

China's Export Boom

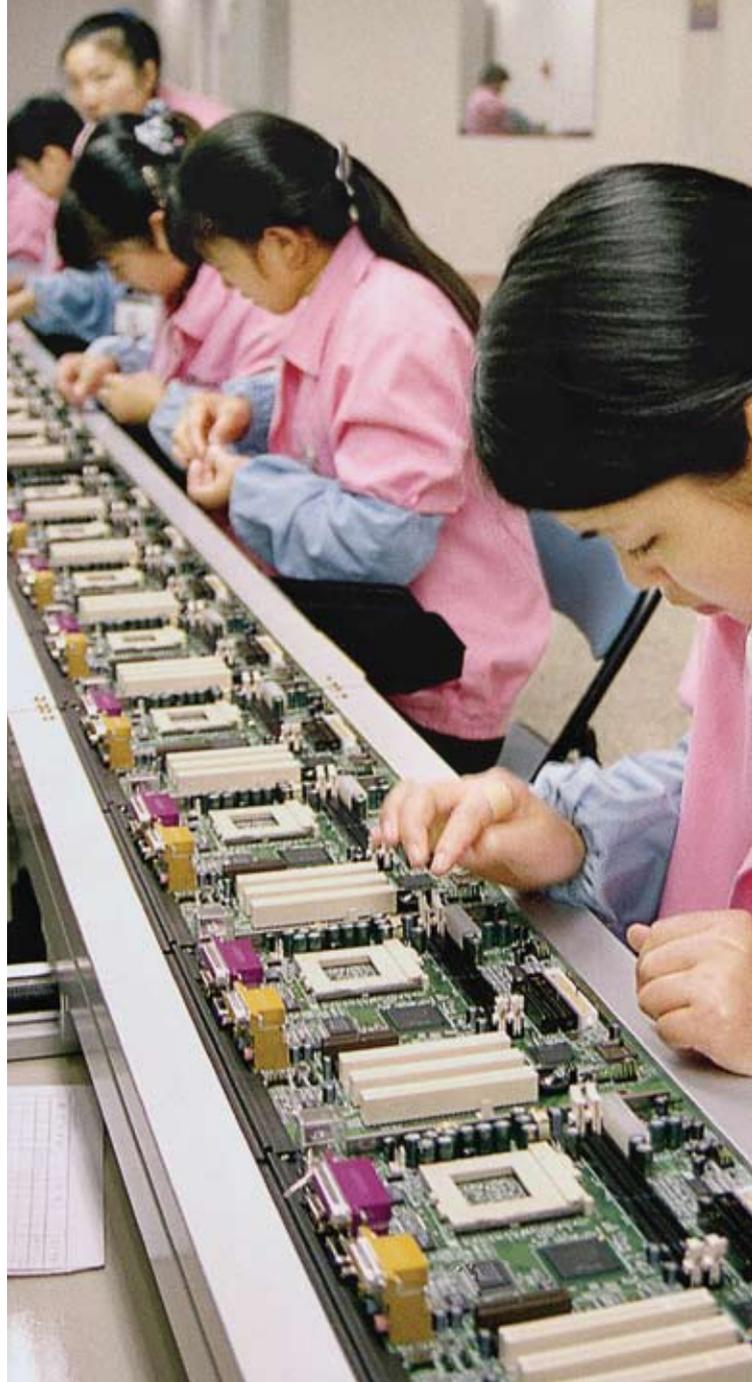
Its export dynamism is revealed in a sharp move into electronics and machinery

Mary Amiti and Caroline Freund

OVER the past 15 years, China's exports have jumped more than tenfold, far exceeding the tripling of world trade that has taken place over the same period. As a result, in 2004, China overtook Japan as the world's third largest exporter, just behind Germany and the United States. Not surprisingly, this growth has attracted a lot of attention among media, academia, and policymakers. Insights into the driving forces behind this growth could help identify how best China and other countries could benefit. Moreover, countries wishing to emulate China's success may find lessons worth replicating.

How has China achieved this phenomenal export growth? Recent studies highlight the sophistication of its exports, the diversification of its product mix, and the growth in new varieties. Sophistication could be important if these products have higher productivity growth. Diversification might aid growth by lessening the impact of shocks to specific sectors and by facilitating new export discoveries. Exporting new products might allow exports to grow rapidly with less downward pressure on export prices.

To better understand these mechanisms, we recently undertook a study that decomposes the export growth in several novel ways. Our findings indicate that, despite a dramatic move out of agriculture, apparel, and textiles into elec-



The share of consumer electronics in China's exports has grown since 1992.

tronics and machinery, China's overall export structure has become more specialized, not more diversified. And China's growing sophistication of its exports is largely thanks to processing trade—the practice of assembling duty-free intermediate inputs.

Reallocating across sectors

As a first step, we compare a snapshot of China's export sector in 1992 with one from 2005 by examining how the composition of its exports has changed. We find that it has undergone a dramatic transformation since 1992. There has been a significant decline in the share of agriculture and soft manufactures, such as textiles and apparel, with growing shares in hard manufactures, such as consumer electronics, appliances, and computers.



Breaking it down further, we take a look at changes *within* the manufacturing sector. In particular, we examine how trade shares have adjusted in all major sectors, which together comprise about 70 percent of China's manufacturing exports. We find that there is a notable move out of textiles, apparel, footwear, and toys and into office machines, electrical machinery, and telecommunications (see Chart 1).

Getting more sophisticated

Does this move into electronics and telecommunications mean that China's manufacturing exports have become more skill intensive? Over the past few years, several studies (Rodrik, 2006; Schott, 2006) have highlighted the surprising sophistication of China's exports, suggesting that they tend to look a lot more like industrial country exports than would be expected given China's income level. The sophistication of China's exports in combination with the country's robust income growth leads Rodrik to the conclusion that what a country exports matters for its future growth. The idea is that producing high-productivity goods has greater growth benefits than producing other goods—computer chips are better than potato chips.

To see whether the skill content of China's export growth has increased over the past 15 years, we look at the share of export products that are mid to high skill—defined as products that are ranked above the bottom 20 percent in terms of skill intensity. Because industry skill-level data for China were unavailable, we base the skill intensity ranking on information

from Indonesia—another emerging market country that is likely to have similar technologies. (We also used U.S. data on skill rankings and the results are nearly identical.) We find that, in 1992, 45 percent of exports were in these mid- to high-skill products, but by 2005, the export share of these industries had risen to 68 percent (see Chart 2, left bars).

But, given the large share of processing trade in China, an increase in the skill content of China's exports could be due to China importing intermediate inputs with higher skill content that it then assembles for export. Indeed, when we exclude processing trade (see Chart 2, right bars), the increasing share of trade in mid- and high-skill industries is much smaller. This result is even stronger at higher skill levels, with processing trade accounting for the entire increase in the share of trade in high-skill industries.

We also explore changes in the pattern of China's imported inputs to see if the increased skill content of processing exports is coming from the foreign or the domestic stage of production. Comparing the change in the skill content of imported manufacturing inputs for processing trade with the change in the skill content of imported inputs for nonprocessing trade, we find a much larger increase in the skill content of processed imports. The results imply that the increase in skill content in China's exports is likely because of the increase in the skill content of imported inputs embedded in these exports.

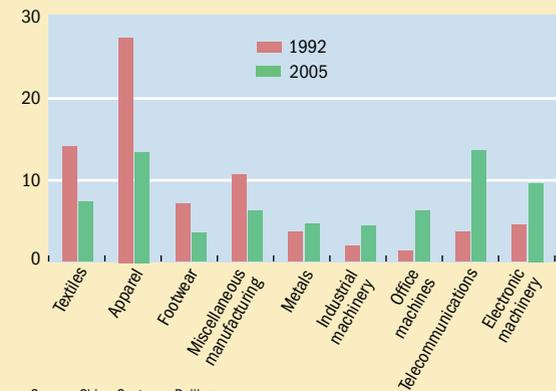
Becoming more specialized

In recent years, many governments have begun promoting a more diversified export structure in hopes of offsetting potential negative shocks in major sectors. This approach picks up

Chart 1

Toward electronics exports

Between 1992 and 2005, the makeup of Chinese manufacturing exports moved toward high technology. (percent of manufacturing exports)



Source: China Customs, Beijing.

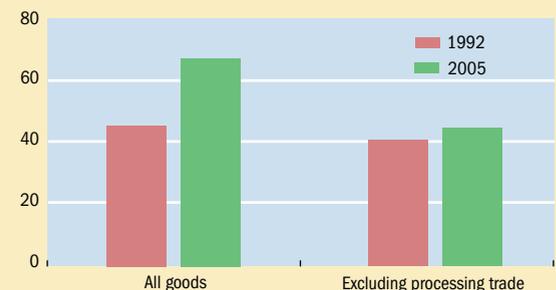
Note: A sector is defined as major if its share of total trade is above 3 percent in 1992 and/or 2005. Major sectors account for about 70 percent of manufacturing exports.

Chart 2

Increasing skill content

Much of the higher skill content of China's exports arises from imported inputs with higher skill content.

(share of exports from mid- to high-skill industries; percent)



Source: China Customs, Beijing.

on the thinking of economists such as Hausmann and Rodrik (2003), who argue that in the early stage of development, more entrepreneurship and potentially greater diversification may help producers identify and expand production of new products in which they are globally competitive. Similarly, Imbs and Wacziarg (2003) find that greater diversification of production has gone hand in hand with income rising from low levels, suggesting it could be an important stage of growth. But traditional theory highlights enhanced specialization as the way to benefit from trade: if each country exports goods in which it has a comparative cost advantage, world output and welfare should rise.

To see whether China has moved in the direction of greater specialization or diversification, we look at the distribution of exports over time. We find that despite an increase in China's total number of export products, the degree of specialization has increased slightly. The increase is especially notable in the top-ranked products. The top 10 export products now account for nearly 25 percent of export value, whereas the top 10 in 1992 accounted for just 10 percent of export value. Similarly, the top 100 products account for 54 percent of trade compared with 45 percent in 1992. These results imply that, if anything, it is increased specialization that has contributed to export growth, consistent with recent work by di Giovanni and Levchenko (2007), which finds that increased trade is accompanied by specialization in a large cross section of countries.

Favoring existing products

Is China exporting new products? Recent research shows a strong correlation between the number of export products and income levels in cross-country data (Hummels and Klenow, 2005). The evidence suggests that income growth leads to the development of new varieties. This is consistent with new trade theory, which shows that the number of goods produced in an economy increases with the size of the economy. In addition, growth in new product varieties is beneficial for exporters because it will likely offset some of the downward pressure on export prices from an increased world supply of goods. In contrast, traditional theory only allows for an expansion of existing exports as income expands.

To explore the importance of new products, we decompose China's export growth from 1992 to 2005 using international product codes, the most detailed level of disaggregation that is comparable over time. Because these data are too aggregated to allow entirely new products to be identified—by 1992, China was exporting in more than 90 percent of these categories—we split exports into deciles by value in 1992 and calculate their share of exports in 2005 (as in Kehoe and Ruhl, 2003). If export growth arose mainly from new product varieties, there would be rapid growth in the bottom deciles, where trade was negligible in 1992. The data reveal that the categories that accounted for the bottom 20 percent of trade by value more than doubled in 15 years, whereas the categories in the other deciles contracted or remained constant (see Chart 3, top panel).

A key concern in using this type of calculation to assess the importance of new export varieties is that exports tend to be highly skewed—the smallest two deciles account for the vast majority of product categories, and thus it is natural to expect these two deciles to exhibit high growth. For that reason, we evaluate the reallocation in more detail by dividing exports into deciles according to the *number* of categories of trade in 1992. For example, the tenth decile is the top 10 percent of product categories when products are ranked by value. The decline in the share of the top decile shows that there was a sizable reallocation of trade, but it was not the bottom 50 percent of products that gained. Over 80 percent of the decline in the trade share of the top decile was accounted for by an increase in the trade share of the four deciles just below the top (see Chart 3, bottom panel). In sum, the results imply that there was a significant reorientation in exports to products that were in the bottom 20 percent by value but in the mid to high range by product rank.

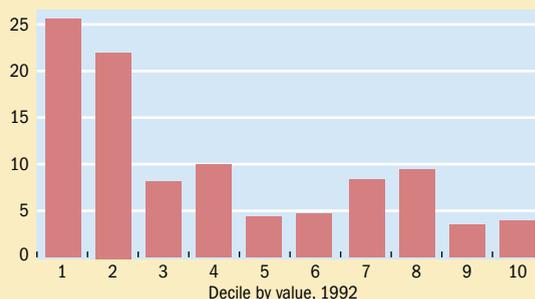
We also perform more detailed analyses using tariff line data from the United States, which are far more disaggregated, with over 16,000 product codes. Our results show that the majority of growth—at least 80 percent—stemmed from existing products. This implies that export expansion was driven by goods that were already being exported in 1992.

Chart 3

Growth in new goods

Goods in the bottom 20 percent of trade show the most growth . . .

(share of total value in 2005, percent)



. . . but the reshuffling of exports during the expansion occurred mainly in the middle- and top-ranked products.

(share of total value, percent)



Source: China Customs, Beijing.

Note: HS 6-digit data, containing more than 5,000 product codes.

Declining export prices

As China increases its supply of goods on world markets, this is likely to put downward pressure on world prices of these goods and thus lead to a deterioration in China's terms of trade. Since we find that most of China's export growth is from existing goods, this is especially likely to be an issue. Product differentiation could lessen price effects if new products were not good substitutes for existing goods.

Taking the subset of goods that China exported to the United States from 1997 to 2005 (for which reliable price data are available), we construct an average export price index that is a weighted sum of the growth rates of the prices of the various products, where the weights are the products'

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shares in total value. We find that the export price index for China over this period is 0.87, indicating a fall of 13 percent in current U.S. dollars. In contrast, the price index for exports of these same products from the rest of the world to the United States is 1.06, indicating a 6 percent increase in prices. Thus, it appears that the rapid export growth has been associated with a decline in China's export prices over the period.

The export price decline in China is consistent with a negative terms of trade effect, with increased exports pushing down export prices. However, it could also be related to improved productivity in China, declining profit margins, or exchange rate movements. This is an important topic for future research.

Going forward

By decomposing China's spectacular export growth of more than 500 percent since 1992, we were able to tease out a number of findings, some of which may help guide policymakers.

First, *the dramatic transformation of China's export structure over the past 15 years implies that its business environment is relatively flexible, enabling it to move in and out of different sectors.* In terms of the flexibility of employment, China ranks roughly on a par with East Asia and the Pacific and significantly higher than averages from the other regions, including those that contain industrial countries, according to the World Bank's Doing Business 2007 indicators. Further, the cost of opening a business in China is 9.3 percent of average per capita income, compared with more than 40 percent on average in Latin America and East Asia and the Pacific. In light of this experience, a lesson for countries seeking to fol-

low China's lead is that the export sector must be allowed to change as it grows.

Second, *our results point to an export sector that is taking advantage of China's large supply of workers and of the increasing fragmentation of production across countries currently under way, especially in Asia.* The increased amount of processing trade has enabled China to export increasingly sophisticated products by assembling high-quality duty-free imported inputs. In the process, exports of many goods have increased dramatically, leading to enhanced specialization. This is a traditional story consistent with a traditional policy recommendation. Lowering trade costs, both tariff and nontariff barriers, and getting prices right are likely to help resources move to their most productive uses. Indeed, China's average tariff has come down from about 45 percent in 1992 to 10 percent today, which has surely facilitated the transformation.

Third, *our finding that China's rapid export growth has been accompanied by falling export prices implies that consumers around the world have benefited from lower prices.* While China's export and income growth have remained robust in recent years, growing exports could push prices down further, with exporter profits eventually suffering. Going forward, exporters may have incentives to offset declines in export prices by expanding into new products and differentiating their products from those of competitors. ■

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