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Global trade in services, jobs, and incomes

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Chapter 1

Introduction

1.1 Background and objective

The globalization of the world economy has accelerated cross-border movements of goods, services, labor, and capital. This has profound implications for the analysis of international trade and in determining the importance of trade for an economy's well-being.

The most significant development over the past 25 years has been the emergence of international production networks, also known as global value chains (GVCs), which increasingly dominate world trade (Baldwin, 2016; Gereffi and Fernandez-Stark, 2016). Although globalization has been with us for hundreds of years, Baldwin argues that GVCs represent a recent structural change in the type of trade flows. Trade used to involve the exchange of goods and services between countries that were mostly, if not entirely, produced by the domestic factors of production of the exporting economy and consumed by final users of the importing economy. Nowadays, international production networks have sliced up the production of goods and services into tasks that are dispersed across different countries. Design, assembly, marketing, distribution, and support activities are typically performed in a country that has a comparative advantage for one or more of these tasks. These export-oriented and specialized activities may themselves involve foreign-owned capital or cross-border workers. They are also often coordinated by multinational enterprises (MNEs).

The global fragmentation of production was made possible with rapidly decreasing transportation and communication costs and has led to a rapid rise in intermediate products (i.e., parts and components) crossing international borders (Baldwin 2006, 2016). Importantly, fragmentation has implications for what trade implies for an economy. This thesis contributes to the literature on GVCs by investigating the characteristics and potential benefits of trade in the context of global production fragmentation. There is also a large literature on the industry- and firm-level perspective of GVCs, for example of industry case-studies and 'upgrading' strategies (Gereffi, 1999; Gereffi and Fernandez-Stark, 2016). I restrict myself in this thesis to macro, country-level aspects.

Trade is traditionally measured in terms of gross exports. Bilateral gross export figures depict the gross flows of goods and services between countries and will continue to be the most important statistic for a country's customs officials. Nonetheless, these statistics have significant analytical limitations that are magnified by the restructuring of the world economy. First, gross exports reflect the industry of the exported product, which may differ from the upstream industries involved in its production. Services account for only a small share of countries' gross exports despite their critical importance as inputs and enablers of international production networks and the 'servicification' trend of manufacturing (Low, 2013). Second, gross export statistics do not differentiate between value added that was created domestically by the exporting country and value added that was created by other countries (i.e., foreign value-added). Hence, the domestic value-added embodied in a traded product, which contributes to a country's gross domestic product (GDP), may be less than the full export value. Third, gross exports are generally insufficient to identify a country's position in international production networks, i.e., in terms of differentiating between upstream vs. downstream activities and determining where a country is creating value. This makes it more challenging to evaluate the true economic benefits of a country's participation in GVCs and international trade.

These developments raise important questions. First, to what extent can conventional trade data still be used in the context of international production networks? What are alternative measures? Second, given the growing interconnectedness of the world economy through GVCs and multinational firms, what are the implications of trade nowadays for a country in terms of generating domestic value-added, contributing to national income, and enabling higher consumption possibilities? Taking into consideration the analytical limitations of gross export statistics, I apply existing and newly developed approaches to assess the importance and benefits of trade from different perspectives. I juxtapose three types of trade in particular: trade in gross exports, trade in value added (or the jobs embodied therein), and lastly, trade in income, to address the topics and questions that are introduced in this chapter. A point of focus is also to account for the role of foreign production factors in a country's domestic value-added production and their contributions to sustaining a country's overall consumption bundle.

It should be noted that these different perspectives are complementary. All my calculations use gross exports data to start with, so high-quality data on gross exports remain important. The noted limitations of gross exports are not an appeal to abolish gross trade statistics. Instead, the interpretation of pure gross exports differs. This means that policymakers and the media are susceptible to misinterpreting them. For example, gross exports are popularly applied to trade balances. The nature of the bilateral US trade deficit with China still receives much international

attention. However, bilateral trade balances are overstated given that the contributions of foreign/intermediate suppliers to the traded products captured in these statistics do not come to light. Trade balances can also be analyzed in the context of value added or, in the more novel approach I employ in Chapter 5, in terms of the gross national income (GNI) induced in each country by foreign consumption of final products (i.e., final demands) in counterpart countries. A comparison of conventional trade balances with value-added and income perspectives would more completely and adequately depict the true nature of interdependencies between countries.

1.2 Indicators on global value chains

In Chapter 2, I review the main approaches and techniques used in the GVC literature. I critically evaluate and discuss an array of indicators for gross measures of trade and indicators derived from input-output frameworks. In my view, the existing literature has lacked a user-friendly guide on the different approaches that are available to measure trade and to characterize a country's position in international production networks. This is an indication that the field is 'young', and no convergence has been reached yet. In addition, as the field is still relatively new, many users struggle to fully understand what indicators are available, how they have been constructed, and how they should be used. The analytical potential of indicators relevant to GVCs is enticing not just to researchers, but also to policymakers and international organizations. Thus, it is essential to make them accessible also to non-specialists and to provide guidance to users on which indicators can be useful in empirical work. There is a need for a more comprehensive overview of the tools available, including the trade in value added approach, along the lines of recent surveys of the field by Los (2017) and Johnson (2018).

Chapter 2 has two main objectives. First, I introduce the current challenges of assessing countries' participation in international trade and production networks. I highlight the key issues that are involved, explain why GVC-based indicators are necessary, and lay the groundwork for my own empirical work in subsequent chapters of this thesis. The widespread use of relatively new databases, notably the World Input-Output Database (WIOD) and the OECD Trade in Value Added (TiVA) database, have given rise to a growing and active research field related to topics involving GVCs. This thesis contributes to this literature by developing new applications using the WIOD based on existing and newly developed GVC-based indicators. Second, the chapter is designed to be a guide for new users to the methodological approaches in the field. I summarize the current state of knowledge on measuring trade in international production networks by reviewing in a systematic and comparative manner many

different indicators. I describe what these various measures indicate. This discussion goes beyond just the indicators that are employed later in the thesis.

The more popular GVC indicators use input-output frameworks and international input-output tables to measure the foreign value-added contained in a country's gross exports (= the degree of 'vertical-specialization') and/or the domestic value-added contributing to the consumption bundle of foreign countries (= 'value-added exports'). The indicators capture, among other aspects, the import content of exports and identify the industries that generate value added in trade. These indicators show that the ratio of domestic value-added to gross exports varies widely across countries, but is generally declining after 1990 (i.e., the foreign value-added content of a country's gross exports is rising) (Johnson, 2014). Also, it is revealed that manufacturing exports have a higher degree of vertical specialization than services exports.

1.3 Global trade in services

The first application of the GVC indicators focusses on the characteristics of trade in services. It is well-established in the GVC literature that services make up a larger share of value-added exports than gross exports. Services thus feature more prominently in international trade than would be perceived based on gross trade statistics (Johnson and Noguera, 2012; Heuser and Mattoo, 2017; Miroudot and Cadestin, 2017). This is because gross exports do not indicate the extent that services inputs are embodied in manufacturing exports or in the exports of other sectors. Services are critically important as value creators and enablers of international production networks (Low, 2013). Manufacturing firms increasingly look to services to add value to their products and to raise their productivity (leading to a bundling of services with goods).

However, services have remained an understudied aspect of international trade. Visibility of the importance of services is not sufficiently transmitted to the general public. This lack of awareness of the role of services is partly due to the focus on gross exports and a lack of suitable data until now. The indicators introduced in Chapter 2 and based on world input-output tables are well-suited to investigate the role of services. Indicators of value-added induced by foreign final demand measure the contributions of all trade-related activities to a country's GDP. The indicators not only capture direct services exports, but also indirect services, i.e., domestic services inputs such as energy, transport, software, and financing that are embodied in other traded products. Industry-level decompositions of these indicators separate out the trade-related

value-added contributions of services (or of specific services industries) from the respective contributions of other sectors and industries.

In Chapter 3, I employ value-added export indicators and (for purposes of comparison) gross export-based indicators to investigate the role of services in globalization for the period 2000-2014. First, from an empirical perspective, it has not been studied to what extent services activities are becoming more important for trade relative to manufacturing activities in the European Union (EU-15 member states), North America, and East Asia. Hence, I ask: has trade of value-added in services (i.e., the value added created by domestic service industries and embodied in foreign consumption of final products) grown more than trade of value-added in manufacturing in these three regions? A confirmation of a growing role for services would emphasize the importance of the liberalization of services trade (efforts which may be boosted by a better availability of statistics). This could involve looking at policies to reduce the regulatory burdens of trade in services and strengthening regulatory cooperation between countries. Services face higher and more complex types of trade barriers relative to goods (Miroudot et al., 2013). Thus, beyond autonomous trade measures, new policy and (multilateral) trade negotiation methods may be necessary to unlock the full potential of services, e.g., in terms of increasing manufacturing competitiveness. This requires having the correct facts first about services.

Second, to my knowledge no previous work has analyzed whether trade in services is more likely to be intraregional (i.e., traded between countries in the same region) or interregional (i.e., traded between countries in different regions) when measured from the standpoint of the distance between the country of value creation and country of final consumption. It is a stylized fact that it is often concluded that trade in goods is still intraregional (Baldwin and Lopez-Gonzalez, 2015). But this may not necessarily also be the case for services. Hence, I ask: does trade of value-added in services travel further than trade of value-added in manufacturing?

1.4 Global trade in jobs

Chapter 4 applies a GVC framework by considering the jobs – both foreign and domestic – that are embodied in a country's consumption of final goods and services.

In the US, import competition from China and the election of President Trump drew much attention to the potential adverse impacts of trade. The current political climate reflects concerns about the ballooning US trade deficit, the growing influence of China, particularly since China's accession to the WTO in 2001, and the belief that trade is driving certain workers out of

employment. These developments are closely related to the international fragmentation of production, which has increased outsourcing and offshoring opportunities. This has probably propelled a reallocation of jobs across countries, e.g., manufacturing jobs going from the US to China. In consequence, the US has been renegotiating major trade agreements, such as the Transatlantic Trade and Investment Partnership (TTIP), the North American Free Trade Agreement (NAFTA), and the free trade pact with South Korea.

Recent research tends to emphasize the ‘lost’ manufacturing jobs due to import competition – especially jobs going from the US to China (Acemoglu et al., 2016; Autor et al., 2013; Pierce and Schott, 2016). The possible benefits of trade with China, including access to lower-priced or more efficient foreign workers and suppliers, are also well-documented. Increased international specialization is commonly viewed as leading to overall welfare gains. However, what has not been studied intensely is the ‘labor footprint’ along supply chains.

In Chapter 4, I use the labor footprint to gain new insights into the implications of trade for employment and for a country’s consumption bundle. The labor footprint relates to the broader footprint concept popular in the analysis of other issues, including carbon emissions, water use, biodiversity, and inequality. Although the idea of using the labor footprint has recently started appearing in the literature to address social inequality issues (Gomez-Paredes et al., 2015), to my knowledge it has yet to be used for the analysis of jobs at the country-level. I define a country’s global labor footprint as the global amount of labor that is embodied in the final products that this country consumes. I ask: how much does the US rely on ‘imported’ foreign labor (of different skill-types and sectors) relative to its own domestic workers to sustain its consumption patterns and standards? Then I employ the labor footprint concept to assess the ability of a country to be self-sufficient in a counterfactual autarky situation (given certain assumptions). Would the US need to sacrifice some of its consumption of final goods and services if there were no involvement of foreign workers, i.e., in a situation of autarky? I focus on the US and the period 1995-2008, but the counterfactual exercises provide results for 39 other, mostly developed, countries. I also determine a country’s so-called labor gains of trade. Labor gains of trade are identified as a situation where the labor footprint in autarky exceeds the number of employed workers of this country. This would then imply a reduced consumption under autarky.

1.5 Global trade in incomes

While developed countries are concerned about losing manufacturing jobs, emerging and developing countries also have reasons to question the true benefits of certain outsourcing and investment arrangements. GVCs have helped many countries to integrate into the world economy and increase the amount of goods and services they trade. At the same time, MNEs and their foreign affiliates play a leading role in GVCs. They account for more than half of all international trade (Cadestin et al., 2019). This suggests that countries may not be able to translate all their domestic value-added from trade-related activities into national income. For example, MNE affiliates may send (i.e., repatriate) their capital profits to the country where the firm's headquarters or investors are located. Emerging and developing countries receiving much foreign investment may be most susceptible to repatriation.

The role of foreign suppliers of capital and labor could have the opposite implication for developed countries. Many of the largest MNEs are headquartered in developed economies and make large direct investments abroad. This may enable their home countries to capture more of the economic benefits linked to final demand abroad (including but not limited to income related to trade) than what is suggested by value-added exports. Suppose a US MNE operating in Mexico earns a profit on the goods and services it exports to Germany. Then value added is generated in Mexico and, quite possibly, some of the value added turns into income for US owners of capital. These income linkages could mitigate some concerns about the drawbacks of international integration in countries like the US, and impact trade and investment policies. The distinction between domestic value-added (GDP) and gross national income (GNI) is consequential in the context of the value-added indicators discussed and employed in earlier chapters. That is, the degrees to which a country's domestic value-added (GDP) and national income (GNI) depend on foreign final demand (also bilaterally) are likely to differ.

In Chapter 5, I propose a way of estimating the national income implications of foreign consumption by exploring cross-border income flows and the investment nexus. This income channel has already been identified in the GVC literature as a relevant issue (Ahmad and Ribarsky, 2014), but to my knowledge its importance has not yet been investigated empirically in a global analysis. This aspect has been neglected in the GVC literature due to data limitations. Another motivation for the analysis involves the depiction of bilateral dependencies between countries. This from-whom-to-whom perspective is relevant because it can help policymakers identify investment linkages and to forecast possible repercussions of economic shocks abroad. It should be noted that my analysis is broad and considers where all value added in a country,

not only value added related to trade or MNE activities, ends up. Hence, I also account for the German cross-border worker employed in Luxembourg who is engaged in a non-tradable sector and generates value added in Luxembourg but income (via her/his wage) in Germany.

I begin by developing a general framework to show how much value added created in a country translates into income gains for this country's residents as opposed to income gains for foreign suppliers of capital and labor. Data on these bilateral relationships do not currently exist. My contribution is to deconstruct the GDP of 42 countries plus 'the rest of the world' into bilateral transfers of primary incomes by making novel use of the Balance of Payments, national accounts, and data on cross-border investment positions. The resulting GDP-GNI matrix indicates what share of GDP is part of the same country's national income and what shares end up as part of the national income of counterpart countries. The GDP-GNI matrix is used in conjunction with trade in value added data derived from world input-output tables to produce a new matrix of trade in income. This new matrix shows the exports of income for each country.

I use the new data to investigate who gains income from foreign consumption of final products. I compare the results to trade in value added measures. I then do similar comparisons for trade balances. Where do transfers of income (according to the GDP-GNI matrix) end up? And what shares of GNI do different countries export (according to the matrix of trade in income)? To what extent does the large US trade deficit - both overall and its bilateral deficits with countries like China and Mexico - differ in terms of value-added and income?

In Chapter 6, I summarize the main findings (and caveats) of my research, discuss policy implications and links between the chapters, and suggest future research directions.