



# China's Growing External Dependence

Li Cui

**The country's economic fortunes are increasingly tied to those of the global economy**

Photo above: A container port in Shanghai.

**R**APIDLY growing foreign trade has been key to China's remarkable economic performance of the past three decades, yet the conventional view is that China's growth has been largely domestically driven. According to this view, China uses its abundant labor to assemble imported inputs into low-tech consumer goods and capital goods exports, making it the *world's workshop*.

Such processing trade typically adds little value to the domestic economy because the import content of exports is high. As a result, the argument goes, changes in global demand or in the exchange rate will have little direct impact on the economy's trade balance or growth—any change in exports will be largely offset by changes in imports.

So how does trade contribute to growth? The answer is through the transfer of better technology. This caricature of China's trade underlies many formal analyses and policy discussions and even garners support from some empirical studies. For instance, Shu and Yip (2006) find that relative price changes have had a small effect on China's exports and trade balance, an outcome that has been attributed to its role as a processing center.

But such a reading of China's economy does not reflect current realities. Although it may have described the Chinese economy in the early stages of reform, when China lacked domestic technological know-how and had to rely on imported intermediate products and capital goods for its production and exports (see Lemoine and Ünal-Kesenci, 2002), a

recent IMF study suggests that it may have become less accurate in recent years (Cui and Syed, 2007). The domestic content of China's exports has increased and its products have become more sophisticated, in part because of substantial investments and technological upgrades that have expanded the economy's production capacity.

Advancements in regional vertical integration (the degree to which a firm owns its upstream suppliers and its downstream buyers) have helped to extend China's domestic value added in the global supply chain, particularly in less sophisticated sectors. These developments, together with a shift in product composition that could make exports more responsive to external shocks, imply that China's trade balance and economic growth have become more sensitive to external demand and exchange rate changes than is generally recognized or estimated from historical averages. This trend is likely to continue as China's trade structure continues to evolve.

### A closer look at the trade surplus . . .

Over the past four years, China's trade surplus has risen sharply, reaching about \$218 billion, or more than 8 percent of GDP in 2006, from an average of about 3 percent of GDP between 2000 and 2004. The trade surplus has been propelled by a sharp rise in the manufacturing sector surplus. In particular, machinery, electronic appliances, and transportation equipment account for more than half of the trade surplus, compared with a significant deficit only a few years ago.

The widening of the trade surplus has been driven mainly by a significant slowdown in imports, which started to lag export growth by large margins in early 2005. In contrast, during most of the past decade, import and export growth were typically on a par, consistent with China's role as a processing center. Imports of intermediate goods (including parts and components and semifinished goods) slowed the most, explaining more than half of the slowdown in total imports between 2003 and 2005 and accounting for the lion's share of the gap between the growth rates of imports and exports. This development has directly affected China's trade with the rest of Asia and may be altering China's role in regional production chains. Although China's trade surplus with the United States and the European Union continues to grow, its trade deficit with the rest of Asia, traditionally an offset, has shrunk over the past two years. This has raised concerns in some Asian economies, especially those for which exports to China have been a major driver of recent economic growth.

The slowdown in imports occurred during a period of booming investment, as China's increased domestic production capacity has enabled greater domestic sourcing for intermediate products (see Chart 1). In some sectors, such as steel and chemical materials, vast capacity was created following the investment boom during 2003 and 2004 in response to surging commodity prices. In other sectors, such as electronics and machineries, foreign direct investment (FDI) has also played an important role, mirroring a major change in the global production network as more stages of production shift to China. For example, FDI flows into the electronics sector from Taiwan Province of China alone increased from

\$538 million in 1999 to \$2.4 billion in 2005. Reflecting the rising domestic production capacity, exports of final products have continued to grow strongly in many sectors—notably home electrical appliances, ordinary machinery, and, to a lesser extent, higher-tech products such as precision apparatus—despite the recent slowdown in imports of intermediate inputs used in their production.

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These developments highlight the evolving role of China in the regional processing trade. It is important to recognize that the category of processing trade is essentially a trade category defined by Chinese customs officials for tax purposes. It is not confined to low-value-added assembly operations, with all materials provided by foreign suppliers. Firms can choose to import all or some intermediate goods (for example, raw materials, parts and components, accessories, and packaging materials) from abroad, obtain the rest from domestic suppliers, and reexport the final products with tax exemptions on the imported inputs. The decision of whether to import or source domestically depends on the availability of the products in different markets and relative prices, similar to that for regular imports.

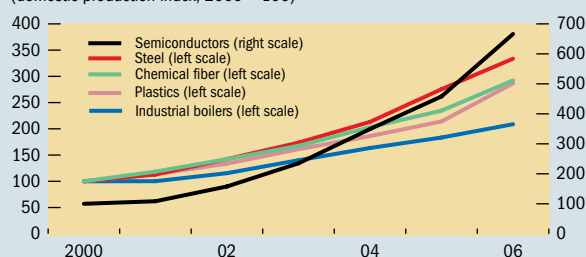
With the expansion of domestic supply, China is increasingly shifting from simple assembly operations toward operations that have greater scope for using domestic inputs. The share of the former has declined sharply, accounting in 2006 for only about 10 percent of the processing trade balance, down from more than 30 percent in the late 1990s. The latter, in contrast, has increased in importance. Moreover, its margin—defined as the domestic value added for each dollar exported, or the trade balance divided by exports—rose from the teens in the mid-

Chart 1

### Expanding horizons

China is strengthening its capacity to produce intermediate products domestically.

(domestic production index; 2000 = 100)

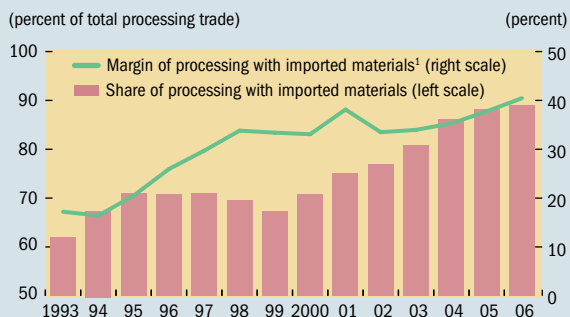


Sources: CEIC; Chinese authorities; and IMF staff estimates.

Chart 2

### Greater domestic content

China is increasingly using domestic materials in its processing operations.



Sources: CEIC; Chinese authorities; and IMF staff calculations.

<sup>1</sup>The domestic value added for each dollar exported, or the trade balance divided by exports.

1990s to about 40 percent last year, consistent with the rising domestic content of exports (see Chart 2).

### ... and at trade composition

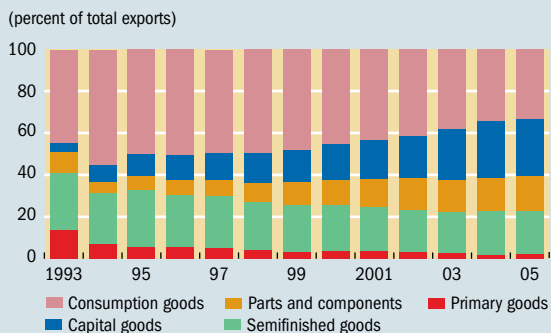
The large domestic investment in capital goods, sizable inflows of FDI, and technological upgrades have also changed the product composition of trade. Whereas labor-intensive consumer goods (including clothing and toys) once dominated China's exports, their share in total exports has declined more than 20 percentage points over the past decade. Exports of capital goods and parts and components have increased markedly, accounting for more than 40 percent of total exports, compared with 10–15 percent a decade ago (see Chart 3). Such a shift points to the changing trade and production structure in China toward more capital-intensive and technologically advanced products.

More broadly, China's exports have become significantly more sophisticated over the past decade (see Chart 4), as have its imports. One useful gauge of trade sophistication is the "Rodrik index": each product is measured by the weighted average of per capita GDP on a purchasing power parity basis of the countries that export it, with the weights determined by each country's revealed comparative advantage. The sophistication indices for overall trade are then calculated as a weighted average of the sophistication indices across products, with the weights determined by trade shares (see Rodrik, 2006). The goods China imports tend to be more sophisticated than those it exports, and the persistent gap between export and import sophistication suggests that China continues to rely on imports in some areas (particularly high-tech products) for its domestic production.

Chart 3

### Shifting export structure

China is sharply stepping up exports of capital goods and parts and components.



Sources: CEIC; Chinese authorities; and IMF staff calculations.

### Sensitivity of trade balance

In exploring the implications of increasing domestic sourcing of exports and growing product sophistication for the sensitivity of the trade balance to external shocks, two questions arise.

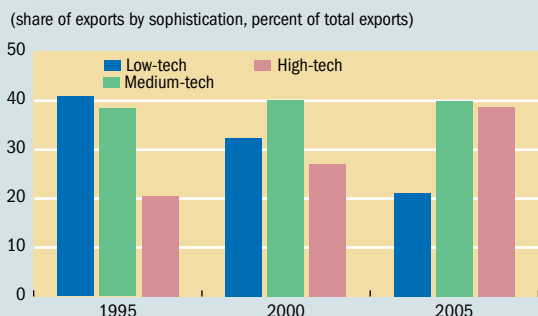
*Have imports delinked from exports?* That is, has the increased domestic production capacity had the predicted effect of weakening the traditionally close link between imports of intermediate products and exports of final products? Disaggregated trade data are used to examine this link for a group of subsectors in the electronics and machinery and transport equipment industries. The sample accounts for about half of China's imports of parts and components. Through panel estimation, each industry's imports of parts and components are regressed on the exports of final products of the same industry, controlling for other variables that represent the domestic demand for these final products, as well as the world price of the input relative to its price in China. The full sample (1994–2005) is also split into two equal periods to assess whether the strength of the relationship between imports and foreign demand, on the one hand, and domestic demand in China, on the other, has changed.

The results show that imports of parts and components are positively related to the exports of final products of the same industry for the full sample period, but this relationship

Chart 4

### Technological upgrade

Over the past 10 years, China's exports have become more sophisticated.



Sources: CEIC; Chinese authorities; and IMF staff calculations.

is statistically strong only for the first half of the last decade. Consistent with the hypothesis that imports of parts and components have delinked from exports of final products in recent years, there is no statistically significant link in the second half of the decade. In the latter period, imported inputs have become more strongly associated with domestic demand, suggesting that China's imports of parts and components are increasingly used to meet domestic production needs (which grow with the expanding domestic production capacity).

Therefore, the conventional view of China's main role in international trade as an assembly center is not as good a fit as it once was. External shocks may have more potent effects on China's trade balance and domestic economy, because a slowdown in exports may not be offset by a commensurate decline in imports. At the same time, China's imports are being driven by the country's economic growth, rather than being directly used as inputs of its products to be exported.

*Does sophistication affect the sensitivity of trade?* That is, how have product characteristics—in particular, their growing sophistication—affected the response of trade flows to aggregate shocks? Again, disaggregated trade data are used to capture the potential product differences within industries, consistent with the view that countries specialize in international trade at much finer levels than industries (see Feenstra and Rose, 2000; Schott, 2004). The statistical framework used to test the hypothesis is an extension of the standard trade model that links exports and imports to external and domestic demand and the real effective exchange rate (see “Why Real Exchange Rates?” on page 46) while allowing trade elasticities to vary according to product sophistication.

The results show that, on the export side, the more sophisticated a product is, the more its exports tend to increase in response to a given increase in foreign demand, and the more its exports tend to drop for a given appreciation of the real effective exchange rate. On the import side, the more sophisticated a product is, the more its imports tend to increase in response to a rise in domestic demand, although they tend to increase less in response to a given appreciation of the real effective exchange rate. Therefore, the rising sophistication level also points to greater sensitivity of China's exports and trade balance to demand and price fluctuations than in the past.

### Shifting roles?

The contribution of net exports to China's growth has increased significantly in recent years, as reflected in the surging trade surplus as a share of GDP. The analysis above suggests that a significant part of the increase reflects structural changes in the Chinese economy, particularly the rising domestic content of its exports. Moreover, the two key trends described here imply that China has become more vulnerable to external shocks, such as a real exchange rate appreciation or a slowdown in external demand, than is generally assumed. This underscores the need to hasten the rebalancing of China's growth away from potentially volatile net exports toward a more sustainable path driven by domestic demand.

The structural changes in China also have important regional implications for trade flows within Asia and the evo-

lution of regional production networks. In recent years, China has displaced the United States as the largest export market for an increasing number of Asian countries. It has also been pivotal in boosting intraregional trade and FDI, particularly in the form of intermediate goods channeled through multinationals as part of cross-border chains. Indeed, intermediate products account for almost three-fifths of the increase in trade within Asia over the past decade. But as China begins to specialize in more parts of the production chain, its imports of intermediate goods from the region could start to fall.

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On their own, these trends could decrease intraregional trade links. However, the potential expansion of China's domestic market creates opportunities for the regional economies, for example, to produce higher-tech goods that China is unlikely to be able to produce domestically in the near future. These developments highlight the need for regional economies to advance their technological innovation and move up the quality chain. At the same time, to the extent that China's comparative advantage evolves and its labor costs rise as a consequence, the lower-income countries in Southeast Asia could take China's place at the lower end of these networks. ■

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