Global Value Chain Network Dashboard – Technical Note

The global environment facing ASEAN+3 has shifted markedly, as tariff measures, broader geoeconomic reconfiguration, and heightened policy uncertainty reshape the region's external setting. At the same time, ASEAN+3's economic linkages have changed fundamentally over the past two decades: the region is now more deeply integrated on both the supply and demand sides, with a denser regional production network and a stronger intraregional demand base.

This dashboard visualizes the evolution of global value chain (GVC) linkages across ASEAN+3 and the broader global economy, tracing how supply and demand networks and bilateral linkages have shifted over time through the lens of value-added trade rather than gross flows alone.

In the global view, the chart shows an economy's position in the broader production network. In the focal-economy view, it highlights that economy's most important partners under the selected settings.

Data and Scope

The dashboard is based on the Asian Development Bank's Multiregional Input-Output Tables at constant 2010 prices, covering 62 economies plus the rest of the world from 2000 to 2024, across 35 sectors, sourced from the Asian Development Bank's Key Indicators Database Online. Value-added trade indicators are constructed using the exvatools package for R (Feas 2024). For visual clarity, the rest-of-the-world node is omitted from the network charts.

Methodology

Value-Added Decomposition

Gross export figures record the full value of a shipment each time it crosses a border, which means the same value-added can be counted multiple times as goods travel through international production chains. Value-added decomposition addresses this by tracing where value originates, how it moves through the production network, and where it is ultimately absorbed. This makes it possible to distinguish conventional final goods trade from GVC-related trade, and to identify whether an economy participates in global production chains primarily as a supplier of inputs to others or as a user of foreign inputs in its own exports.

The decomposition follows Borin and Mancini (2019, 2023), which separates gross exports into components based on where value added originates and where it is absorbed.

EXGR – Gross Exports. The full recorded value of exports before decomposition. All other indicators are components of EXGR.

VAX – Value Added Exported and Absorbed Abroad. Domestic value added embodied in exports that is ultimately absorbed outside the exporting economy.

DAVAX – Domestic Value Added Directly Absorbed. The value that is produced entirely domestically and consumed by the importing economy, and of the intermediate inputs that are used by the importing economy to produce the final goods for its internal market, without being re-exported. This corresponds to more conventional, non-GVC trade.

GVC – GVC-Related Trade. Defined as EXGR minus DAVAX. It captures export flows that cross at least two international borders before reaching final absorption – the defining feature of participation in international production networks.

Network Charts

The network representation follows the approach of Li and others (2019). Supply mode highlights major supply hubs from which others source their imports. Demand mode shows major demand hubs where others direct their value-added exports.

The size of the node represents the share of the economy's value-added exports or imports by other economies in the world's total value-added exports or imports. The thickness of the linkage represents the share of the value-added export or import flow between each trading partner in the world's total value-added export or import flow. The arrow of the linkage shows the direction of the trade flow.

In the global view, to simplify the visual, a linkage between the two economies appears if

(1) economy A takes the largest share in economy B's value-added exports or imports, or

(2) economy A comprises more than 25 percent of economy B's value-added exports or imports.

In the focal-economy view, the chart shows the selected economy's ten most important direct partners under the chosen settings.

How to Navigate the Dashboard

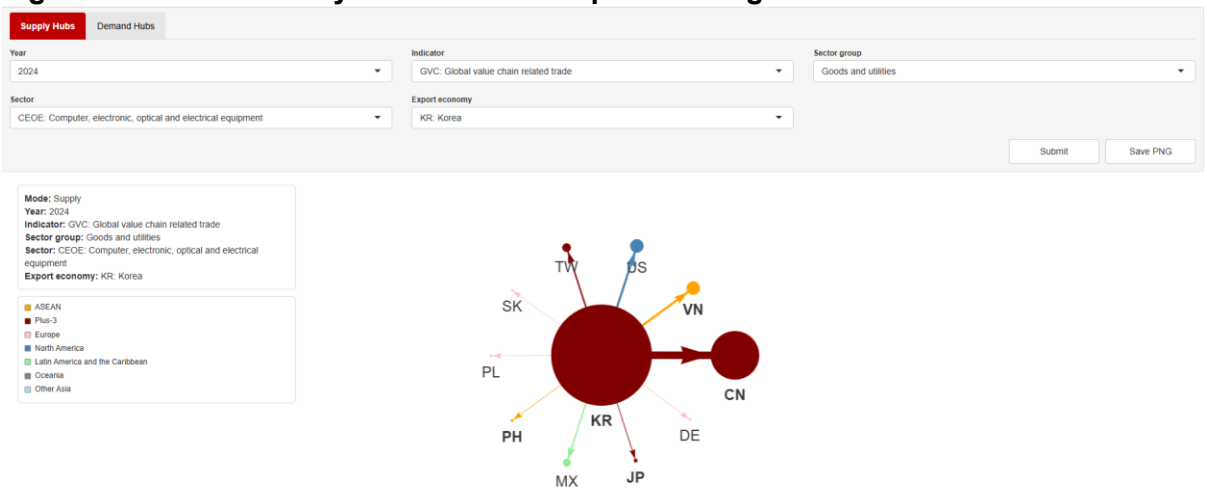
Supply / Demand mode changes the network perspective. *Year* changes the time period. *Indicator* changes the trade concept being visualized – gross exports, value-added exports, directly absorbed domestic-value added, or GVC-related trade. *Sector group* and *Sector* allow focus on goods, services, or a specific industry.

Selecting *All* shows the global network; selecting a specific economy shows its focal network with ten most important partners under the chosen settings. The same economy can look quite different depending on whether the question concerns sourcing patterns, destination markets, sector-specific dependence, or overall GVC participation.

Example of Interpretation

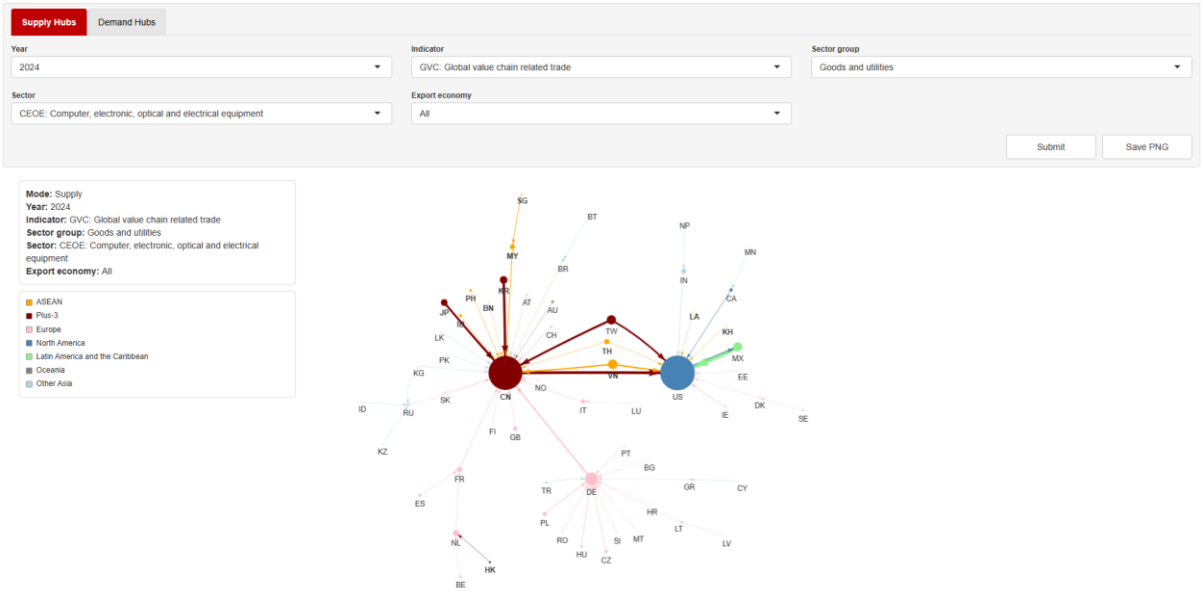
Suppose the filters selected are 2024, GVC, electronics, and Korea as the focal economy under the Supply mode (Figure 1). The generated chart will place Korea at the centre and display the partners that account for the largest shares of Korea's GVC exports in electronics, that is, the economies who rely the most on Korea for intermediate inputs in producing their electronics exports. Large partner nodes indicate more important suppliers; thicker arrows indicate stronger value-added linkages. Switching to All economy shows where Korea sits in the broader global supply network for electronics and whether it functions as a central hub, a regional hub, or a more specialized node (Figure 2).

Figure 1. Focal Economy View: Korea's Top 10 Trading Partners in the GVC Network



Source: AMRO GVC Network Dashboard.

Figure 2. Global View: GVC Supply Network



Source: AMRO GVC Network Dashboard.

Interpretation and Limits

The dashboard is best read as a structured visualization of major production relationships rather than a complete map of every bilateral flow. It can be used for identifying supply concentration, diversification, upstream versus downstream roles, and shifts in network centrality over time. As the chart applies filtering rules for visual readability, smaller but still relevant linkages may not always appear.

References

Asian Development Bank (ADB). Key Indicators Database: Multiregional Input-Output Tables at Constant Prices. ADB. Manila. https://kidb.adb.org/globalization/constant.

Borin, Alessandro, and Michele Mancini. 2019. Measuring What Matters in Global Value Chains and Value-Added Trade. Policy Research Working Paper; No. 8804. World Bank. Washington, DC. http://hdl.handle.net/10986/31533.

Borin, Alessandro, and Michele Mancini. 2023. "Measuring What Matters in Value-added Trade." Economic Systems Research 35(4): 586–613.

Feas, Enrique. 2024. exvatools: Value Added in Exports and Other Input-Output Table Analysis Tools. R package v1.0.0. https://CRAN.R-project.org/package=exvatools

Li, Xin, and others. 2019. “Recent Patterns of Global Production and GVC Participation.” Chapter 1 in Global Value Chain Development Report 2019: Technological Innovation, Supply Chain Trade, and Workers in a Globalized World. World Bank. Washington, DC. http://documents.worldbank.org/curated/en/384161555079173489.