

International trade and global supply chain analysis



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Summary of the Training Session:

The production processes of goods and services in the modern economy are fragmented and conducted in multiple regions and countries. Slicing up value chains across regions and countries has a myriad of implications for economies, societies and the environment. In this module, we will first introduce global value chain (GVC) accounting. In the GVC era, a general consensus is that "trade in value added" provides a better measure to evaluate the benefits of a country's participation in international trade. Value added exports, value added in trade, the extent of GVC participation, and other relevant GVC accounting issues will be discussed and studied. We will also introduce environmental accounting, in particular, accounting for consumption-based emissions. In the second session, we will discuss several quantitative models to quantify the economic exposure to supply chain disruptions with a focus on the input-output-based hypothetical extraction method. In the third session, we will do some relevant exercises. In the last session, I would like to briefly discuss quantitative trade model and its important applications.

Outline:

First Session *Global value chains: economic and environmental accounting*

Second Session *Economic exposure to global supply chain disruptions*

Third Session *Tables & Exercises: How to account for value added exports, trade in value-added, consumption-based emissions using global input-output tables?*

Fourth Session *Beyond Input-Output model: quantitative trade model and its applications*

Prerequisites:

We require a projector and internet connection in the classroom.

Participants will bring their laptops.

It could be necessary that participants have a basic level in input-output model, Matlab and Excel.

Suggested References:

Dietzenbacher, E., van Burken, B. & Kondo, Y. (2019). Hypothetical extractions from a global perspective. *Economic System Research*, 31, 505-519.

Dietzenbacher, E., Cazcarro, I. Arto, I. (2020). Towards a more effective climate policy on international trade. *Nature Communications* 11, 1130.

Eaton, J., Kortum, S. (2002). Technology, geography, and trade. *Econometrica* 70(5), 1741–1779.

Miller, R. E. & Blair, P. D. (2009). *Input-output analysis: foundations and extensions*. Cambridge University Press.

Hummels, D., Ishii, J., Yi, K.M. (2001). The nature and growth of vertical specialization in world trade. *Journal of International Economics* 54 (1), 75–96.

Johnson, R.C., Noguera, G. (2012). Accounting for intermediates: production sharing and trade in value added. *Journal of International Economics* 86, 224–236.

Koopman, R., Wang, Z., Wei, S.J. (2014). Tracing value-added and double counting in gross exports. *American Economic Review* 104, 1–37.

Los, B., Timmer, M.P., de Vries, G. (2016). Tracing value-added and double counting in gross exports: comment. *American Economic Review* 106 (7), 1958–1966.

Tian, K. et al. (2022). Regional trade agreement burdens global carbon emissions mitigation. *Nature Communications*, 13, 408.

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