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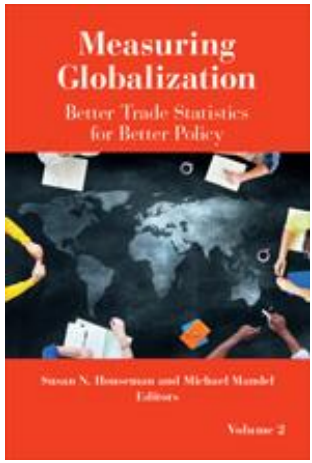
Introduction



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Introduction

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Why should economists care about correctly measuring globalization? Obviously having a better picture of the global economy is a desirable end in itself. But more important is the relationship between good data and good policy: An accurate description of the global links among nations, businesses, and individuals is essential to optimal decision making by policymakers. Without such knowledge, policymakers are essentially flying blind.

Consider policy toward manufacturing enterprises. The federal, state, and local tax codes contain quite a few explicit beneficial provisions for manufacturing, in addition to direct and indirect subsidies. Moreover, there's an intense debate about whether manufacturing in countries such as the United States has been hollowed out or remains robust.

From this perspective, policymakers at every level of government would find it helpful to have direct information about the sorts of jobs that are created when manufacturers outsource production but keep the highly paid research and development (R&D), product development, and marketing jobs at home. Yet very little such data has existed heretofore.

This volume covers three topics where current statistical methodologies for tracking trade don't provide enough information for policymakers. These areas are "factoryless manufacturing," value-added trade in supply chains, and trade in services, intangibles, and data.

These areas are connected by a common thread: Rapid changes in the global economy have outstripped the traditional statistical presentation of export and import data by commodity and industry, as published by national and international statistical agencies. This has meant that such agencies no longer provide enough information for policymakers and researchers. The traditional presentation of trade statistics does not

allow economists to trace out the implications of global supply chains, which disaggregate production among countries in new and unexpected ways. Moreover, economists have very little data on cross-border flows of intangibles and data, which are poorly reported in the conventional trade statistics and yet increasingly important.

Chapters 2, 3, and 4 describe a way of augmenting the conventional industrial classifications by creating a new category called "factoryless goods producers" (FGP). Such a change—and the data collection changes that would accompany it—would have the effect of providing policymakers with a new source of information about the impacts of global supply chains in manufacturing.

Chapters 5, 6, and 7 examine the measurement of value-added trade. In a world of global supply chains, policymakers need to know more than straightforward gross exports and imports for each commodity. An export may contain large amounts of imported components, while a particular imported commodity may be an essential part of high-value exports. As a result, trade negotiators would greatly benefit from having access to value-added trade statistics so they can determine which categories of exports are most beneficial to the domestic economy.

Similarly, value-added trade statistics would be invaluable for state and local economic development policy. Governments often offer tax and training incentives to companies without being able to correctly measure the true spillover benefits to the local economy.

Even domestic macroeconomic policy relies heavily on a good understanding of globalization. As we saw during the financial crisis, the credit contraction leapt across national borders in unanticipated ways. Today, U.S. consumption, investment, and production are heavily dependent on global supply chains. A credit or political shock in China, for example, could plausibly have large effects on inflation or consumption in the United States and other countries.

Finally, Chapters 8 and 9 address the difficult issues of measuring cross-border flows of intangibles and data. Like value-added trade, getting better measurements of these increasingly important components of the global economy could significantly affect trade policy, tax policy, economic development policy, and even macro policy.

FACTORYLESS GOODS PRODUCTION

Chapters 2, 3, and 4 deal with correctly measuring the increasingly important phenomenon of factoryless goods production and contract manufacturing services (CMS). Companies such as Apple and Nike—which do research in new technology, design new products, market the products, and receive the profits from the sale of the products—are subcontracting out most or all of their actual production to other companies, either in the United States or globally. The issue is whether the first type of company—which may own no factories but may perform all the high-end functions of manufacturers—should be classified in the manufacturing industry.

On one level, this is a straightforward classification question. Under the North American Industry Classification System (NAICS) currently used in the United States, a company that outsources production could be classified in either manufacturing, wholesaling, or some other industry altogether. What's needed is a consistent way of identifying such firms that the main statistical agencies—the U.S. Census Bureau, the Bureau of Labor Statistics (BLS), and the Bureau of Economic Analysis (BEA)—can agree on. Then the FGPs would buy manufacturing services from other companies (providers of CMS), which would do the actual factory production.

But the topic of FGPs turns out to raise some profound theoretical, practical, and policy issues as well, going beyond the narrow sphere of economic statistics. Manufacturing is important as a source of high-paying jobs and innovation for the economy. By separating out the production aspect of manufacturing from the product development and marketing aspect, FGPs make it possible to understand where the value-added and high-paying jobs are created in the research/product development/production/marketing chain.

In turn, if FGPs are buying manufacturing services from overseas contract manufacturers, the statistical agencies have to explicitly measure the quantity and price of purchased manufacturing services as part of imports.

At the time of the conference that these volumes grew out of, "Measuring the Effects of Globalization," held February 28–March 1, 2013, in Washington, D.C., U.S. statistical agencies were operating under a

2011 mandate from the Office of Management and Budget (OMB) to integrate the concept of FGPs into the sprawling U.S. system of economic statistics. As a result, agencies began planning and researching how to best track FGPs, and the three chapters in this volume reflect that effort.

However, since then, the OMB has relaxed its mandate. An August 8, 2014, OMB directive in the *Federal Register* notes the following:

> The Economic Classification Policy Committee (ECPC), which advises OMB on periodic revisions to NAICS, recently reported to OMB that results of preliminary research on the effectiveness of survey questions designed to identify Factoryless Goods Producers (FGPs) [show] inconsistent results. These results indicate that questions tested in the 2012 Economic Census fail to yield responses that provide accurate and reliable identification and classification of FGPs. The ECPC has advised that additional research, testing, and evaluation are required to find a method for accurate identification and classification of FGPs, and that this process could take several years. Given these initial research results and the large number of public comments submitted on the topic of FGPs, OMB here announces that the FGP recommendation will not be implemented in 2017. (*Federal Register* 2014, p. 46558)

The *Federal Register* note goes on to say this:

> Without the deadline imposed by the 2017 NAICS revisions, the relevant statistical agencies will now have the opportunity to complete the additional research, testing, and evaluation needed to determine the feasibility of developing methods for the consistent identification and classification of FGPs that are accurate and reliable. (Ibid.)

From this perspective, the chapters in this volume stand as a road map for future research. In Chapter 2, "Reflecting Factoryless Goods Production in the U.S. Statistical System," Maureen Doherty gives a brief history and overview of the rationale behind creating the category of factoryless goods production. She shows how the United States chose a somewhat different approach from international statistical organizations.

In Chapter 3, "Measuring 'Factoryless' Manufacturing: Evidence from U.S. Surveys," Fariha Kamal, Brent R. Moulton, and Jennifer Ribarsky identify data that the BEA and the Census Bureau are already

collecting on both producers and users of CMS. Using this data, the chapter provides a snapshot of companies that are engaged in these activities.

Chapter 4, "The Scope of U.S. 'Factoryless Manufacturing,'" by Kimberly Bayard, David Byrne, and Dominic Smith, estimates the extent of U.S. factoryless manufacturing using corporate financial reports and Economic Census microdata. The authors calculate that manufacturing value-added would have been 5 to 20 percent greater for 2007 if all FGPs were reclassified to manufacturing, and that value-added would have been 20 to 30 percent greater for 2007 for semiconductor manufacturing if FGPs were included.

VALUE-ADDED TRADE

Factoryless goods producers make up only one aspect of global supply chains, however. The next three chapters take a more general look at value-added measures of trade. Value-added measures of trade acknowledge that exports of many goods and services are actually heavily dependent on imported intermediates. For example, a smartphone exported from China may contain chips originally made in Japan or South Korea (Kraemer, Linden, and Dedrick 2011). Similarly, exports of financial services from New York investment banks may in theory rely on intermediate services generated in the London offices of these banks.

Value-added measures of trade, rather than reporting gross exports, account for these imported intermediates by subtracting them out. Thus, value-added trade in theory represents the actual domestic value generated by exports.

Value-added trade measures are a very useful conceptual step forward. They are not a full solution, however. First, most countries do not have the right surveys in place to directly track usage of imported intermediates by industry. Second, value-added trade measures do not solve the import price bias issues raised in the first volume. For example, consider a piece of electronics assembled in China from imported components, and then exported to the United States. China's share of the final sales price might be quite low in this calculation. However, that assumes Chinese wages for the cost of assembly. If assembly was

shifted to the United States, then the cost of assembly at U.S. wages would be a much bigger share of the final sales price.

Nevertheless, major steps have been made in assessing value-added trade, as described in the chapters in this volume. In Chapter 5, "Incomes and Jobs in Global Production of Manufactures: New Measures of Competitiveness Based on the World Input-Output Database," Marcel P. Timmer, Bart Los, and Gaaitzen J. de Vries analyze global value chain income ("GVC income") for 20 countries, including the United States, Japan, Brazil, China, India, Russia, and the major economies of Europe. The authors define GVC income as the income generated in a country by participating in global manufacturing production, including the large contribution of nonmanufacturing industries.

The authors show that in advanced countries, GVC income generated by capital and high-skilled labor is rising. This fits the common story that global shifts in manufacturing have benefited workers with more education. Some of these gains are coming in service jobs, since the authors demonstrate that the manufacturing sector is the direct source of only half of the GVC income. On the downside, the same analysis shows that high-skilled-job opportunities have declined in the United States since 1995, while rising in Europe and Japan.

The methodology described in the chapter relies on tracing out cross-border flows of intermediates, as described in the World Input-Output Database (WIOD), an effort funded in part by the European Commission (Timmer 2012). A similar effort, funded by the Organisation for Economic Co-operation and Development (OECD) and the World Trade Organization (WTO), is described in Chapter 6, "Measuring Trade in Value-Added and Beyond," by Nadim Ahmad. This chapter describes the methodology behind the Trade in Value-Added (TiVA) database, the assumptions behind the methodology, and the initiatives launched to improve the quality of those assumptions and the underlying data.

An August 2013 report that draws on the TiVA database, published subsequent to the 2013 globalization conference, estimates that between 30 and 60 percent of the value of the exports of G20 countries are either composed of imported inputs or are intermediate inputs for other countries (OECD, WTO, and UNCTAD 2013). In addition, 42 percent of the value-added of exports for G20 economies are made up of services, which closely matches the estimate in the previous chapter.

Finally, there's a broader policy point that often escapes policymakers—succeeding in international markets requires an ability to import high-quality intermediate inputs, as countries such as China have done.

From both a political and economic framework, China represents one particularly important application of the value-added framework. In Chapter 7, "Import Uses and Domestic Value-Added in Chinese Exports: What Can We Learn from Chinese Microdata?," Shunli Yao, Hong Ma, and Jiansuo Pei estimate China's domestic value-added share in exports by combining two enterprise-level sources of microdata. The chapter provides an excellent background for the types of data that the Chinese statistical authorities are collecting, as well as upper and lower bounds for domestic value-added shares.

INTANGIBLES AND DATA

The next two chapters address the difficult questions of measuring cross-border flows of intangibles and data. Chapter 8, "A Formulary Approach for Attributing Measured Production to Foreign Affiliates of U.S. Parents," by Dylan G. Rassier and Jennifer Koncz-Bruner, focuses on the proper geographical attribution of the income generated by intangible capital such as patents, software, and other intellectual property. The problem is that the knowledge embodied in intangible capital is a "shared input" across an entire enterprise. The return on intangible capital could in theory be attributed to the country where the capital was created, the country where the intangible capital was used for production, the country where the product that incorporates the intangible capital is sold, or the country where the intangible capital is nominally located for legal or tax purposes.

The BEA publishes data on income and assets by country for foreign affiliates of U.S. multinationals. The current methodology is to attribute the income generated by intangible capital owned by a multinational to the country where the capital resides for legal or tax purposes. That results in apparent anomalies where certain countries such as Bermuda and Ireland show relatively high levels of assets and income for the foreign affiliates of U.S multinationals, apparently out of proportion with the actual economic significance of those countries.

Rassier and Koncz-Bruner propose using proxy measures such as compensation, net physical assets, and sales in order to provide a better estimate of the location of income and economic activity of foreign affiliates of U.S multinationals. The proposed methodology results in only a small shift of income, in the aggregate, between foreign affiliates and U.S. parents. But the global location of income outside the United States shifts significantly. In particular, the proposed methodology shifts income across global regions including Africa, Asia, Europe, Latin America, and the Middle East by more than 10 percent of value-added.

The proposed methodology, however, does not actually deal with some of the conceptual problems raised by shared inputs. It would be better, in some sense, to be able to measure the creation and use of intangible capital separately, and provide some theoretical guidance for how the data can be used

In the final chapter, "Data, Trade, and Growth," Michael Mandel examines a topic that is rarely considered—how to measure cross-border flows of data. These days no international commerce can be conducted without an associated flow of data. That includes financial data, entertainment, the data that accompanies back-office functions such as human resources, sales data, and production data. Estimates from TeleGeography suggest that cross-border data flows rose at an average annual rate of 49 percent between 2008 and 2012.

The problem is that these cross-border flows of data, while clearly economically valuable, are often not picked up by the trade statistics. In the current methodology used by the BEA and most other statistical agencies globally, data is classed as a service—and a service export by definition occurs when a foreign person pays a domestic person for a service. Similarly, an import of services by definition occurs when a domestic person pays a foreign person for services.

However, the global architecture of the Internet allows and even encourages data to cross national borders without leaving a significant monetary footprint. In particular, major Internet providers exchange data without exchanging money, opening up the possibility of a packet of data traveling around the world without leaving a single monetary trace.

As a result, Chapter 9 offers evidence that economically important cross-border data flows are simply not being counted by current inter-

national economic statistics. It is likely that both the level and the rate of growth of data trade are being significantly understated.

This mismeasurement issue has several important policy implications. First, it seems likely that the data sector, and the companies making up the data sector, are bigger contributors to domestic and global growth than policymakers realize. That in turn leads to the second implication: To the degree that trade negotiators for the United States (and for other countries) prioritize their negotiation objectives according to the relative economic importance of different sectors of the economy, the undermeasurement of the data sector will adversely affect policy. To put it a different way, if wheat exports are easier to measure than trade in data, then U.S. trade policy will place too much emphasis on reducing barriers to agriculture exports and not enough on maintaining the free flow of data.

The second policy implication is that international tax policy may be distorted by undermeasurement of cross-border data flows. Tax policy is, at base, a balancing act between revenue raised and distortions to market outcomes. But it requires good information about the economy in order to make good choices.

And third, attempts by various countries to implement barriers to the free flow of data may do considerably more economic damage than the current trade statistics show.

Taken together, these two volumes show that progress is being made in the difficult problems of measuring globalization. However, there's a long way to go before global trade statistics truly provide policymakers with the information that they need.

References

Federal Register. 2014. "2017 North American Industry Classification System (NAICS) Revision." *Federal Register* 79(153): 46558. https://www.federalregister.gov/articles/2014/08/08/2014-18766/2017-north-american-industry-classification-system-naics-revision (accessed October 6, 2014).

Kraemer, Kenneth L., Greg Linden, and Jason Dedrick. 2011. "Capturing Value in Global Networks: Apple's iPad and iPhone." Working paper. Irvine, CA: Personal Computing Industry Center. http://pcic.merage.uci.edu/papers/2011/value_ipad_iphone.pdf (accessed October 6, 2014).

Organisation for Economic Co-operation and Development (OECD), World

Trade Organization (WTO), and United Nations Conference on Trade and Development (UNCTAD). 2013. *Implications Of Global Value Chains For Trade, Investment, Development, and Jobs*. Paris: Organisation for Economic Co-operation and Development; and Geneva: World Trade Organization; United Nations Conference on Trade and Development.

Timmer, Marcel P., ed. 2012. "The World Input-Output Database (WIOD): Contents, Sources, and Methods." WIOD Working Paper No. 10. Brussels: European Commission, Directorate-General for Research.

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Better Trade Statistics for Better Policy

Volume 2

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