

Technical appendix and acknowledgments

Global Trade Explorer



General information about the visualization data

Trade values shown are based on trade values self-reported to UN Comtrade. The accuracy of the data is based on each economy's reported values.

Sector taxonomy and classification are based on the judgment of McKinsey industry experts working with the McKinsey Global Institute.

There are bilateral asymmetries in import and export data sets from UN Comtrade.

Data used in the visualization is from or ends in 2023. McKinsey & Company expects to update the data as 2024 data becomes available but is under no obligation to update the data or correct the results presented in this visualization.

Information on data sources, usage, and definitions

The United Nations Commodity Trade Statistics Database (UN Comtrade)

Data set description

The following text is provided directly by UN Comtrade: UN Comtrade contains detailed imports and exports statistics reported by statistical authorities of close to 200 countries or areas. It concerns annual trade data from 1962 to the most recent year. UN Comtrade is considered the most comprehensive trade database available with more than one billion records. Find more information here: <https://unstats.un.org/wiki/pages/viewpage.action?pageId=143100203>

Data caveats and limitations

The following text is provided directly by UN Comtrade: UN Comtrade displays bilateral asymmetries in trade data. These occur when the reported exports from country A to country B do not match the reported imports to country B from country A. Find more information here: <https://unstats.un.org/wiki/display/comtrade/Bilateral+asymmetries>

There may also be inconsistencies between UN Comtrade and trade figures from local statistics bureaus.

Notes on our treatment of data

The following visuals use imports and exports reported to UN Comtrade by each economy:

- Trade partner map
- Trade composition
- Evolution in trade partners

To ensure consistency of trade figures between exporting and importing economies, McKinsey used only reported imports for the following visuals:

- Global trade network
- Trade interdependencies

The import data visualized in this tool exclude all of an economy's reported trade with itself, which is commonly considered re-imports. Find more information here: <https://unstats.un.org/wiki/display/comtrade/Trade+with+Itself>

The partner "Areas NES (not elsewhere specified)" is used (a) for low-value trade, (b) if the partner designation was unknown to the country or if an error was made in the partner assignment, or (c) to protect company information. Find more information here: <https://unstats.un.org/wiki/display/comtrade/Areas+not+elsewhere+specified>

Commodity code 999999 is used for low-value transactions and to adjust the values of the reported detailed commodity data in UN Comtrade so that it sums to the total trade value for a given country data set. Due to confidentiality, countries may choose to report total trade value but not their detailed commodity trade.

Trade in Value Added (TiVA)

Data set description

The following text was provided by the OECD and has been updated: TiVA indicators are derived from OECD Inter-Country Input-Output (ICIO) tables. These are constructed using statistics compiled from national, regional, and international sources and use an industry list based on the International Standard Industrial Classification (ISIC). The 2023 edition of TiVA provides indicators for 76 economies (including all OECD, EU, G20 and ASEAN economies) over the period 1995–2020. Find more information here: <https://www.oecd.org/en/topics/sub-issues/trade-in-value-added.html>

Economy-related data treatment

Economies available for selection in the website drop-down menus are the top 50 economies by GDP for 2021 (excluding those for which UN Comtrade does not have 2021 import/export data). This equates to more than 80 percent of global GDP and more than 90 percent of global trade.

Former economies and geographic areas are included in regional aggregates but are not considered as individual trading partners.

Trade with partners classified as “Areas, NES” in the UN Comtrade data set is considered in sectoral aggregates but is not mapped to any trading partner or region.

Outlying islands in UN Comtrade data set are mapped to the geographically closest region regardless of which region its sovereign state belongs to.

Region definitions

Europe 30 comprises 27 European Union member states plus Norway, Switzerland, and the United Kingdom.

Other Europe and Central Asia includes Russia, Türkiye, Commonwealth of Independent States economies, and all other European economies not included in Europe 30.

North America includes Canada, Mexico, and the United States.

Latin America includes economies in Latin America and the Caribbean as defined by the World Bank (not including Mexico).

Asia–Pacific comprises continental Asia, Australia, New Zealand, and Pacific Island nations (not including Greater China).

Greater China includes mainland China, Hong Kong, Macau, and Taiwan.

— The UN does not show trade statistics related to Taiwan. The category “Other Asia, NES” is generally considered a proxy for Taiwan and is treated as such in these analyses. Find more information here: <https://unstats.un.org/wiki/display/comtrade/Taiwan%2C+Province+of+China+Trade+data>

Middle East and North Africa includes economies as defined by the World Bank.

Sub-Saharan Africa includes economies as defined by the World Bank.

Rest of World includes Antarctica and other areas that are not included in the listed regions.

Sector definitions

Manufactured goods

Chemicals: Chemical compounds manufactured for non-retail use.

Electronics: Devices that generate, distribute, and use electrical power to perform specific functions, along with their electrical components.

Food and beverages: Products specifically prepared for consumption by humans or animals, taking the form of substances that can be eaten or drunk. Includes various intermediate products and associated products that are generated through processing, such as oil cake.

Machinery: Devices that involve mechanical processes and physical movements to perform specific operations (such as handling, weighing, or packing), along with their components. Excludes devices that are components of retail goods.

Medical and scientific instruments: Equipment that supports medical or scientific uses.

Metal products: Items or objects primarily made from metal or its alloys.

Non-metallic mineral products: Items or objects primarily made from nonmetallic minerals (such as glass, cement, and ceramics).

Pharmaceutical products: Medications or drugs used for the prevention, treatment, or management of diseases and medical conditions in humans.

Rubber and plastic products: Items or objects primarily made from rubber or plastic.

Textiles: Materials made from fibers, thin threads, or filaments, along with apparel and homeware products that use these materials as core inputs.

Transport equipment: Vehicles for transporting passengers or freight, along with their parts and accessories. Includes automotive, ships, railroad rolling stock, and aerospace.

Wood and paper products: Wood products (such as plywood and veneers), pulp, paper, and converted paper products.

Others: Any other products, including nonspecified products.

Resources

Agriculture: Vegetal and animal natural resources comprising products derived from growing of crops, raising and breeding of animals, harvesting of timber and other plants, or animals or animal products from a farm or their natural habitats. Excludes products that have been processed beyond primary stages.

Energy resources: Energy or mineral fuels that can be transformed into energy.

Minerals: Mined (unprocessed) inorganic elements (excluding pearls and precious stones). Mineral intermediates, such as aluminum oxide, are mapped to the chemical subsector inorganic chemicals.

Data gaps

There are some gaps in data that may affect visualizations. The following are common but not exhaustive types of missing data:

1. Trade values are listed but the economy does not specify who the trade partner is, for example, Germany natural gas imports, Australia liquefied natural gas exports, Saudi Arabia crude oil exports.
2. Total trade values are listed but the economy does not specify trade by sectors, for example, United Arab Emirates until 2018.
3. No trade data is reported for a given year, for example, Bangladesh reporting ends in 2015.

A list of official UN Comtrade data FAQs can be found here: <https://unstats.un.org/wiki/display/comtrade/Data+FAQs>

Visual-specific notes

Trade partner map

The United Nations reports that the status of borders in the Kashmir area has not been agreed upon by the parties.

The boundaries and names shown, and the designations used on this map, do not imply official endorsement or acceptance by McKinsey & Company.

The map is not globally comprehensive and has been stylized to simplify some international borders and omit some smaller islands.

Europe 30 is treated as a single trading partner, including trade between individual Europe 30 economies and the rest of the Europe 30 bloc.

Instances where the largest trading partner of an economy is self-reported as unspecified, are labeled “no data available.”

Source: UN Comtrade (refreshed January 30, 2025); UN Geospatial

Global trade network

Size of circle indicates relative value of each economy's global imports/exports. Thickness of line shows relative size of economy-to-economy flows.

Top 40 flows are identified based on import trade value for the selected sector, with the relevant economies shown on either end of the identified flow.

Flows are calculated using only UN Comtrade import data; displayed export values may differ from other visualizations that use both import and export data, as there are asymmetries in UN Comtrade import and export data sets.

An economy may appear as a large circle in the top chart but be missing from the bottom chart. This is usually due to most of the trade being reported with an unspecified trading partner, for example, Germany imports of pipeline natural gas in 2021.

Source: UN Comtrade (refreshed January 30, 2025)

Trade composition

Trade on a regional level excludes trade between countries belonging to the same region. Trading partner category “Other” includes trade with unspecified trading partners.

In cases where an economy has reported only total imports and exports of a sector but not specified the trading partner, the sector will not appear in the drop-down menu of the bottom chart, for example, Saudi Arabia exports of crude oil in 2021.

For individual partners, trade with “Not specified” includes reported trade with any partner that is not classified as an existing economy (for example, geographical areas, former economies, and undisclosed trading partners). For regional partners, trade with “Not specified” includes reported trade with any partner that does not map to one of the nine regions (such as ship stores and undisclosed trading partners). As such, there may be a difference in the “Not specified” value for individual partners versus regions. For example, trade with “Caribbean” would be considered part of trade with Latin America and Caribbean in the regional partner view, but part of “Not specified” in the individual partner view.

Source: OECD TiVA Origin of Value Added in Final Demand (refreshed November 28, 2024)

Evolution in trade partners

Trade on a regional level excludes trade between countries belonging to the same region. Top five trade partners are selected based on most recent year of data. Trade partner value is visualized as zero for years that have missing data.

For individual partners, trade with “Not specified” includes reported trade with any partner that is not classified as an existing economy (e.g., geographical areas, former economies, and undisclosed trading partners). For regional partners, trade with “Not specified” includes reported trade with any partner that does not map to one of the nine regions (such as ship stores and undisclosed trading partners). As such, there may be a difference in the “Not specified” value for individual partners versus regions. For example, trade with “Caribbean” would be considered part of trade with Latin America and Caribbean in the regional partner view, but part of “Not specified” in the individual partner view.

Source: UN Comtrade (refreshed January 30, 2025)

Value-added trade visual

Value added is different from gross trade, which is the default view shown across all other visualizations. While gross trade accounts for the full value of a product or service each time it crosses borders, including the cost of inputs and the value each country adds to it, value added accounts for only the latter. For example, if a country imports a cellphone, adds one component to it, and exports the new product, gross exports will reflect the full value of the cellphone, while value added will measure only the value of the new component that country added.

The following text is provided directly by the OECD: Value added reflects the value generated by producing goods and services and is measured as the value of output minus the value of intermediate consumption. Value added also represents the income available for the contributions of labour and capital to the production process. Find more information here: <https://data.oecd.org/natincome/value-added-by-activity.htm#:~:text=Value%20added%20reflects%20the%20value,capital%20to%20the%20production%20process>

Exported value added indicates the value of inputs from the selected sector and economy into all other sectors and economies. Imported value added indicates the value of inputs into the selected sector and economy from all other sectors and economies.

Analysis excludes domestic value-added trade. Data not available for regional aggregations.

Source: OECD TiVA Origin of Value Added in Final Demand (refreshed November 28, 2024)

Trade interdependencies

Trade on a regional level excludes trade between countries belonging to the same region.

Flows are calculated using only UN Comtrade import data; displayed export values may differ from other visualizations that use both import and export data, as there are asymmetries in the UN Comtrade import and export data sets.

Source: UN Comtrade (refreshed January 30, 2025)

Product concentration visual

The Herfindahl-Hirschman Index (HHI) is a common measure of market concentration. For product-level analysis, HHI values greater than 3,000 typically mean that there are three or fewer suppliers for the product globally (y-axis), or that a specific economy relies on three or fewer suppliers for its imports (x-axis). HHI of a specific product is calculated by squaring the supplier share of a given economy (individual, region, or world) and then summing the resulting numbers across all partners.

$$HHI = \sum_{i=1}^N (SS_i \times 100)^2,$$

Where SS_i is the supplier share of economy i in the market, and N is the number of economies.

The HHI calculation considers each unspecified trading partner, area, and former economy as an individual supplier. As such, the product-specific HHI may be overestimated in cases where an economy has grouped together trade from several individual partners under the same unspecified code. For example, "Other Africa" is considered as one supplier in the HHI calculations but may in fact consist of several economies in Africa.

In the breakdown of top suppliers of individual products, all unspecified trade partners are aggregated under the "Not specified" label.

The share of concentrated trade for a specific economy is calculated by taking the trade value for products with an HHI value larger than 3,000 and dividing it by the trade value of all products.

Regional calculations of HHI, supplier share of total imports, and share of concentrated trade exclude any trade between economies within the selected region.

Largest products by global imports have been allocated shortened names. Original names can be found on the UN Comtrade website using the HS6 code.

Products with only unspecified suppliers are not shown.

Source: UN Comtrade (refreshed January 30, 2025)

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