

2020

36th IARIW General Conference

Paper Prepared for the 36th IARIW General Conference, Oslo, Norway, August 24-28, 2020

The Rise of Global Value Chains in a Long Historical Perspective

Pieter Woltjer

Marcel Timmer

In recent decades, the production of goods has increasingly been organized along global value chains, where the production process is fragmented into distinct stages and is allowed to cross borders. As production has globalized, conventional trade statistics may provide a skewed perspective of the importance of trade to the growth of output and income in evermore connected economies. This reflects the fact that national accounts record trade flows as gross shipments across the border, not the value added by every contributing economy at different stages of the production process. The gross value of products that cross borders several times for further processing are counted multiple times, obscuring how value added is traded in the global economy. As noted by Johnson and Noguera (2017) “gross trade data alone are not sufficient to isolate the causes or interpret the consequences of the massive changes in the global economy that have occurred in recent decades.”

Policymakers and researchers increasingly stress the need for complementing existing trade statistics with a new framework more appropriate to deal with the rise of global manufacturing. A wealth of new studies has been published on global value chains, notably several macro studies that capture the trade in value added using global input-output tables that provide information on inter-country and inter-industry flows of goods and services (Johnson and Noguera 2012; Andrew and Peters 2013; Lenzen et al. 2013; Meng et al. 2013; Timmer et al. 2014; Los et al. 2016; OECD 2018; Pahl et al. 2019). These global input output tables link national input-output tables to international trade flows, providing a comprehensive summary of all transaction in the global economy between producers and consumers across countries. Tracing both national and international flows of goods and services has proven to be an indispensable tool for the analysis of global production networks. However, new studies tend to focus on extending global input-output tables to include more countries, provide a more detailed sectoral breakdown of the economy or extend the annual coverage of the tables ever closer to the present. Few have provided a long-term view of the trade in value added, sketching a more complete picture of the rise of global production networks. Arguably, the rise of the Asian Tigers and the integration of Europe since the 1960s as well as the adoption of more extensive trade

agreements have provided an impetus to the global economy, rivalling that observed during the wave of globalization since the 1990s.

To measure value added in global value chains, this paper tracks the flow of products across industries and countries, closely following the methods and concepts introduced in the World Input-Output Database (Timmer et al. 2015). It provides world input-output tables for each year between 1965 and 2005 for 26 countries, including 15 European countries and 11 other major economies: Australia, Brazil, Canada, China, Hong-Kong, India, Japan, Mexico, South Korea, Taiwan and the United States. In addition, a model for the rest of the world economy is provided such that the value-added decomposition of final output is complete. It contains data for 28 industries covering the total economy, including agriculture, mining, construction, utilities, 17 manufacturing industries, and 7 services industries. The tables have been constructed by combining national input-output tables for benchmark years, spanning the entire period, with national accounts data on output, productivity and expenditures as well as bilateral international trade data. This novel dataset will be used to study the changes in the value added content of trade over these four decades. In addition we use the decomposition approach introduced by Pahl et al (2019) to account for global value chain jobs by the global demand for final goods, a country's international competitiveness and technology.

REFERENCES

Andrew, R. and G.P. Peters (2013). A Multi-Region Input-Output Table Based on the Global Trade Analysis Project Database (GTAP-MRIO). *Economic Systems Research*, 25, 99–121.

Johnson, R.C. and G. Noguera (2012). Accounting for Intermediates: Production Sharing and Trade in Value Added. *Journal of International Economics*, 86, 224–236.

Johnson, R. C., & Noguera, G. (2017). A portrait of trade in value added over four decades. *Review of Economics and Statistics*, vol 99(5), pages 896-911.

Lenzen, M., D. Moran, K. Kanemoto, and A. Geschke, (2013) Building Eora: A Multi-region Input–Output Database at High Country and Sector Resolution. *Economic Systems Research*, 25, 20-49.

Meng, B., Y. Zhang and S. Inomata (2013). Compilation and Applications of IDE-JETRO's International Input-Output Tables. *Economic Systems Research*, 25, 122-142.

Pahl, S., M. P. Timmer, R. Gouma, and P. Woltjer (2019). Jobs in Global Value Chains: New Evidence for Four African Countries in International Perspective. World Bank Policy research Working Paper, 8953, 1-76.

Timmer, M. P., Erumban, A. A., Los, B., Stehrer, R., and G. J. de Vries (2014). Slicing up global value chains. *Journal of Economic Perspectives*, 28(2), 99–118.

Timmer, M. P., Dietzenbacher, E., Los, B., Stehrer, R. and G. J. de Vries (2015), An Illustrated User Guide to the World Input–Output Database: the Case of Global Automotive Production. *Review of International Economics*, 23, 575–605

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