

## SIDEBAR

**Trade in Value Added of the Computer, Electronic, and Optical Products Industry**

Goods and services, including R&D intensive products, are increasingly produced in global supply chains with inputs from various countries around the world. Value-added trade data trace the value contributed by each industry and country in the production chain and allocate it to the corresponding industries and countries. As such, value-added trade data measure net trade flows across countries. In contrast, conventional trade data measure the gross flows of goods and services as they cross borders. As such, they do not measure the country-specific value added or contribution to traded products composed of intermediate goods that have crossed borders multiple times.

Figure 6-E shows a simple example of trade associated with a good produced in a global value chain. Country A manufactures an intermediate input valued at \$20 that is exported to Country B for further processing. Country A's exports to Country B are the same on a value-added and gross flow basis (\$20). Country B manufactures an intermediate input and assembles the finished good. Country B adds value of \$20, consisting of the value of its intermediate input (\$10), and the value of final assembly (\$10). Country B exports the finished good to Country C. Country B's gross exports are \$40, consisting of Country A's intermediate input (\$20) and the value added contributed by Country B (\$20). Country B's value-added exports (\$20) are lower than on a gross flow basis because the value of Country A's intermediate input is not credited to Country B's exports. Total exports on a value-added basis (\$40) are lower than gross exports (\$60) because gross exports count Country A's intermediate input twice: (1) Country A's exports to Country B and (2) Country B's exports. Total value-added exports count Country A's intermediate input once as part of Country A's export to Country B.

FIGURE 6-E

**Example of trade in global value chain**

(Dollars)

|                       | Country A                          | Intermediate export   | Country B                          | Final export  | Country C                       |
|-----------------------|------------------------------------|---|------------------------------------|---|---------------------------------|
| Measurement of export | Produces intermediate input (\$20) |  | Produces intermediate input (\$10) |  | Imports and consumes final good |
| Value-added exports   |                                    | \$20  | Performs final assembly (\$10)     | \$40  |                                 |
| Gross exports         |                                    | \$20  |                                    | \$60  |                                 |

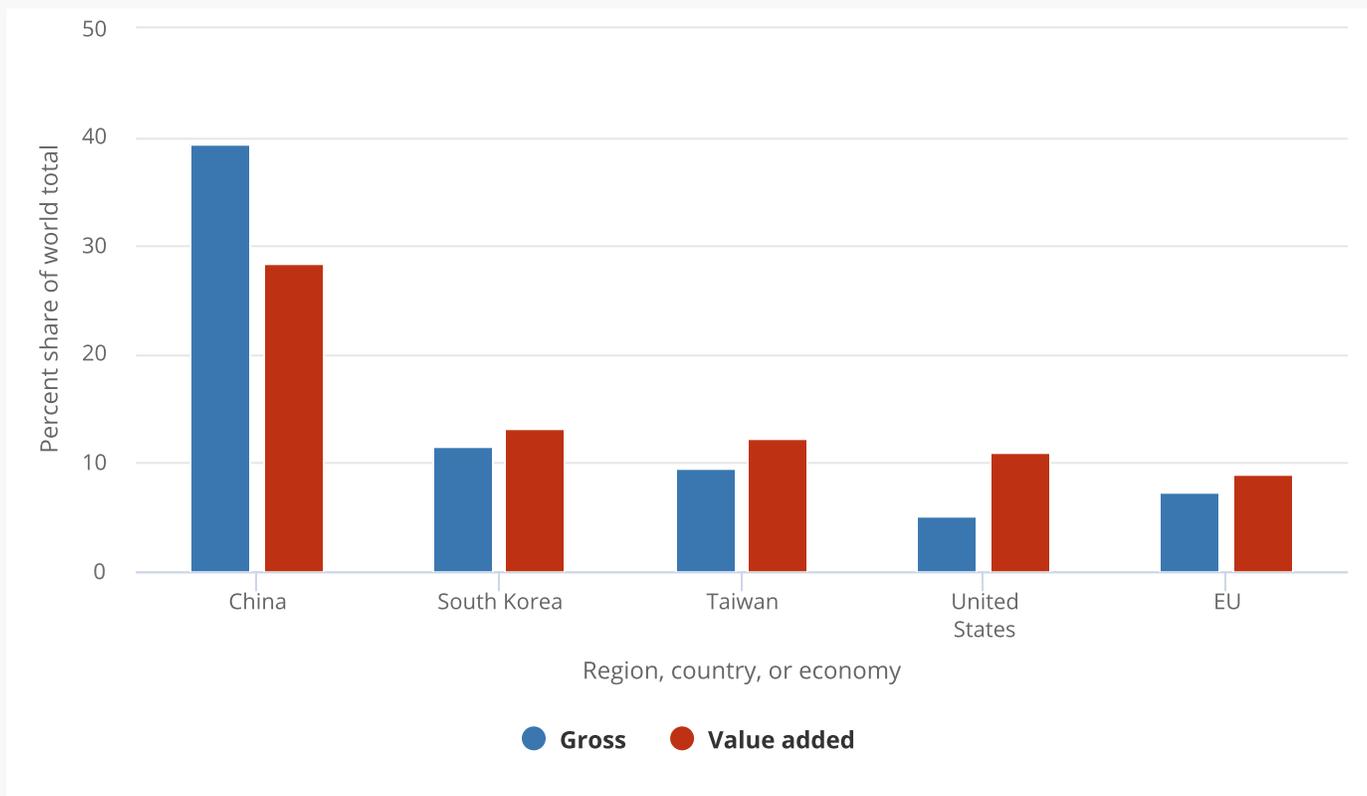
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The Trade in Value Added joint initiative of the Organisation for Economic Co-operation and Development (OECD) and the World Trade Organization (WTO) has estimates of trade in value added that measure the contribution that each country provides in goods produced in global value chains.\* The OECD/WTO database has value-added and conventional data on the computer, electronic, and optical products category, which is a major component of high

R&D intensive products. The OECD/WTO value-added data suggest that the United States has a comparatively stronger trade position than conventional data show while China has a somewhat weaker position. Measuring U.S. exports on a value-added basis credited the United States for the exports of inputs and components to China and other countries, which were credited to the location of final assembly, mainly China, on a conventional basis. On a conventional basis, the United States was the fifth-largest exporter (5% global share), far below first-ranked China in 2015 (Figure 6-F). On a value-added basis, the U.S. export share is higher (11%), making it roughly the same level as Taiwan and the EU (Figure 6-F). In addition, the gap between the export share of China and the United States, while still substantial, is smaller on a value-added basis. The larger export share of the United States on a value-added versus conventional basis is explained by its far lower share of foreign content compared to other major exporters (Figure 6-G).

FIGURE 6-F

## Exports of computer, electronic, and optical equipment, by selected region, country, or economy: 2015



EU = European Union.

**Note(s):**

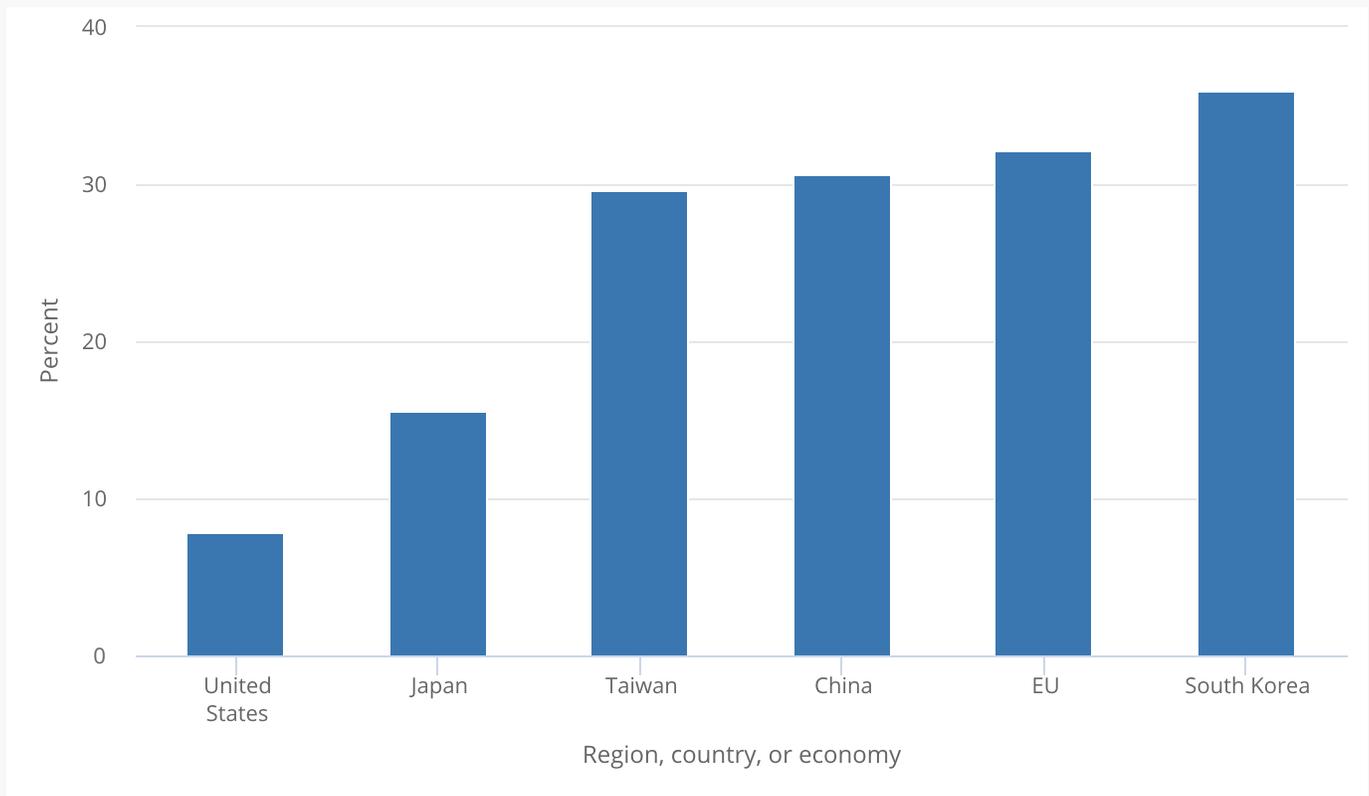
Exports measured on a gross basis include value of domestic content and intermediate inputs supplied by other countries. Exports measured on value-added basis include value of domestic content and exclude value of intermediate inputs supplied by other countries. U.S. exports do not include exports to Canada and Mexico. The EU includes 28 current member countries. EU exports do not include exports among individual EU member countries. China includes Hong Kong. China's exports do not include exports between mainland China and Hong Kong.

**Source(s):**

Organisation for Economic Co-operation and Development, Trade in Value Added Database.

FIGURE 6-G

Foreign content share of gross exports of the computer, electronic, and optical equipment industry, by selected region, country, or economy: 2015



EU = European Union.

**Note(s):**

Foreign content is the value of imported intermediate goods and services from other countries that are embodied in gross exports. U.S. exports do not include exports to Canada and Mexico. The EU includes 28 current member countries. EU exports do not include exports among individual EU member countries. China includes Hong Kong. China's exports do not include exports between mainland China and Hong Kong.

**Source(s):**

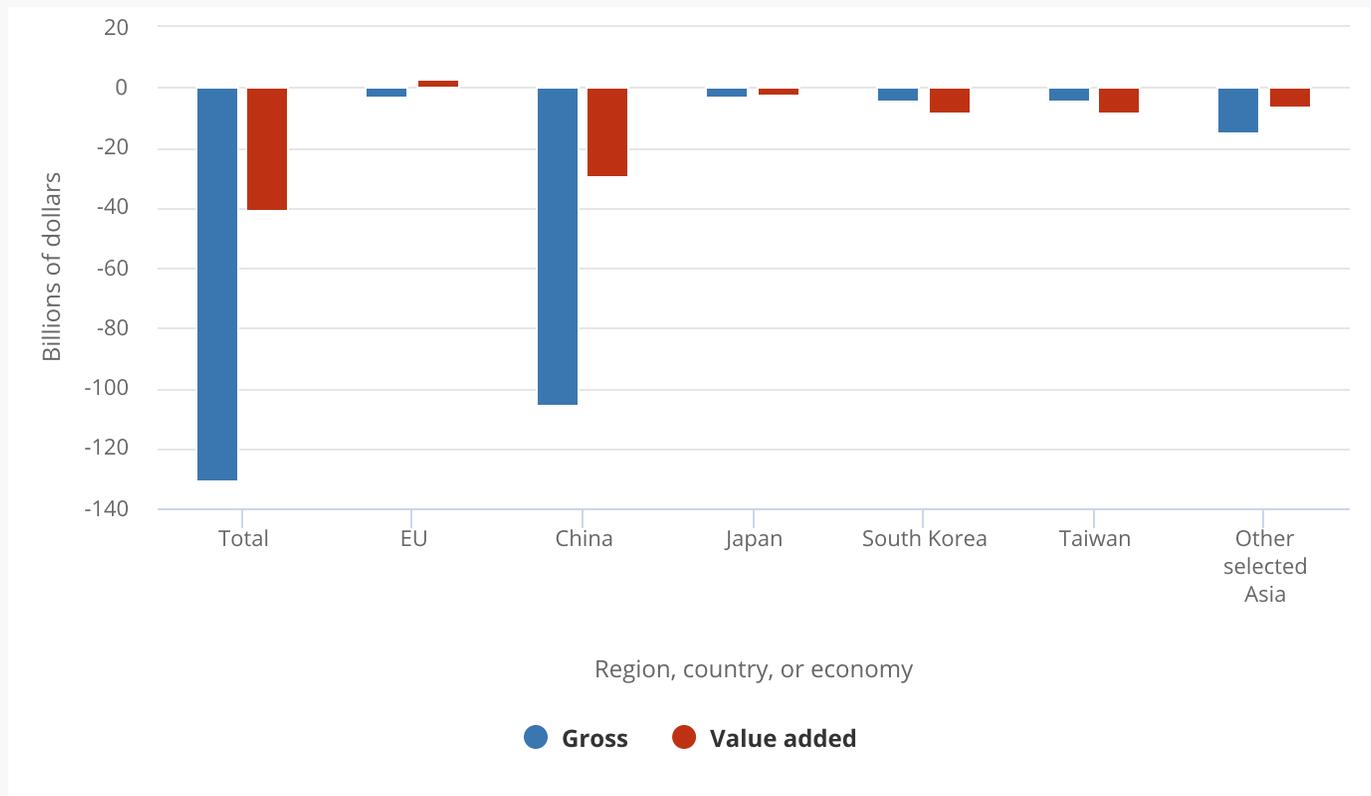
Organisation for Economic Co-operation and Development, Trade in Value Added Database.

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The higher U.S. global export share on a value-added basis coincides with a much smaller U.S. trade deficit compared to a conventional basis, largely due to a much smaller deficit with China (Figure 6-H). Value-added measurement of U.S. trade with China results in comparatively lower imports from China by crediting the foreign content of China's imports to the countries that supplied inputs and components to China.

FIGURE 6-H

### U.S. trade balance in the computer, electronic, and optical equipment industry by selected region, country, or economy: 2015



EU = European Union.

#### Note(s):

Exports and imports on a gross basis include value of domestic content and intermediate inputs supplied by other countries. Exports and imports on a value-added basis consist of value of domestic content and exclude value of intermediate inputs supplied by other countries. U.S. trade balance excludes trade with Canada and Mexico. The EU includes current 28 member countries. China includes Hong Kong. Other selected Asia includes India, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

#### Source(s):

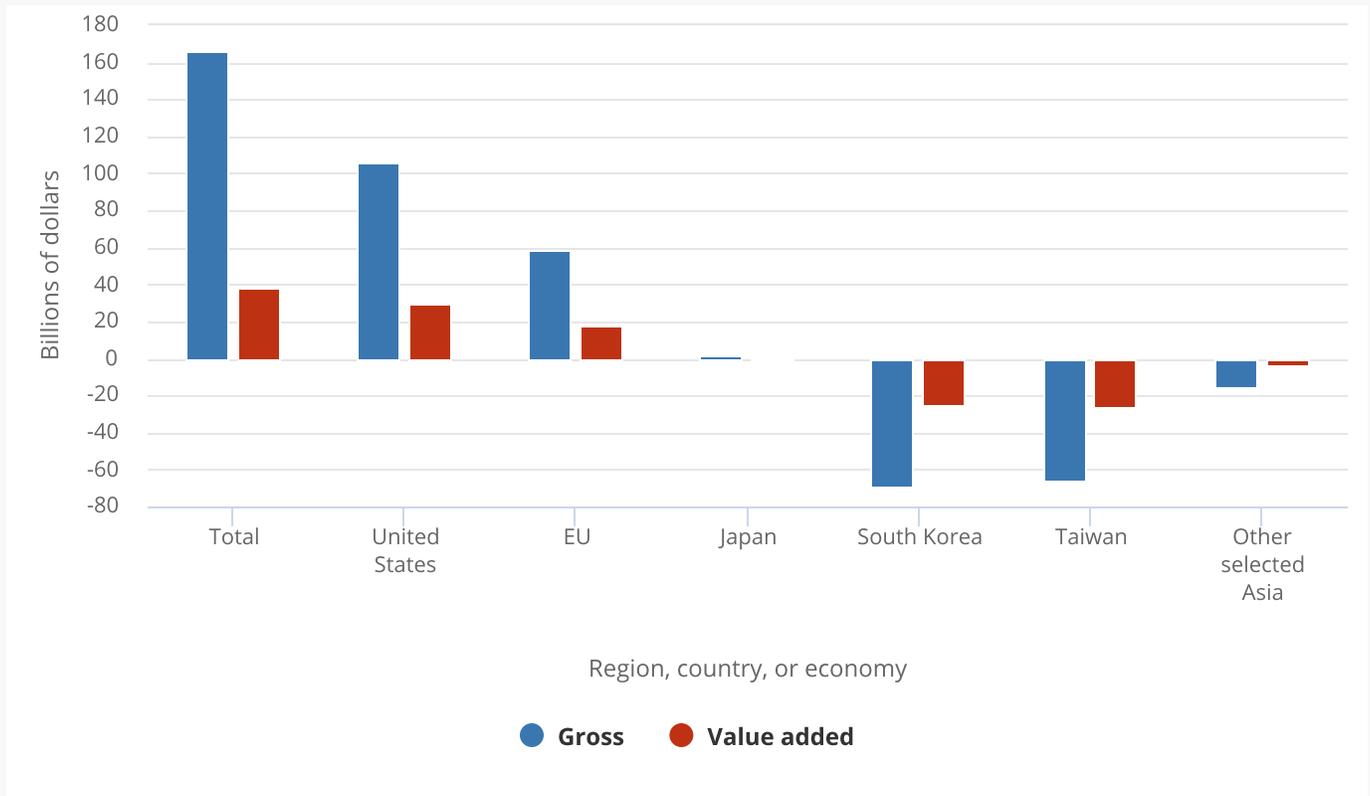
Organisation for Economic Co-operation and Development, Trade in Value Added Database.

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According to the OECD/WTO value-added data, China is the world's largest exporter (39% global share) on a conventional basis, with a wide lead over other major exporters (Figure 6-F). Although it continues to be the largest global exporter on a value-added basis, China's global share is lower (28%), and the gap between China and other major exporters is narrower. The large decline of China's global share moving from a conventional to a value-added basis is due to the high share of foreign content in China's exports. In addition, China's trade surplus is much lower on a value-added basis (\$38 billion) than on a conventional basis (\$166 billion) due to a far smaller bilateral surplus with the United States (Figure 6-I).

FIGURE 6-1

## China's trade balance in the computer, electronic, and optical equipment, by selected region, country, or economy: 2015



EU = European Union.

**Note(s):**

Exports and imports measured on a gross basis include value of domestic content and intermediate inputs supplied by other countries. Exports and imports measured on value-added basis include value of domestic content and exclude value of intermediate inputs supplied by other countries. U.S. trade excludes exports and imports with Canada and Mexico. The EU includes current 28 member countries. China includes Hong Kong. Other selected Asia includes India, Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.

**Source(s):**

Organisation for Economic Co-operation and Development Trade in Value Added Database.

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\* Data on the OECD/WTO trade in value-added indicators and additional information are available at <https://www.oecd.org/industry/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm>.