, one that is even bigger than that of NAFTA. Again, the boom in imports is concentrated in the years following 2001.

The advancing of China is even more impressive when measured in relative terms. China's share of total U.S. imports increased by about 12 percentage points between 1996 and 2006 (9 of which after 2001), making the country the single largest supplier of non-energy products to the U.S.

Of particular relevance is the fact that the increase in China's share matches almost exactly the combined decrease in the shares of Japan and Asia. This lends some support to the hypothesis that, to some degree, Chinese products are displacing imports from other Asian countries⁴.

Besides, the increase in the share of the Rest of the World (+3.2 percentage points) is offset by a decrease in the share of NAFTA (-2.7) and EU-5 (-1.0) countries.

If we focus our attention on the evolution of the deficit as a whole (Table 2), some facts stand out. First and foremost, we observe an impressive decline in the relative position of Japan over the years 1996-2006, as its share of the total U.S. trade deficit has fallen by

⁴ The 'replacement' view will be discussed at length in Section 8.

over 28 percentage points. Accordingly, Japan's position turned from being the largest contributor to the U.S. deficit (45 percent) to having a share (17 percent) only slightly higher than that of the EU-5 group.

TABLE 2 - *U.S. Trade Deficit*
(Billions of U.S. dollars; SITC classification; custom value)

	1996	2001	2006	change 1996 - 2006	change 2001 - 2006
Total	168	411	818	649	407
<i>as a percentage of GDP</i>	2.2	4.1	6.2	4.0	2.1
Total ex energy	108	301	519	412	218
<i>as a percentage of GDP</i>	1.4	3.0	3.9	2.5	0.9
NAFTA	20	46	45	25	-1
<i>as a percentage of total ex energy</i>	18.5	15.2	8.6	-9.9	-6.6
EU-5	24	49	80	56	31
<i>as a percentage of total ex energy</i>	22.2	16.3	15.4	-6.8	-0.9
Japan	49	69	88	39	19
<i>as a percentage of total ex energy</i>	45.2	23.0	16.9	-28.3	-6.0
China	39	83	232	193	149
<i>as a percentage of total ex energy</i>	36.3	27.5	44.6	8.3	17.1
Asia	30	59	72	41	13
<i>as a percentage of total ex energy</i>	28.3	19.5	13.8	-14.5	-5.7
Rest of the World	-54	-4	3	57	8
<i>as a percentage of total ex energy</i>	-50.5	-1.5	0.6	51.1	2.1

Source: author's elaboration on U.S. Census data.

The evolution of China's share over the years 1996-2006 displays an overall increase by 8.3 percentage points. However, if we take 2001 as the initial point, China's share of the U.S. deficit increased by 17 percentage points and now makes up almost 45 percent of the deficit.

One also needs to highlight that over the sub-period 2001-2006, the increase in China's share runs in parallel with the declines in the shares of Asia and Japan, as well as in that of NAFTA.

Finally, the share of the EU-5 group has also declined by almost 7 percentage points, although it remained broadly unchanged since 2001.

3. SECTORAL EVOLUTION OF THE U.S. TRADE BALANCE

In this Section, we analyze in more depth the evolution of the U.S. international trade by adding a sectoral perspective to the cross-country viewpoint. More precisely, we break down the aggregate deficit into its three main SITC sectoral components (manufactured goods, machinery and transport equipment and miscellaneous manufactured articles), in order to get some qualitative insights about the recent patterns of U.S. trade in different categories of products, characterized by different value-added⁵.

The main conclusion is that the increasing importance of China as a world and particularly, as a U.S. trading partner runs in parallel with the progresses made by China up through the value-added chain of production: not only the country is producing and exporting more goods than before, but also its productions are expanding from lower to higher valued-added sectors.

As a general fact (Table 3), we can first note that, back in 1996, the U.S. was recording a substantial trade deficit in each of the three above-mentioned SITC categories, as well as a \$45 billion surplus in the residual ('other') sectoral component. By 2001, however, this surplus itself had turned into a \$10 billion deficit, which then reached \$24 billion last year.

Furthermore, from 2001 to 2006, we note, in relative terms, a decline of the miscellaneous manufactured articles component as a contributor to the deficit (with a share down from 36.4 to 30.9 percent of the total) and an increase of the manufactured goods category, whose share went up from 18.7 to 23.0 percent.

Over the same years, the machinery and transport equipment component has remained the largest of the three, accounting for 41.5 percent of the U.S. trade deficit in both 2001 and 2006.

3.1 Trade in Manufactured Goods

In the manufactured goods category (Table 4), the U.S. trade deficit increased, in absolute terms, by over \$20 billion from 1996 to

⁵ A well-known drawback of the trade data we use is that they are expressed only in nominal terms (current dollars), and this makes us unable to distinguish between 'quantity' and 'price' effects. This distinction could have been particularly useful in our analysis, since the products where China's role as a supplier to the U.S. has increased the most (office machines and telecommunication equipments) are those whose prices have displayed the largest decrease in the period under consideration.

2001, and more than doubled in the next five years, reaching \$120 billion at the end of 2006 (23 percent of the total trade deficit). The Rest of the World group marked the largest increase (from \$10 to \$40 billion), followed by China (from \$3.8 to \$32.5) and Asia (from \$5 to \$18 billion).

TABLE 3 - *U.S. Non-Energy Trade Balance by Counterparts - 1-digit SITC Classification*

(billions of U.S. dollars; as a percentage of total deficit in italic; custom value)

	1996	2001	2006
Non-energy trade balance	-107.7	-300.9	-519.4
Manufactured goods	-35.9 <i>33.3</i>	-56.4 <i>18.7</i>	-119.5 <i>23.0</i>
Machinery and transport equipment	-56.6 <i>52.6</i>	-124.8 <i>41.5</i>	-215.4 <i>41.5</i>
Miscellaneous manufactured articles	-59.9 <i>55.6</i>	-109.6 <i>36.4</i>	-160.4 <i>30.9</i>
Other	44.7 <i>-41.5</i>	-10.2 <i>3.4</i>	-24.0 <i>4.6</i>

Source: author's elaboration on U.S. Census data.

However, in relative terms, China's net exports as a ratio of the total non-energy U.S. deficit are the only ones to show an increase, from 3.5 percent in 1996 to 6.3 percent in 2006: this is all the more relevant as it takes place in a context where the relative importance of the manufactured goods sector as a contributor to the total deficit is scaling down.

Besides, in terms of the relative importance as a supplier of products within the manufactured goods category only, China displays the strongest advancement, with its share increasing by almost 17 percentage points, to over 27 percent at the end of 2006.

By virtue of that, China now is the single largest provider of manufactured goods to the U.S. The Rest of the World group also shows a 6.5 percentage point increase in its category share from 1996 to 2006.

The progresses of China and the Rest of the World are mirrored by the relative decline of the EU-5 and NAFTA countries and, to a lesser extent, of Japan as sources of manufactured goods for the U.S.

TABLE 4 - U.S. Trade by Category and Supplier: SITC 6
 Manufactured Goods
 (billions of U.S. dollar)

	Total	NAFTA	EU-5	Japan	China	Asia	RofW
	1996						
absolute values	-35.9	-6.4	-7.9	-3.2	-3.8	-4.9	-9.8
as a percentage of total deficit	33.3	6.0	7.3	3.0	3.5	4.5	9.1
as a percentage of SITC deficit		17.9	21.9	8.9	10.5	13.6	27.2
	2001						
absolute values	-56.4	-5.2	-9.0	-4.0	-9.7	-10.2	-18.3
as a percentage of total deficit	18.7	1.7	3.0	1.3	3.2	3.4	6.1
as a percentage of SITC deficit		9.1	16.0	7.1	17.2	18.1	32.4
	2006						
absolute values	-119.5	-10.8	-13.0	-5.1	-32.5	-17.9	-40.3
as a percentage of total deficit	23.0	2.1	2.5	1.0	6.3	3.4	7.8
as a percentage of SITC deficit		9.1	10.9	4.3	27.2	14.9	33.7
	change 1996 - 2006						
absolute values	-83.6	-4.4	-5.1	-1.9	-28.7	-13.0	-30.5
as a percentage of total deficit		-3.9	-4.8	-2.0	2.8	-1.1	-1.3
as a percentage of SITC deficit		-8.8	-11.0	-4.6	16.7	1.3	6.5

Source: author's elaboration on U.S. Census data.

3.2 Trade in Machinery and Transportation Equipment

The evolution of trade within the machinery and transport equipment category (Table 5) highlights some of the most striking changes arising from the impact of China on both the U.S. as a whole and the other U.S. trading partners.

In fact, in 1996 Japan was, by far, the largest net supplier of machinery and transport equipment to the U.S., making up 58 percent of the total U.S. trade deficit and more than the total deficit in the category (\$56.6 billion), because of the substantial trade surplus enjoyed by the U.S. with the Rest of the World (\$51.6 billion). Japan was followed by the Asian countries group, with a share of 38.5 percent. China's share was 15 percent, as much as that of NAFTA (14.8 percent) and slightly less than the EU-5's (12.9 percent).

By 2006, China had become the single largest U.S. supplier within the machinery and transport equipment category, with a share shooting to almost 50 percent, marking in absolute terms a thirteen-fold increase (from \$8.4 to \$106.1 billion).

As in the previous SITC category, the rise in the relative importance of China runs in parallel with the decline of both Japan and the Asian countries: Japan's share of the category deficit collapsed by over 40 percentage points, from 110.2 to 41.8 percent, although Japanese net exports increased by \$28 billion in absolute terms; Asia's share fell by 22 percentage points, from 38.5 to 17 percent, while increasing by \$15 billion in absolute terms.

TABLE 5 - *U.S. Trade by Category and Supplier: SITC 7 Machinery and Transport Equipment*
(billions of U.S. dollar)

	Total	NAFTA	EU-5	Japan	China	Asia	RofW
	1996						
absolute values	-56.6	-8.4	-7.3	-62.4	-8.4	-21.8	51.6
as a percentage of total deficit	52.6	7.8	6.8	57.9	7.8	20.2	-48.0
as a percentage of SITC deficit		14.8	12.9	110.2	14.9	38.5	-91.2
	2001						
absolute values	-124.8	-27.1	-19.2	-70.8	-24.7	-31.7	48.7
as a percentage of total deficit	41.5	9.0	6.4	23.5	8.2	10.5	-16.2
as a percentage of SITC deficit		21.7	15.4	56.7	19.8	25.4	-39.0
	2006						
absolute values	-215.4	-26.1	-35.5	-90.1	-106.1	-36.5	79.0
as a percentage of total deficit	41.5	5.0	6.8	17.3	20.4	7.0	-15.2
as a percentage of SITC deficit		12.1	16.5	41.8	49.3	17.0	-36.7
	change 1996 - 2006						
absolute values	-158.8	-17.8	-28.2	-27.7	-97.7	-14.8	27.3
as a percentage of total deficit		-2.8	0.1	-40.6	12.6	-13.2	32.7
as a percentage of SITC deficit		-2.7	3.6	-68.4	34.4	-21.5	54.6

Source: author's elaboration on U.S. Census data.

NAFTA and the EU-5 countries marked only modest changes in their relative positions: NAFTA's share of the category deficit decreased by 2.7 percentage points while EU-5's increased by 3.6 percentage points. Both groups, however, marked significant advances (\$18 and \$28 billion, respectively) in the value of their net exports to the U.S.

Finally, it is worth noting that by the end of 2006, despite the huge increase in the category deficit as a whole, the substantial surplus (\$51.6 billion) enjoyed by U.S. with the Rest of the World group in 1996, mostly related to the export of airplanes (Boeing is the single largest U.S. industrial exporter), had grown by over \$27 billion (to \$79 billion).

Incidentally, one can anticipate here a theme that will be addressed more appropriately in the last part of the paper. In fact, some of the findings above bring up the question of whether imports from China replace (or, conversely, add to) imports from other U.S. trading partners.

In fact, as one can observe from Table 5, the increase in China's share of the U.S. deficit is mirrored by a decline in the shares of other Asian countries, most notably Japan and the Asian countries.

The evolution of the gains and losses in the deficit shares of the various U.S. trading partners would then lends some support to the hypothesis that, at least to some degree, Chinese productions are replacing other Asian exports to the U.S.

Addressing this issue is all the more important because it amounts to address perhaps the most sensitive and controversial issue of all for U.S. international trade: to what extent imports from China are hurting U.S. manufacturing production and employment.

3.3 Trade in Miscellaneous Manufactured Articles

As for the miscellaneous manufactured articles category (Table 6), we should first note that, although the size of the deficit almost tripled over the period (from 60 to 160 billion), in relative terms this sector shows the largest decline of all three, from 56 to 31 percent of total deficit.

China held the top position already in 1996, providing 48 percent of U.S. net imports of miscellaneous manufactured goods, followed by Asia with 35 percent. By the end of 2006, China had gained 14 more percentage points to its share (over \$70 more billion in absolute terms), while Asia's share had lost 20 percentage points. The Rest of the World group marks another major advancement, increasing its net exports to the U.S. by \$21 billion and raising its category share from 4.4 to 10 percentage points.

Finally, the EU-5 countries' share more than halved from 1996 to 2006, standing at 5.0 percent at the end of the period.

Despite the progress made by China as a supplier of miscellaneous manufactured goods, it should be noted that this category (SITC 8) is the only one among the three where China records a decline in the ratio between its net exports and the total U.S. trade deficit, from 27 percent in 1996 to 19 percent in 2006. On the contrary, as we have seen before, China's net exports of manufactured goods (SITC 6) and machinery and transportation equipment (SITC 7) increased,

respectively, from 3.5 to 6.3 percent and from 7.8 to 20.4 percent, as a ratio to total U.S. trade deficit.

TABLE 6 - *U.S. Trade by Category and Supplier: SITC 8 Miscellaneous Manufactured Articles*
(billions of U.S. dollar)

	Total	NAFTA	EU-5	Japan	China	Asia	RofW
	1996						
absolute values	-59.9	0.2	-6.3	-1.3	-29.0	-20.9	-2.7
as a percentage of total deficit	55.6	-0.2	5.8	1.2	27.0	19.4	2.5
as a percentage of SITC deficit		-0.4	10.5	2.2	48.4	34.8	4.4
	2001						
absolute values	-109.6	-5.3	-7.6	-4.5	-49.4	-25.7	-17.0
as a percentage of total deficit	36.4	1.8	2.5	1.5	16.4	8.5	5.7
as a percentage of SITC deficit		4.8	7.0	4.1	45.1	23.5	15.6
	2006						
absolute values	-160.4	-2.4	-8.0	-2.2	-100.2	-24.3	-23.4
as a percentage of total deficit	30.9	0.5	1.5	0.4	19.3	4.7	4.5
as a percentage of SITC deficit		1.5	5.0	1.4	62.4	15.2	14.6
	change 1996 - 2006						
absolute values	-100.5	-2.6	-1.7	-0.8	-71.2	-3.5	-20.7
as a percentage of total deficit		0.7	-4.3	-0.8	-7.7	-14.7	2.0
as a percentage of SITC deficit		1.9	-5.5	-0.9	14.0	-19.7	10.1

Source: author's elaboration on U.S. Census data.

This finding can be interpreted as suggestive of qualitative evolution of China as a provider of goods to the U.S., from lower value-added to higher value-added sectors: in fact, data show a relatively more important role taken on by the country in the machinery and transportation equipment sector and a parallel decline in the miscellaneous manufactured articles sector.

4. MAIN CONTRIBUTORS TO THE U.S. TRADE DEFICIT BY 2-DIGIT SITC CATEGORY

We now turn to a more detailed analysis of the U.S. trade deficit, by adopting a narrower 2-digit SICT classification, which will provide us with a better understanding of the evolution overtime of the main contributors to the U.S. deficit, from both a sectoral and a country perspective.

To this end, Table 7 shows a ranking of U.S. net imports sorted by their contribution (or share) to the total U.S. deficit.

In 1996, office machines from Asian countries were the single largest contributor to the U.S. deficit, making up 24 percent of the total trade imbalance. Net imports of road vehicles from Japan stood just below, occupying the second position in the ranking and accounting for about 23 percent of the total, while road vehicles from NAFTA got the third position (21 percent).

Others major contributors included articles of apparel from Asia and the Rest of the World, office machines and electrical machines from Japan, and road vehicles from the EU-5 group. China had two entries among the top ten contributors, miscellaneous manufactured articles and footwear, both belonging to the lower valued-added SITC 8 category.

Over the next five years, we can observe little changes within the top ten positions. By 2001, net imports of road vehicles from Japan and NAFTA had got to the top two positions of the ranking, while office machines from Asian countries slipped down to the third position.

Furthermore, telecommunication products from Asia and commodities from NAFTA countries joined the top ten contributors. As for China, although the country lost one entry (footwear) among the top ten positions, in 2001 it could count five entries within the second ten largest contributors (as opposed to one in 1996), thanks to increases in net exports to the U.S. of office machines, telecommunication and electrical machines.

Incidentally, one should note that because of the increase in the overall U.S. deficit, each single item now contributes to the total deficit by a lower percentage than in 1996.

By 2006, contrary to what had happened between 1996 and 2001, some major changes had taken place within the top-ten ranking.

In particular, while Japanese road vehicles still held the top position (making up 10.5 percent of total deficit), office machines from China shot up from the thirteenth position in 2001 to the second position, now accounting for 9 percent of total deficit (or 46 billion), up from just 3.0 percent five years before. This rise is mirrored by the fall in the relative position of net imports of office machines from Asia, from the third to the seventh position (from 8.7 to 5.1 percent as a share of total deficit).

The same impressive jump applies to telecommunication products from China, which went from the fourteenth position in 2001 straight to the third position in 2006 (from 3.0 to 7.8 percent of total deficit).

TABLE 7 - U.S. Non-Energy Trade Deficit - Main Contributors

Position	1996			2001			2006		
	Item	\$bn	% deficit	Item	\$bn	% deficit	Item	\$bn	% deficit
1	Asia SITC 75 Office machines	-25.9	24.0	Japan SITC 78 Road vehicles	-38.5	12.8	Japan SITC 78 Road vehicles	-54.7	10.5
2	Japan SITC 78 Road vehicles	-24.5	22.7	NAFTA SITC 78 Road vehicles	-36.1	12.0	China SITC 75 Office machines	-46.2	8.9
3	NAFTA SITC 78 Road vehicles	-23.0	21.3	Asia SITC 75 Office machines	-26.3	8.7	China SITC 76 Telecommunications	-40.6	7.8
4	Asia SITC 84 Articles of apparel	-14.5	13.5	RofW SITC 84 Articles of apparel	-20.6	6.8	NAFTA SITC 78 Road vehicles	-36.8	7.1
5	China SITC 89 Miscell. manufactured art.	-11.5	10.7	China SITC 89 Miscell. manufactured art.	-19.3	6.4	China SITC 89 Miscell. manufactured art.	-36.1	7.0
6	Japan SITC 75 Office machines	-11.1	10.3	Asia SITC 84 Articles of apparel	-18.4	6.1	RofW SITC 84 Articles of apparel	-27.2	5.2
7	Japan SITC 77 Electrical machinery	-9.9	9.2	EU-5 SITC 78 Road vehicles	-17.5	5.8	Asia SITC 75 Office machines	-26.6	5.1
8	RofW SITC 84 Articles of apparel	-9.8	9.1	Asia SITC 76 Telecommunications	-14.0	4.7	Asia SITC 76 Telecommunications	-26.0	5.0
9	EU-5 SITC 78 Road vehicles	-8.7	8.1	NAFTA SITC 93 Commodities	-12.9	4.3	China SITC 84 Articles of apparel	-23.1	4.4
10	China SITC 85 Footwear	-6.4	5.9	RofW SITC 51 Organic chemicals	-10.4	3.5	EU-5 SITC 78 Road vehicles	-23.0	4.4
11	NAFTA SITC 93 Commodities	-6.3	5.9	NAFTA SITC 76 Telecommunications	-9.9	3.3	Asia SITC 84 Articles of apparel	-17.6	3.4
12	China SITC 84 Articles of apparel	-6.3	5.8	China SITC 85 Footwear	-9.7	3.2	RofW SITC 68 Nonferrous metals	-16.4	3.2
13	Asia SITC 77 Electrical machinery	-6.1	5.6	China SITC 75 Office machines	-9.2	3.0	NAFTA SITC 76 Telecommunications	-16.3	3.1
14	NAFTA SITC 24 Cork and wood	-5.9	5.5	China SITC 76 Telecommunications	-8.9	3.0	China SITC 82 Furniture	-15.1	2.9
15	Asia SITC 76 Telecommunications	-5.8	5.4	China SITC 84 Articles of apparel	-8.8	2.9	NAFTA SITC 93 Commodities	-13.9	2.7
16	Japan SITC 76 Telecommunications	-5.1	4.7	RofW SITC 68 Nonferrous metals	-7.6	2.5	China SITC 85 Footwear	-13.8	2.7
17	Japan SITC 71 Power generating machines	-4.9	4.6	Asia SITC 78 Road vehicles	-7.3	2.4	China SITC 77 Electrical machinery	-13.6	2.6
18	NAFTA SITC 64 Paper	-4.6	4.3	NAFTA SITC 84 Articles of apparel	-7.1	2.4	Asia SITC 78 Road vehicles	-12.0	2.3
19	NAFTA SITC 76 Telecommunications	-4.2	3.9	China SITC 77 Electrical machinery	-7.0	2.3	China SITC 69 Manufactures of metals	-11.8	2.3
20	RofW SITC 67 Iron and steel	-4.1	3.8	Japan SITC 75 Office machines	-6.5	2.2	RofW SITC 67 Iron and steel	-11.8	2.3
21	Japan SITC 74 General industrial machines	-4.0	3.7	Japan SITC 77 Electrical machinery	-6.2	2.1	RofW SITC 51 Organic chemicals	-10.3	2.0
22	China SITC 76 Telecommunications	-3.9	3.6	RofW SITC 66 Nonmetallic mineral	-6.2	2.1	NAFTA SITC 68 Nonferrous metals	-9.7	1.9
23	RofW SITC 66 Nonmetallic mineral	-3.7	3.5	Japan SITC 76 Telecommunications	-6.1	2.0	EU-5 SITC 74 General industrial machines	-9.0	1.7
24	RofW SITC 68 Nonferrous metals	-3.7	3.5	Japan SITC 71 Power generating machines	-5.7	1.9	RofW SITC 66 Nonmetallic mineral	-8.9	1.7
25	EU-5 SITC 72 Machinery specialized	-3.7	3.5	EU-5 SITC 93 Commodities	-5.5	1.8	EU-5 SITC 54 Pharmaceutical products	-8.8	1.7
26	NAFTA SITC 68 Nonferrous metals	-3.7	3.4	RofW SITC 93 Commodities	-5.4	1.8	NAFTA SITC 98 Low valued items	-7.6	1.5
27	EU-5 SITC 74 General industrial machines	-3.7	3.4	NAFTA SITC 98 Low valued items	-5.3	1.8	Asia SITC 89 Miscell. manufactured art.	-7.0	1.4
28	China SITC 77 Electrical machinery	-3.3	3.1	NAFTA SITC 24 Cork and wood	-5.2	1.7	China SITC 74 General industrial machines	-6.9	1.3
29	China SITC 75 Office machines	-3.3	3.1	Asia SITC 89 Miscell. manufactured art.	-5.0	1.7	Japan SITC 77 Electrical machinery	-6.8	1.3
30	EU-5 SITC 93 Commodities	-3.3	3.1	China SITC 82 Furniture	-5.0	1.7	EU-5 SITC 72 Machinery specialized	-6.7	1.3

Source: author's elaboration on U.S. Census data.

Overall, by 2006 China had placed four entries among the top ten contributors to the U.S. deficit, up from two in 1996. Besides, if we broaden our observation to the top thirty contributors to the U.S. trade deficit, China's entries have increased from six to nine, because of the progresses made by the country as a new large provider of such goods as furniture, manufactured of metals and general industrial machines, which in 1996 did not appear in the top thirty net imports.

Perhaps more importantly than the quantitative changes, the two new top entries (office machines and telecommunications equipments) capture the qualitative change that the trade relationship between China and the U.S. has been undergoing since China's entry into WTO: in fact, while until 2001 China's largest net exports to the U.S. mostly belonged to the lower value-added miscellaneous manufactured articles sectors, by 2006 China had emerged as the largest provider of relatively higher value-added goods such as office machines and telecommunications equipments.

4.1 Evolution of the Lafay-Like Index

Although the previous section has already broadly highlighted the advancements of China's net import penetration into the U.S. over the years 1996-2006, a more precise assessment of the changes in a country's specialization in international trade can be obtained by means of the Lafay index. This index is a measure of a country's comparative advantages in international trade: the higher the index, the more specialized is the country in that particular product, while negative values amount to degree of de-specialization. In practice, the Lafay index measures a product's contribution to the overall trade balance.

More importantly, the Lafay index filters out the effect of macroeconomic variables, such as the business cycle or the exchange rate, on a product's trade balance. By doing so, the index allows an evaluation of a country's international trade specialization from a *structural*, as opposed to *cyclical*, perspectives. In fact, underlying the index is the idea that a worsening of the trade balance for a particular product has to be assessed with regard to the evolution of the overall trade balance: only if the trade deficit for a particular product is worsening by more than the overall trade deficit, we may conclude that a country is becoming relatively less specialized in that particular product.

In its original version, the Lafay index applies to each item (at various levels of disaggregation) that a country trades with the rest of the world. We adopt a slightly modified version of the index, by computing the index with reference to item-country pairs: in other terms, we pair each item in the sixth, seventh and eighth 2-digit SITC categories with each of the six countries/areas which make up our grouping of U.S. trade partners.

Although the interpretation of this Lafay-like index as a measure of the evolution over time of a country's comparative advantages in trade becomes less clear-cut, the index is still valuable to point out structural changes undergoing in the U.S. trade balance, in a better way than the simple ranking of contributors to the deficit shown in Table 7.

The values of the bottom 20 Lafay-like indexes in Table 8 confirm our previous findings on the evolution and main determinants of the U.S. trade deficit. Other than highlighting the structural imbalance with Japan in the road vehicles sector, what really stands out is the change at the top of the ranking: in fact, the significant U.S. dependence on office machines imported from non-China Asian countries, which was in place up until 2001, by 2006 had been replaced by net imports of this item from China.

The deepening of the U.S. import dependence on China is also well evidenced by the increasing number of Chinese products which enter the bottom 20 ranking, from four in 1996 to eight in 2006. Besides, to confirm the qualitative change in the nature of the trade relationship between the two countries, we can note that by 2006 products such as office machines and telecommunication equipments had replaced miscellaneous manufactured articles and footwear as those with the lowest values of the index, thus marking the progressive de-specialization of the U.S. in the above sectors.

It is also worthwhile to note that imports of road vehicles from NAFTA, contrary to those from Japan and EU-5, do not enter the bottom 10 ranking of the Lafay-like index in 2006, although in this same year road vehicles from NAFTA are the forth largest net contributor to the U.S. deficit (see Table 7). Keeping in mind the caveats on the analytical properties of the Lafay-like trade index, the aforementioned finding might be suggesting that there exists a difference in the nature of the trade in road vehicles between the U.S. and NAFTA, on one hand, and the U.S. and Japan, as well as the EU-5 countries, on the other: the former trade relationship may be more affected by cyclical factors, while the deficit in the trade of motor vehicles with Japan and the EU-5 would take on a more structural nature.

TABLE 8 - Bottom 20 Lafay Index

Position	1996		2001		2006	
	Item	value	Item	value	Item	value
1	Asia SITC 75 Office machines	-1.70	Japan SITC 78 Road vehicles	-1.79	Japan SITC 78 Road vehicles	-1.69
2	Japan SITC 78 Road vehicles	-1.65	Asia SITC 75 Office machines	-1.09	China SITC 75 Office machines	-1.42
3	NAFTA SITC 78 Road vehicles	-1.20	RoFW SITC 84 Articles of apparel	-0.91	China SITC 76 Telecommunications	-1.25
4	Asia SITC 84 Articles of apparel	-1.00	China SITC 89 Miscell. manufactured art.	-0.91	China SITC 89 Miscell. manufactured art.	-1.12
5	China SITC 89 Miscell. manufactured art.	-0.79	NAFTA SITC 78 Road vehicles	-0.91	RoFW SITC 84 Articles of apparel	-0.83
6	Japan SITC 75 Office machines	-0.70	Asia SITC 84 Articles of apparel	-0.87	Asia SITC 76 Telecommunications	-0.75
7	RoFW SITC 84 Articles of apparel	-0.64	EU-5 SITC 78 Road vehicles	-0.74	China SITC 84 Articles of apparel	-0.73
8	Japan SITC 77 Electrical machinery	-0.60	Asia SITC 76 Telecommunications	-0.60	Asia SITC 75 Office machines	-0.72
9	EU-5 SITC 78 Road vehicles	-0.56	China SITC 85 Footwear	-0.46	EU-5 SITC 78 Road vehicles	-0.57
10	China SITC 85 Footwear	-0.44	China SITC 84 Articles of apparel	-0.42	Asia SITC 84 Articles of apparel	-0.55
11	China SITC 84 Articles of apparel	-0.44	China SITC 75 Office machines	-0.40	RoFW SITC 68 Nonferrous metals	-0.47
12	Asia SITC 76 Telecommunications	-0.35	China SITC 76 Telecommunications	-0.40	China SITC 82 Furniture	-0.47
13	Japan SITC 71 Power generating machines	-0.32	RoFW SITC 68 Nonferrous metals	-0.34	China SITC 85 Footwear	-0.43
14	Japan SITC 76 Telecommunications	-0.32	Asia SITC 78 Road vehicles	-0.33	China SITC 69 Manufactured of metals	-0.36
15	RoFW SITC 67 Iron and steel	-0.27	China SITC 77 Electrical machinery	-0.29	Asia SITC 78 Road vehicles	-0.35
16	NAFTA SITC 64 Paper	-0.27	NAFTA SITC 84 Articles of apparel	-0.28	RoFW SITC 67 Iron and steel	-0.34
17	Japan SITC 74 General industrial machines	-0.26	NAFTA SITC 76 Telecommunications	-0.26	NAFTA SITC 76 Telecommunications	-0.31
18	China SITC 76 Telecommunications	-0.26	Japan SITC 76 Telecommunications	-0.24	China SITC 77 Electrical machinery	-0.29
19	RoFW SITC 68 Nonferrous metals	-0.24	China SITC 82 Furniture	-0.24	NAFTA SITC 78 Road vehicles	-0.22
20	RoFW SITC 66 Nonmetallic mineral	-0.23	Japan SITC 71 Power generating machines	-0.23	EU-5 SITC 74 General industrial machinery	-0.20

Source: author's elaboration on U.S. Census data.

5. EVOLUTION OF THE U.S. IMPORT DEPENDENCE IN KEY SECTORS

The analysis so far has focused on the evolution over time of net imports as a measure of the U.S. international specialization in trade. However, the rising importance of China as a supplier to the U.S. can be gauged, in a complementary way, by looking at the evolution of imports only, which are seen by some as a better measure of a country's dependence on foreign goods.

As it is shown in Table 9, in the manufactured goods sector U.S. imports from China have risen from 5 percent in 1996 to 16 percent in 2006. This is matched up by a decrease in the import shares of both the EU-5 group and Japan, while Asia's share has remained fairly constant. On the other hand, while in 1996 NAFTA was the largest provider of manufactured goods to the U.S., with a 34-percent share, by 2006 this number had decreased by 6 percentage points and the top position had been taken by the Rest of the World, whose share increased from 25 to 29 percent.

TABLE 9 - *U.S. Imports by 1-Digit SITC Category and Supplier*
percentage of total SITC category

	NAFTA	EU-5	Japan	China	Asia	RofW
SITC 6 Manufactured goods						
1996	34	15	8	5	13	25
2001	33	13	6	9	13	27
2006	28	10	4	16	12	29
SITC 7 Machinery and transport equipment						
1996	30	14	24	4	22	6
2001	33	15	19	7	19	7
2006	29	14	16	19	16	7
SITC 8 Miscellaneous manufactured articles						
1996	15	13	8	23	23	18
2001	17	12	7	26	18	20
2006	14	10	4	38	14	20

Source: author's elaboration on U.S. Census data.

Even more impressive are the progresses made by China as a provider to the U.S. of goods belonging to the machinery and transport equipment sector, with a share of total U.S. imports rising from 4 to 19 percent over the years 1996-2006. Again, this fact is mirrored by declines in both Japan's and Asia's shares, from 24 to 16

percent and from 22 to 16 percent respectively. Virtually no change has taken place for the other groups. This lends some support to the 'replacement view', which claims that Chinese imports are substituting, at least to some extent, imports from other countries.

Contrary to the two previous sectors, in the miscellaneous manufactured articles sector China held a leading position already in 1996, providing 23 percent of U.S. imports (the same amount as Asia's). Nonetheless, by 2006 China had scored a 15-percentage increase in its share, mostly occurring after 2001, and now provides 38 percent of total imports within the category. China's advance is reflected by a 9-percentage point decrease (to 14 percent) in Asia's share and a halved Japanese share (to 4 percent). As a consequence of the above changes, by 2006 the Rest of the World had become the second largest provider of miscellaneous manufactured articles imported by the U.S.

In order to single out some of the most relevant features characterizing the rise of China as a U.S. trading partner, we now focus on some of the most important sectors to the U.S. international trade using a 2-digit SITC classification.

5.1 Import Shares in the SITC 6 Manufactured Goods Sector

In the manufactured goods sector (Table 10), the rise of China as a provider of manufactured of metals (SITC 69) stands out: in fact, imports from China have increased threefold, from 10 percent of the category total in 1996 to 33 percent in 2006, along with a trade deficit going up from 1.2 to 11.8 billion. Conversely, non-China Asian countries and, above all, Japan have experienced a relative decline of their positions.

Also noticeable is the rising role of China (as well as that of the Asian group) as a supplier of iron and steel (SITC 67), with an import share which hits 12 percent in 2006, up from negligible values in the previous years. In this sector, the Rest of the World group of countries is the leading provider, accounting for 37 percent of total imports in 2006. Japan, which used to deliver 10 percent of U.S. imports of iron and steel in 1996, by 2006 had no longer been among the top four largest providers.

To a lesser extent, China has made progresses as a supplier of non-metallic mineral manufactures (SITC 66), doubling its share of U.S. imports to 12 percent in 2006. In this category, the Rest of the World group has retained its leading role over all of the years under consideration, raising its share of U.S. imports to a record 47 percent in 2006.

TABLE 10 - U.S. Trade Balance - SITC 6 Main Contributors

1996					2006				
Position	Country	\$bn	% deficit	% category imports	Position	Country	\$bn	% deficit	% category imports
SITC 66 - Non-metallic mineral manufactures									
23	RofW	-3.7	3.5	40	22	RofW	-6.2	2.1	44
48	EU-5	-2.0	1.9	17	59	EU-5	-2.3	0.8	15
69	Asia	-1.2	1.1	16	64	Asia	-2.1	0.7	15
83	China	-0.9	0.8	6	66	China	-2.0	0.7	9
SITC 67 - Iron and steel									
20	RofW	-4.1	3.8	34	38	RofW	-3.6	1.2	33
33	EU-5	-3.0	2.8	22	60	EU-5	-2.3	0.8	19
63	Japan	-1.4	1.3	10	81	Asia	-1.2	0.4	11
90	NAFTA	-0.8	0.7	25	86	Japan	-1.1	0.4	9
SITC 68 - Non-ferrous metals									
24	RofW	-3.7	3.5	37	16	RofW	-7.6	2.5	44
26	NAFTA	-3.7	3.4	48	34	NAFTA	-3.9	1.3	37
104	EU-5	-0.5	0.4	10	93	EU-5	-0.9	0.3	13
	-	-	-	-	-	-	-	-	-
SITC 69 - Manufactures of metals									
42	Asia	-2.3	2.2	24	35	China	-3.9	1.3	19
59	Japan	-1.5	1.4	14	41	Asia	-3.3	1.1	20
66	China	-1.2	1.2	10	77	Japan	-1.5	0.5	9
84	EU-5	-0.9	0.8	15	91	EU-5	-1.0	0.3	12
						Japan	-1.6	0.3	6

Source: author's elaboration on U.S. Census data.

5.2 Import Shares in the SITC 7 Machinery and Transport Equipment

This sector is undoubtedly the one where China has made the most outstanding progresses, from both a quantitative and a qualitative point of view.

In fact (Table 11), in 1996 the bulk (50 percent) of office machines (SITC 75) imported by the U.S. was provided by non-China Asian countries, followed by Japan with a 25 percent share. China was only a minor provider of such goods, accounting for 5 percent of U.S. imports in this category.

By 2006, China's share had shot up to an astonishing 46 percent, mirrored by a drop in both Asia's and Japan's shares, to 32 and 8 percent respectively.

Also impressive is the advance of China in the category of telecommunication equipment (SITC 76), where the percentage of U.S. imports from the country increased from 13 to 37 between 1996 and 2006, again stripping Asia of the top position. However, contrary to the office machines sector, Asian countries' share held up well over the same period, with only a minor decline from 29 to 26 percent, while Japan marked the largest drop, from 22 to 7 percent.

Finally, equally noticeable is the rising role of China in the electrical machinery sector, where the country supplied 20 percent of total imports in 2006, up from only 5 percent in 1996.

5.3 Import Shares in the SITC 8 Miscellaneous Manufactured Articles

Although the sectors within the SITC 8 category are those where China presence has long been strong, further significant progresses have been made by the country over the period under investigation.

In the furniture sector (Table 12), NAFTA was the lead supplier in 1996, providing 47 percent of total U.S. imports, with China holding a 12 percent share. By 2006, China's share had reached 46 percent, stripping NAFTA of the top position.

In the apparel sector, China doubled its share of U.S. imports from 15 to 29 percent, and lay behind just the Rest of the World group in the ranking. We also observe a decline of the Asia group as a supplier to the U.S., from a leading share of 35 percent in 1996 to 23 percent in 2006.

The strengthening of China's position has taken place also in the footwear and miscellaneous manufactured articles sectors: in the former, China now holds the top position, providing over 70

TABLE 11 - U.S. Trade Balance - SITC 7 Main Contributors

1996					2001					2006				
Position	Country	\$bn	% deficit	% category imports	Position	Country	\$bn	% deficit	% category imports	Position	Country	\$bn	% deficit	% category imports
SITC 75 - Office Machines														
1	Asia	-25.9	24.0	50	3	Asia	-26.3	8.7	45	2	China	-46.2	8.9	46
6	Japan	-11.1	10.3	25	13	China	-9.2	3.0	14	7	Asia	-26.6	5.1	32
29	China	-3.3	3.1	5	20	Japan	-6.5	2.2	15	32	Japan	-6.4	1.2	8
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SITC 76 - Telecommunications														
15	Asia	-5.8	5.4	29	8	Asia	-14.0	4.7	28	3	China	-40.6	7.8	37
16	Japan	-5.1	4.7	22	11	NAFTA	-9.9	3.3	32	8	Asia	-26.0	5.0	26
19	NAFTA	-4.2	3.9	30	14	China	-8.9	3.0	16	13	NAFTA	-16.3	3.1	25
22	China	-3.9	3.6	13	23	Japan	-6.1	2.0	14	31	Japan	-6.4	1.2	7
SITC 77 - Electrical Machinery														
7	Japan	-9.9	9.2	22	19	China	-7.0	2.3	11	17	China	-13.6	2.6	20
13	Asia	-6.1	5.6	38	21	Japan	-6.2	2.1	14	29	Japan	-6.8	1.3	11
28	China	-3.3	3.1	5	-	-	-	-	-	99	EU-5	-1.2	0.2	11
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SITC 78 - Road Vehicles														
2	Japan	-24.5	22.7	28	1	Japan	-38.5	12.8	26	1	Japan	-54.7	10.5	27
3	NAFTA	-23.0	21.3	53	2	NAFTA	-36.1	12.0	49	4	NAFTA	-36.8	7.1	45
9	EU-5	-8.7	8.1	12	7	EU-5	-17.5	5.8	14	10	EU-5	-23.0	4.4	15
68	Asia	-1.2	1.1	3	17	Asia	-7.3	2.4	5	18	Asia	-12.0	2.3	6.3

Source: author's elaboration on U.S. Census data.

TABLE 12 - U.S. Trade Balance - SITC 8 Main Contributors

1996				2001				2006						
Position	Country	\$bn	% deficit	% category imports	Position	Country	\$bn	% deficit	% category imports	Position	Country	\$bn	% deficit	% category imports
SITC 82 - Furniture														
43	NAFTA	-2.2	2.1	47	30	China	-5.0	1.7	27	14	China	-15.1	2.9	46
49	Asia	-1.9	1.8	22	32	NAFTA	-4.4	1.5	41	39	NAFTA	-5.6	1.1	29
70	China	-1.1	1.0	12	55	Asia	-2.4	0.8	14	61	Asia	-3.1	0.6	10
88	EU-5	-0.8	0.8	11	74	EU-5	-1.6	0.5	11	82	RofW	-1.9	0.4	8
SITC 84 - Articles of apparel														
4	Asia	-14.5	13.5	35	4	RofW	-20.6	6.8	38	6	RofW	-27.2	5.2	37
8	RofW	-9.8	9.1	33	6	Asia	-18.4	6.1	29	9	China	-23.1	4.4	29
12	China	-6.3	5.8	15	15	China	-8.8	2.9	14	11	Asia	-17.6	3.4	23
37	NAFTA	-2.6	2.4	12	18	NAFTA	-7.1	2.4	16	46	NAFTA	-4.7	0.9	9
SITC 85 - Footware														
10	China	-6.4	5.9	50	12	China	-9.7	3.2	64	16	China	-13.8	2.7	73
45	Asia	-2.1	1.9	18	71	EU-5	-1.8	0.6	12	74	RofW	-2.1	0.4	12
51	EU-5	-1.8	1.7	15	75	RofW	-1.6	0.5	12	94	EU-5	-1.4	0.3	8
58	RofW	-1.5	1.4	14	80	Asia	-1.3	0.4	9	109	Asia	-1.0	0.2	6
SITC 89 - Miscellaneous manufactured articles														
5	China	-11.5	10.7	31	5	China	-19.3	6.4	34	5	China	-36.1	7.0	44
36	Asia	-2.8	2.6	19	29	Asia	-5.0	1.7	15	27	Asia	-7.0	1.4	14
39	EU-5	-2.4	2.3	18	45	EU-5	-3.1	1.0	16	63	EU-5	-2.8	0.5	13
98	Japan	-0.5	0.5	11	52	Japan	-2.5	0.8	10	121	Japan	-0.7	0.1	5

Source: author's elaboration on U.S. Census data.

percent of total U.S. imports, while in the latter, a category made up mostly of toys, the country's share increased from 31 to 44 percent: this makes miscellaneous manufactured articles the fifth largest contributor to the overall U.S. trade deficit, accounting for 7 percent of it at the end of 2006.

6. AN INTRODUCTION TO THE DEBATE ON THE RELATIONSHIP BETWEEN RISING IMPORTS FROM CHINA AND U.S. EMPLOYMENT

In this Section, we touch upon perhaps the most sensitive and controversial question arising in the context of the U.S.-China trade relationship: whether imports from China are hurting U.S. production and employment in the manufacturing sector.

First of all, it is fair to warn the reader beforehand that, because of the complexity of the question and the difficulty to single out any given factor which may influence the evolution of U.S. employment, more powerful statistical tools and a more rigorous analysis are required in order to provide meaningful potential answers.

In fact, any simple correlation between declines in employment and increases in imports, namely from China, could be misleading, as one has to take into account factors such as productivity gains, the extent to which imports from China displace imports from other countries and the contributions of demand changes to job gains or losses in particular industries. In this regard, it is worth recalling that an industry may experience a worsening of its trade balance without necessarily observing a decline in the level of its exports, as imports add to domestic production, to match demand, rather than displace it.

With these important caveats in mind, we first review the main terms of the story, which can be summarized by the following two polar views (although they do not justice to the complexity of the issue): i) the *displacement* view (aka *scapegoating China*), according to which Chinese imports are progressively displacing U.S. domestic production of manufactured goods and, as a result, are responsible for large scale job losses in the manufacturing sector; ii) the *replacement* view, which replies to the previous 'allegation' by stating that imports from China replace, at least in part, imports of the same goods from other countries, rather than add to total imports.

On the first point, the usual criticism is that job losses are the most visible tip of China's impact on the U.S. economy. For example, Scott (2007) argues that the rise in the U.S trade deficit with China

between 1997 and 2006 caused the displacement of production that supported 2.166 million U.S. jobs, most of which in the high-wage manufacturing sector. According to the author, most of these jobs (1.8 million) have been lost after China entered the WTO in 2001.

Most importantly, mirroring the qualitative changes in the U.S.-China trade relationship that we documented in the previous sections, over the last years there would have been a significant shift in the kinds of industries suffering job displacements: while the largest impact was initially felt in the labor-intensive, lower-tech manufacturing industries, such as apparel and footwear, more recently the fastest growth in job displacements is occurring in highly skilled and advanced technologies areas such as electronics, computer and communications equipment.

On the other hand, other commentators consider the above criticism as misplaced. Hormats (2006) points out that the U.S. has been losing manufacturing jobs for decades, well before the increase in trade with China even began. In addition, the U.S. economy is typically subject to a very high 'churn rate', as companies downsize, close or expand, reflecting the natural dynamic of a market economy.

As an empirical support the above arguments, Holtz-Eakin (2005) argues that there is little evidence that links higher import penetration directly to job losses: in fact, with a few exceptions, a declining employment characterize both industries that experienced large increases in import penetration and those where increases were smaller. Besides, the increase in import penetration between 2000 and 2004 might have expected to directly reduce manufacturing employment in the short run by a small fraction (2-3 percent) of the 17 percent decline that actually occurred.

Against a background of competing views regarding the impact on the domestic labor market arising from the international trade with China, there is a broad consensus⁶ that the first and foremost cause of the decline in U.S. manufacturing employment is long-term productivity growth: rapid technological innovations are responsible for the most recent acceleration in the 'churn rate', to which other factors may have contributed, such as the 2001-2003 business cycle downturn (mostly in business investment and exports) and more fierce competition in international trade. As a result, courtesy of

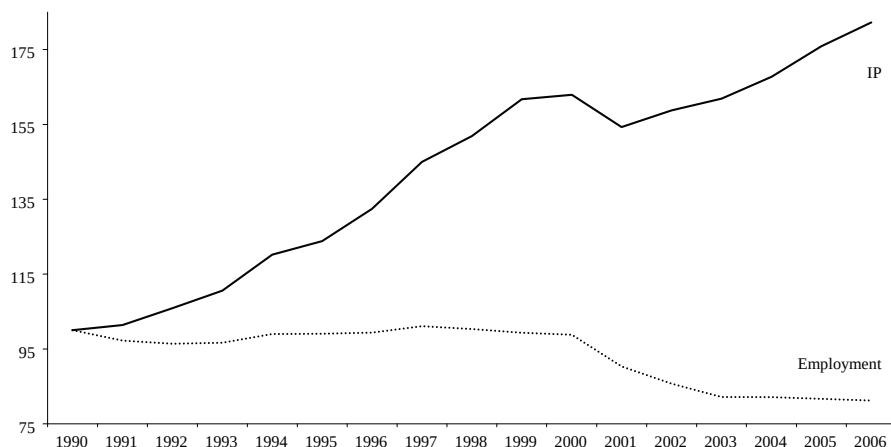
⁶ See, for example, Hufbauer and Yee (2004) and Mankiw (2003).

productivity, there can be a potentially weak link between trade deficit and employment or, in other words, *the political arithmetic that equates trade deficits with job losses is either exaggerated or plain wrong.*

Figure 1 illustrates the role of productivity gains in the U.S. manufacturing sector, with an increase in industrial production coupled with a stable employment from 1990 to 2000. Besides, since around 2001 we observe an acceleration in industrial production running in parallel with a falling employment, which seems to have leveled off in the last three years.

To be fair, China (and more generally, the international

FIGURE 1- *Employment and Industrial Production in the U.S. Manufacturing Sector (1990 = 100)*



competitors to U.S. manufacturers) might still have played a role in negatively affecting U.S. employment, insofar as rising international competition lowers global demand for U.S. manufactured goods and thus prevent it from sustaining domestic employment and offsetting the negative effect on this latter variable arising from productivity gains.

In any event, it has been pointed out that some particular U.S. industries have probably been more affected by imports, including those from China, than the manufacturing sector as a whole has been (Holtz-Eakin 2005). For example, above-average declines in employment occurred in sectors such as apparel, computer and electronic products, and electrical equipment, where China's imports have registered large increases in the share of U.S. domestic demand.

At the same time, however, job losses have been slightly below average in sectors such as furniture, where the import-penetration ratio for Chinese goods had also risen as of late.

The apparel sector, on one hand, and the computer and electronic products sector, on the other, represent two interesting cases to roughly cast some doubts on the existence of a direct link between a rising trade deficit with China and a declining domestic employment.

As shown in Table 13, both sectors have experienced significant layoffs from 2000 to 2006, amounting, in cumulative terms, to 293,000 (-51 percent) and 461,000 (-29 percent) respectively⁷, as well as a rising trade deficit with China, from \$8 to \$22 billion in the apparel sector and from \$20 to \$83 billion in the computer sector. As a result, China's share of total deficit had more than doubled in both sectors, from 15 to 31 percent in the apparel sector and from 37 to 76 percent in the computer sector.

However, a number of explanations have been brought forward to play down the view that names China's imports as the main culprit in the decline of domestic employment in the two sectors.

With regard to the apparel sector, Holtz-Eakin (2005) points out that the loss of jobs *appears to be a continuation of a long-standing trend*, rather than a direct consequence of competition from Chinese products. In fact, employment in the apparel sector had already fallen by 376,000 units (or 42 percent) between 1992 and 1999.

As for the computer and electronic products sector, where over 184,000 (+6 percent) new jobs had been added between 1992 and 2000, the bulk of job losses, rather than being attributable to increases in imports, can be traced to the years 2001-2003, those marked by the burst of the dotcom bubble and the ensuing decline in businesses' investment in computers and telecommunications equipment, which set the stage for the subsequent business cycle downturn. Furthermore, employment in the sector remained virtually unchanged over the year 2004-2006, despite the further acceleration in the trade deficit with China.

Besides, the two sectors above display a major difference in the evolution of the industrial production. In the apparel sector, production had been on a downward trend since at least the second

⁷ As a percentage of total job losses in the manufacturing sector, the apparel sector and the computer sector account for 15 and 9 percent, respectively.

half of the 1990s, along with employment. On the contrary, in the computer sector production had grown until 2000, bottomed out in 2001 and gone back up from 2002 onwards at an accelerating pace, mirroring, among others, strong gains in productivity.

To further underlie the complexity of the relationship between

TABLE 13 - *U.S. Employment and Trade Deficit*

	Change in employment (thousands)	Total U.S. deficit (billions of US\$)	U.S. deficit with China (billions of US\$)	China's share of total U.S. deficit (percentage)
NAICS 315 Apparel				
1997	45	-39	-7	19
1998	-77	-44	-7	16
1999	-79	-47	-7	15
2000	-50	-54	-8	15
2001	-91	-56	-9	15
2002	-39	-56	-9	16
2003	-46	-61	-11	18
2004	-23	-66	-13	20
2005	-27	-70	-19	28
2006	-16	-72	-22	31
NAICS 334 Computer and electronic products				
1997	81	n.a.	n.a.	-
1998	-49	n.a.	n.a.	-
1999	-13	n.a.	n.a.	-
2000	84	-55	-20	37
2001	-252	-40	-19	47
2002	-181	-60	-28	47
2003	-111	-63	-37	59
2004	-5	-85	-56	66
2005	-4	-101	-71	70
2006	8	-109	-83	76

Source: author's elaboration on U.S. Census data.

industrial production, employment and trade deficit, we can refer to the SITC 776 semiconductors and integrated circuits sector: here, the U.S. have been enjoying a rising trade surplus (including, most recently, with China), which hits \$25 billion in 2006, up from a deficit of \$635 million back in 1996. Accordingly, this sector can be thought of as a sort of 'litmus test', as it makes clear that even large loss of employment can take place at the same time as a booming trade surplus.

To sum up, although the above arguments do not mean

to completely dismiss the role of China's imports on domestic employment, they once again stress the need to take into consideration factors such as productivity gains and demand conditions in order to carry out a comprehensive analysis of the phenomenon at hand.

The role of China as a contributor to job losses in the U.S. manufacturing sector can be played down further with reference to the 'replacement' view⁸, which suggests that U.S. imports from China, rather than hurting domestic productions, compete most directly with goods from other Asian countries: due to a significant difference in price competitiveness, U.S. importers would have thus switched to Chinese goods at the expenses of productions from other Asian countries.

Some authors⁹ have further elaborated on this view, suggesting that not all of the alleged displacement is symptomatic of competition: firstly, China might have been moving into the product space vacated by other more mature Asian economies, as they move to higher value-added productions. Furthermore, Asian economies may be continuing to export to the U.S. but indirectly, by relocating production into China to take advantage of its lower labor costs.

More precisely, according to this so-called 'final assembly' view, over the last few years China would have taken on the role of final assembly center for manufactured products, previously held by other Asian and a few non-Asian countries. This shift on the part of manufacturers would thus be the primary force driving the increase in imports of goods from China. As a consequence, if China's goods replace imports from other countries, it turns out that not all of the U.S. imports from China represent lost U.S. production.

From the empirical point of view, the increased export competition between China and other Asian economies in the U.S. market is not much clear from aggregate data, where Chinese export growth and that of other Asian economies move in tandem (thus suggesting a 'flying geese' pattern). On the contrary, China's competitive pressures on other Asian countries are all the more evident if one turns to sectoral data: in this context, Asian economies appear as 'sitting ducks' which are *being picked off by a China armed with a huge pool of cheap labor and an allegedly undervalued exchange rate*. In particular, according to Ahearne *et al.* (2006), China has gained market share in the U.S. market as a whole and in almost every

⁸ Rogowsky (2003); Holtz-Eakin (2005).

⁹ Ahearne *et al.* (2006), and Bergsten (2006).

industry, while the share of other Asian economies has declined.

As shown in Figures 2, 3 and 4, this ‘replacement’ effect, while less clear-cut for products such as furniture (NAICS 337) and communication equipment (NAICS 3342), is all the more evident in the computer and peripheral equipment sector (NAICS 3341), where the huge increase in net imports from China is mirrored by a shrinking deficit with all other countries, which eventually had turned into a surplus by 2005.

More generally, as mentioned already at the beginning of this

FIGURE 2 - *U.S. Trade Balance: NAICS 337 Furniture (Billions of U.S. Dollars)*

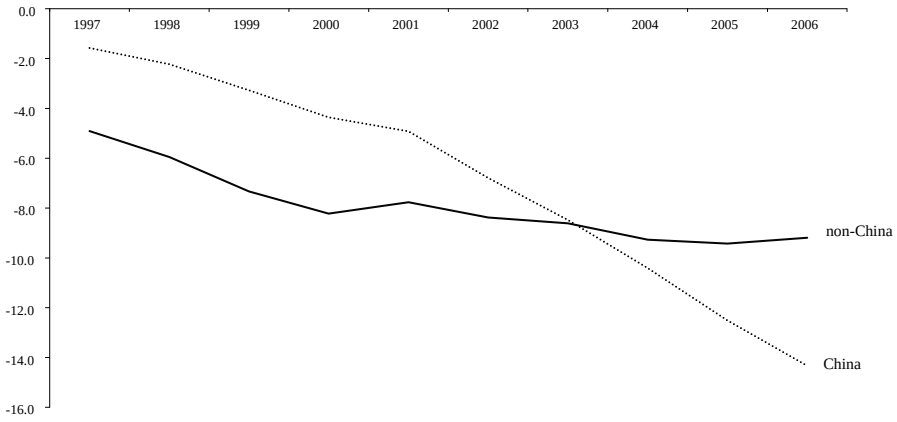


FIGURE 3 - *U.S. Trade Balance: NAICS 3342 Communication Equipment (Billions of U.S. Dollars)*

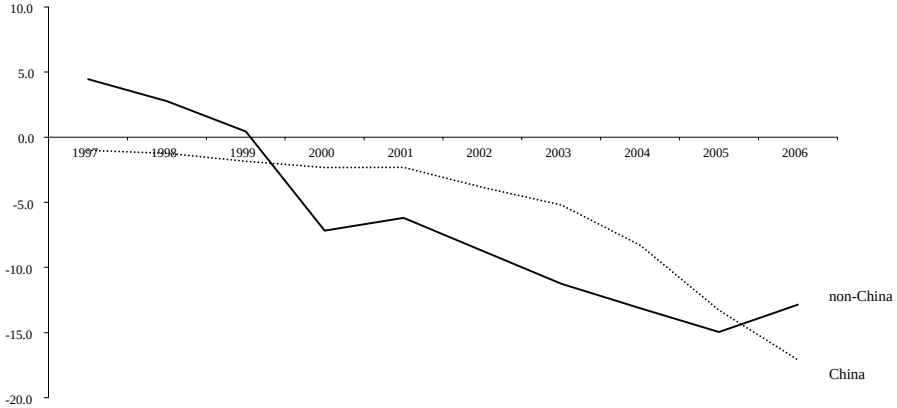
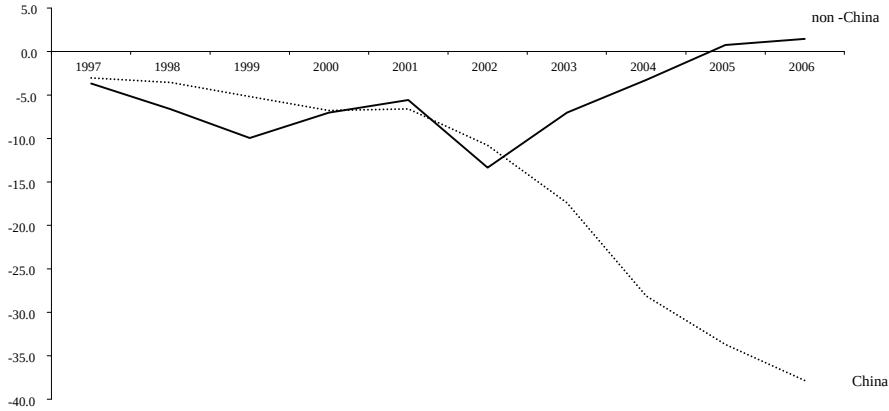


FIGURE 4: *U.S. Trade Balance: NAICS 3341 Computer and Peripheral Equipment (Billions of U.S. Dollars)*



Section, the relationship between employment, industrial production and trade deficit is a complex one and at an introductory level it is difficult to identify a clear pattern among those variables.

In fact, from a visual inspection at the data in Table 14, and temporarily setting aside the role of production, it looks like declines in employment show no direct link with an increase in the trade deficit: job losses of different magnitude are associated to broadly similar increases in the trade deficit. That other factors, first and foremost productivity gains, are at play well exemplified by the furniture sector, where a 130 percent increase in the average number of job losses (from 24,000 to 58,000) is paired with a relevant increase in production, against the background of virtually equal deteriorations in the trade deficit.

7. CONCLUSION

In this paper, we have carried out an analysis of the evolution of the U.S. trade deficit between 1996 and 2006, by taking either a sectoral and cross-country perspective. Over the years under investigation, China's share of U.S. trade deficit rose from 36 to 44 percent, while the shares of other major U.S. trading partners (first and foremost Japan) have declined significantly.

TABLE 14 - *Industrial Production, Employment and Trade Deficit*

Change in:	1997-1999 (average) <i>minus</i> 2000-2002 (average)	2000-2002 (average) <i>minus</i> 2003-2005 (average)
Manufacturing		
IP index	4	6
Employment (thousands)	-1,502	-1,670
U.S. trade deficit (billions of \$)	137	147
U.S. - China trade deficit (billions of \$)	32	76
Computer and peripheral equipment - NAICS 3341		
IP index	31	-3
Employment (thousands)	-46	-63
U.S. trade deficit (billions of \$)	6	13
U.S. - China trade deficit (billions of \$)	4	18
Communication equipment - NAICS 3342		
IP index	32	4
Employment (thousands)	-31	-63
U.S. trade deficit (billions of \$)	11	12
U.S. - China trade deficit (billions of \$)	1	6
Furniture - NAICS 337		
IP index	-1	24
Employment (thousands)	-25	-58
U.S. trade deficit (billions of \$)	5	6
U.S. - China trade deficit (billions of \$)	3	5
Apparel - NAICS 315		
IP index	-46	-36
Employment (thousands)	-203	-127
U.S. trade deficit (billions of \$)	12	10
U.S. - China trade deficit (billions of \$)	2	6

Source: author's elaboration on U.S. Census data.

The debate on the rising importance of China as a U.S. trade partner is often framed within two extremes of the spectrum. On one hand, the 'downplaying China' view states that, bottom line, net imports from China amounted to only 1.7 percent of U.S. GDP in 2006. This view has been at times made popular by the saying that *China has to sell hundreds of millions of shirts to buy just one B-747*.

On the other hand, the 'fearing China' view points out the U.S. increasing dependence on imports from China, and the more recent shift in the role of this country as a supplier of not only traditional, low-tech goods but also of higher-value added products such as computers.

In this regard, to get a 'colorful' rendition of the increased commercial power of China, one can note that in 1996, by using the receipts arising from its then largest net export item to the U.S. (toys, SITC 894), China would have been able to buy 24 percent of total U.S. exports of aircraft (SITC 792). On the contrary, in 2006 the total value of China's top net seller to the U.S. (automatic data processing machines, SITC 752) would have allowed the country to buy 49 percent of total U.S. exports of aircraft (up from only 4 percent back in 1996).

In this polar view context, we have examined the evolving role of China as a U.S. trading partner within a broader analysis of the structural changes which have taken place in the overall U.S. trade balance. In our opinion, this more comprehensive framework is appropriate to help clear up some of the many misconceptions surrounding the discussion on China and weigh up the proper policy response.

In fact, the widespread perception of China as a major culprit for U.S. job losses and the even more erroneous belief that the U.S.-China economic relationships is a zero-sum game have made the debate take on a prominent political dimension, which has proved to be able to exert a relevant influence on the shaping of the overall U.S. trade policy.

This is all the more important in a moment when a crucial measure for the future well being of many developing countries, namely the *Doha Development Round*, faces several difficulties, to say the least, to get a final approval.

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ABSTRACT

The rising importance of China as a major U.S. trading partner is the most important change in the international specialization pattern of the U.S. over the last decade. Using a multi-dimensional approach and a detailed dataset, we analyze the evolution over time of the trade relationship between China and the U.S. in order to highlight its major quantitative and qualitative changes. In this regard, the role of China as a major trading partner to the U.S. has significantly increased following its entry into the WTO in December 2001. In fact, while between 1996 and 2001 China accounted for 23 percent of the increase in the overall U.S. non-energy trade deficit, over the years 2001 through 2006 China's contribution to the additional deterioration in the U.S. trade balance shot up to 68 percent. Perhaps more importantly, China's role as a provider of goods to the U.S. has evolved not only from a quantitative but also from a qualitative viewpoint, moving its exports up the value chain, from lower value-added to higher value-added products. The most dramatic example of this evolution is in the office machines sector: in 2006, China provided 46 percent of total U.S. imports of such products, up from only 5 percent in 1996. In the final part of the paper, we briefly touch upon perhaps the most sensitive and controversial question arising in the context of the U.S. - China trade relationship: whether imports from China are hurting U.S. production and employment in the manufacturing sector.

JEL classification: F10, F14, O51

Keywords: trade deficit, trade links.

RIASSUNTO

Gli scambi USA-Cina: un'analisi disaggregata, 1996-2006

La crescente importanza della Cina quale maggior partner commerciale degli USA rappresenta il cambiamento più importante del modello economico americano nell'ultimo decennio. Grazie all'utilizzo di un approccio multi-dimensionale e di un dettagliato dataset, questo lavoro analizza l'evoluzione temporale delle relazioni commerciali tra Cina e Stati Uniti, al fine di evidenziarne i maggiori cambiamenti sia qualitativi che quantitativi. Il ruolo della Cina al riguardo è cresciuto sensibilmente a seguito dell'entrata nel WTO nel dicembre 2001. Infatti, mentre tra il 1996 e il 2001 le importazioni dalla Cina rappresentavano il 23 per cento dell'aumento del deficit commerciale extra-energetico degli USA, dal 2001 al 2006 il contributo cinese all'ulteriore peggioramento della bilancia commerciale americana saliva al 68 per cento. Ciò che è ancora più importante è che il ruolo della Cina quale fornitore di merci si è evoluto non solo dal punto di vista quantitativo ma soprattutto sotto l'aspetto qualitativo, spostando l'export da prodotti a basso valore aggiunto a quelli con più alto valore aggiunto. L'esempio più drammatico di questa evoluzione è il settore delle macchine da ufficio: nel 2006 il 46 per cento dell'import totale di questi prodotti proveniva dalla Cina, mentre nel 1996 tale percentuale ammontava solo al 5 per cento. Nella parte finale di questo studio si accenna brevemente a quella che, forse, è la più delicata e controversa problematica relativa al commercio USA-Cina, e cioè se le importazioni dalla Cina danneggino la produzione e l'occupazione americana nel settore manifatturiero.