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Global trade in services, jobs, and incomes

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Chapter 6

Summary and conclusions

This thesis considered different ways of looking at trade. The globalization of the world economy raises new questions with respect to how services activities, the foreign workers embodied in a country's imports of goods and services, and the role of foreign factors of production influence the economic benefits a country obtains from open trade and investment policies. Suitable (and in some cases new) approaches are necessary to address these questions. Therefore, Chapter 2 provided a methodological overview of techniques used to assess trade in the context of globally fragmented production. I discussed several indicators that aim to shed light on a country's position in international production networks. These included indicators that were developed to overcome the analytical limitations of gross export statistics. In Chapters 3-5, I addressed different GVC-relevant questions (mostly at the country-level) by using existing and newly developed approaches. In general, I identified three factors that affect the extent to which a country benefits from trade: the competitiveness of its services sector, access/availability of foreign labor to produce the goods and services that its residents consume, and its income and investment linkages with other countries. This concluding chapter summarizes the main findings of my research, considers some caveats, suggests policy implications, and proposes ideas for future research.

In Chapter 3, I employed value-added export and gross export indicators to explore the role of services in globalization. First, I investigated whether services activities are becoming more important in trade relative to manufacturing activities in the EU-15, North America, and East Asia. Second, I analyzed whether trade in services has a more intraregional or interregional character. Based on the World Input-Output Database, I found that, in general, the share of services in exports of value-added grew over time between 2000 and 2014, whilst the share of manufacturing remained constant (or grew relatively less). Furthermore, the results showed that throughout the entire period, services had a larger share in interregional exports of value-added than in intraregional exports of value-added, whilst the opposite was true for manufacturing. Hence, trade in services was more global than trade in manufacturing. I also concluded that, because of the interregional characteristic of services and the underrepresentation of services in

gross exports, trade is more global when measured in value added terms than in terms of gross exports.

These insights suggest that policymakers should consider focusing their efforts towards promoting services industries. This requires a strong regulatory framework and a level playing field. The international competitiveness of firms that produce goods for export depends in large part on their ability to source the most efficient services inputs (both domestic and imported). Policymakers need to be aware of this and should not solely focus on promoting exported manufactured goods without considering the upstream activities that go into their production. Suppliers of services inputs in the context of exported goods are often small and medium-sized enterprises (SMEs) (Maurer et al., 2016). SMEs tend to specialize in niche functions within the value-chain and sell their services to exporting MNEs. Therefore, identifying, supporting and encouraging these SMEs may be one way for governments to increase the amount of embodied (indirect) services in trade. At the country-level, some countries may in fact have a comparative advantage and/or create most of their value added in services even if (according to gross export statistics) they seem to rely heavily on manufacturing exports. In this context, the merchandise trade balance, which does not include services but is often cited by policymakers as an indicator of international competitiveness, is less instructive with respect to the benefits of trade.

Finally, services should receive more attention in trade policy beyond their roles in the World Trade Organization's General Agreement on Trade in Services (GATS) and ongoing plurilateral negotiations of the Trade in Services Agreement (TiSA). The overall importance of trade in services and the global nature of services reinforces the need for bilateral and multilateral efforts to reduce the high levels of behind-the-border barriers to trade in services. As underscored by the OECD Services Trade Restrictiveness Index (STRI) database, measures could include improving market access (i.e., dealing with national treatment and foreign entry barriers), reducing discriminatory measures against foreign services providers, and promoting pro-competitive regulations and global best practices. Progress in these areas would not only boost the direct cross-border trade of services, but also improve competitiveness of the manufacturing supply chains and products relying on the domestic outsourcing of services.

There are several avenues for future work to build upon this research. First, what are the sources or drivers of a country's rising dependence on trade in services over time (relative to manufacturers)? To address this from an economic point of view, it is necessary to look at the role of transaction costs affecting trade. This could include incorporating the roles of transport and communication costs, tariffs, non-tariff barriers, trade agreements, and cultural distance into a broader analysis. For example, countries which belong to regional agreements may have

higher levels of convergence and thus export more services. Follow-up work could analyze the extent to which price level changes in services (rather than volume changes) played a role in their increasing embodiment in trade over time. It is possible that the prices of services remained relatively high compared to manufacturers if there were sectoral (or interindustry) differences in productivity growth. Second, my analysis used trade in value added indicators that do not distinguish between embodied (e.g., non-tradable) and direct services exports. By applying a vertical specialization approach (instead of a demand-side absorption approach), it would be possible to decompose gross exports into the direct and indirect value-added contributions of services, thus separating out these components. However, with this approach we do not learn who is consuming the services, and thus would know less about how far they travel.

One issue that could complicate the estimations of trade in services, not addressed in this thesis, involves the emergence of so-called “factoryless goods producers”, or FGPs (Bernard and Fort, 2013; Kamal, 2018). FGPs are plants and firms that are traditionally considered to be outside of the manufacturing sector in official statistics. Yet FGPs such as Apple Inc. or Philips are heavily involved in manufacturing-related activities, including in the design and engineering of products and in coordinating production activities. There may be repercussions for the relative importance of manufacturing and services activities in trade if FGP establishments were reclassified as part of the manufacturing sector (and thus also the value added generated by them as reflected in WIOD data). However, there is no consensus on how to define FGPs, and moreover, it is far from simple to identify them. Bernard and Fort (2013), using US Census Bureau microdata, find that reattributing the output of FGPs in the wholesale sector to manufacturing would have increased US manufacturing output by between 5.2% (lower bound) and 16.8% (upper bound) in 2007, depending on the method used to measure FGPs. Therefore, even if it were feasible to account for the role of FGPs, it appears unlikely that the reallocation of value added would be enough to overturn the conclusions of the analysis in Chapter 3.

Chapters 4 and 5 provided new perspectives on the benefits of international trade by turning to the implications of trade for jobs, the consumption bundle, and income. These last two chapters were motivated by growing concerns in both developed and developing areas of the world about how international trade is now structured, including the dominating role of MNEs.

In Chapter 4, I used the labor footprint concept to assess how much countries rely on foreign labor to sustain their current consumption patterns and standards in the period 1995-2008. I analyzed the composition of the US labor footprint. I also compared labor footprints with labor endowments to evaluate the capacity of the US and 39 other countries to be self-

sufficient in terms of labor in a hypothetical situation of autarky and perfect labor mobility. There were three key findings. First, I showed that US consumption increasingly depended on foreign workers. The analysis showed that the possible adverse impact of China with respect to job losses (at the national level) may be exaggerated. The share of jobs from China embodied in US consumption of final products was just 1.5% in 2008 after accounting for differences in labor productivities between US and Chinese workers. At the same time, US labor has benefitted from new jobs generated by the world economy, especially high-skilled jobs in the services sector. This also held in relation to US jobs induced by final demand in China.

Second, the counterfactual autarky exercises revealed that most countries in the study were able to produce all output for consumption themselves (by using only their own production technology and labor). However, once the assumptions that labor is perfectly mobile across skill levels and that all unemployed workers accept a job when offered one were relaxed, most countries could no longer be self-sufficient. That is, these countries would not be able to sustain their current consumption pattern. Third and finally, I concluded that there were positive labor gains of trade for most countries. That is, in no year could US consumption in the actual trade structure be sustained in a counterfactual situation of autarky by just using currently employed US workers.

The analysis in Chapter 4 builds on Chapter 3 by reinforcing the important role of services also for job creation. Although the results indicated a large increase of manufacturing jobs that were ‘imported’ by the US from abroad in the same period (i.e., foreign workers embodied in the US consumption bundle), which may have replaced US manufacturing jobs, this focus is misleading because these losses were offset by new US jobs generated in the services sector. The counterfactual analysis showed that the US benefited from trade not just by specializing in services and services-related jobs, but also from access to the global labor market with cheap and/or efficient foreign workers and suppliers. The main policy implication is that barriers to trade (e.g., a tariff war between the US and China) and an emphasis on ‘lost’ manufacturing jobs is misguided because a reversion to autarky, even if it were to lead to full employment, would require sacrifices in consumption. As Baldwin (2016) observes, the labor market is becoming global; therefore, labor footprint analyses will become more important.

A few caveats are appropriate. First, the counterfactual analysis was at the national level, which implies that what happens within a country (i.e., distribution across industries) is not covered. Overall labor gains in trade would do little to console the manufacturing worker who is out of a job. Second, the analysis only considered the factor labor. This was by design because the focus was on the labor footprint itself. This means that there are only partial links

to the trade in factor services literature and the gains of trade literature. One direction for future research could involve employing a dynamic general equilibrium framework that introduces physical capital and/or land. The substitution between labor and capital could be as important as the substitution between domestic and foreign workers or the substitution between skilled and unskilled labor. Although data on capital are included in the WIOD database, which would make it possible to replicate the study for other production factors, the assumptions involved in the data construction are more severe. CGE models are an interesting alternative approach to address the impact of policy decisions, but they typically start off with specific questions and heavy data requirements, with outcomes that are sensitive to the models and economic parameters that are chosen. Input-output measures are more straightforward and provide the best numbers.

Follow-up research may wish to consider the role of automation. A substitution of domestic or foreign labor for machines would change the labor footprint without any change in trade. Automation may lower the US labor force participation rate and change input coefficients. This would mechanically increase the share of foreign labor compared to domestic labor. On the other hand, automation may decrease the role of trade if machines become more substitutable to foreign labor. The goal of a follow-up analysis could be to tease out which of trade and automation is the most important factor in explaining changes to the labor footprint and/or self-sufficiency prospects. However, this again would require a different, more dynamic, type of study. The goal of Chapter 4 was not to simulate autarky, but rather to highlight the implications for labor and consumption, as well as the potential use of labor footprints in empirical research.

There is also considerable potential to incorporate the insights of the growing literature on ‘functional specialization’ into labor footprint analyses. Countries’ exports increasingly reflect a specialization in functions or sets of tasks carried out by occupational classes, which do not necessarily align with industries (Grossman and Rossi-Hansberg, 2008; Timmer et al., 2019). Industry-level analyses are thus imperfect indicators of comparative advantage or specialization patterns in trade. This caveat applies to the analysis of the US labor footprint in Chapter 4. Timmer et al. (2019) use a new dataset of occupations to subdivide labor income at the industry-level into income earned by workers performing four distinct functions: R&D, management, marketing, and fabrication. The authors, who have made this data publicly available, find some evidence that links different functions (e.g., R&D) with different types of countries (e.g., high-income). This type of data can be used to extend our study and the application of footprint analyses more generally to include insights into the type of work performed by domestic workers versus the workers that are imported (of different countries and industries).

Functional specialization suggests that US workers may perform different activities than foreign workers within the same industry, and that these functions also differ in their propensity to be relocated. Thus, one might argue that our industry-level wage comparison of US and foreign workers to determine US-efficiency equivalents in the counterfactual autarky exercises is not fine-tuned enough. However, Chapter 4 distinguished between workers with three different skill-levels (based on educational attainment). Timmer et al. (2019) find that education is to some extent related to functions. R&D activities in the US are mostly performed by college educated workers, while fabrication activities are overwhelmingly performed non-college educated workers. Therefore, we already have a rough proxy with respect to these two functions with the breakdown of skills. The results of our counterfactuals also did not meaningfully change when workers were not distinguished by skill-level and only industries were used. This suggests that differentiating workers by function instead of skill-type would not have a big impact on baseline outcomes with respect to the ability of the US to be self-sufficient in autarky.

In Chapter 5, I introduced a gross national income (GNI)-based trade framework as the next step compared to value added. This was motivated by the large capital investments linked to MNEs' foreign affiliates. The returns (profits) on foreign-owned investments and intangible assets may be repatriated to investors in another country despite contributing to host-country GDP. By making novel use of the Balance of Payments, national accounts, and data on cross-border investment positions, I deconstructed the GDP of 42 countries plus 'the rest of the world' to create a 43×43 matrix of exported transfers of income for the year 2014. The relation between GDP and GNI revealed that most transfers of income went to the US and the EU-15. Next, the GDP-GNI matrix was used together with trade in value added data derived from world input-output tables to generate a novel 43×43 matrix of trade in income. This matrix allowed me to estimate the national income of one country that is embodied in the final demands of other countries. While all countries exported a higher share of their income (GNI) than value-added (GDP) to final users abroad, the results showed that highly developed countries benefitted the most in relative terms from the income perspective. That is, their economic dependence on foreign consumption of final products appeared higher. Finally, perhaps the most interesting discovery was that the large US trade deficit in gross terms and in terms of value-added disappeared almost entirely when measured in terms of income. The trade deficits of several other highly developed countries were also less negative in terms of income.

Based on the results, I encourage trade policy analysts to think beyond value added and consider the national income implications of the activities that their country is engaged in or is promoting. Although upgrading into higher, more attractive value-added activities within

GVCs (e.g., R&D) is generally perceived as desirable and a way of capturing more domestic value-added via trade, these activities may generate profits that end up in other countries. The country-level benefits of attracting MNE investment and integrating into the global economy may thus be smaller in terms of what they mean for GNI than the corresponding contributions in terms of GDP. Therefore, the true benefits of a country's participation in GVCs also depend on how much income it retains from the earnings of foreign-owned production factors (labor and capital) at home plus the income that it earns from domestically-owned factors abroad.

The perspective of income also places some of the previous findings in the GVC literature in context, including my own findings in Chapter 3 on services. While Chapters 2 and 3 showed that correctly measuring domestic value-added contained in foreign consumption is one way to measure the impact of trade on the economy, Chapter 5's focus on the income channel is perhaps just as relevant (especially given the role of MNE foreign affiliates in generating the majority of world trade). GNI is an equally important indicator of the economy because this income represents national wealth for a country's people. At the same time, in interpreting the results, one should remember that not everybody benefits equally. Owners of capital (perhaps a small subset of the population) may earn a large share of the GVC-income. This characteristic of GVCs could be linked to the well-documented rise of income inequality within countries.

Given that this is a novel approach, there is much potential for additional analysis and improvements in the data. First, I constructed matrices for 2013 and 2014 only. This period should be extended once additional data becomes available and/or by using alternative databases. A more ambitious extension could involve splitting up the transfers of income on the industry- rather than country-level. Second, it would be interesting to set the matrix up from the creditor's perspective. This approach could yield a different decomposition than what is derived using the debtor approach of Chapter 5 because of bilateral asymmetries in the data reported by counterpart economies. For example, I used inward FDI stocks to proxy the bilateral shares of returns on direct investment incomes going to (and thus generating GNI in) other countries. However, the outward FDI of the counterparts (with the returns generating their GNI) may be reported differently in mirror statistics. The creditor perspective would provide more reliable estimates of the breakdown of a country's GNI into domestic and foreign value-added components. Third, I would have preferred that the investment data used to proxy offsetting transfers of income would only capture the ultimate investors and not the immediate counterpart investors. Data by ultimate counterpart country was not always available, but the IMF and OECD are encouraging the collection of this type of data. These efforts could lead to future improvements of the matrix.

The analyses of trade in jobs in Chapter 4 and trade in income in Chapter 5 may themselves inspire future extensions to the GVC indicators guide in Chapter 2. Although Chapter 2 provided an overview of many GVC-based measures of trade, it is not exhaustive and did not include a jobs or income component. International organizations such as the OECD have shown an interest in measuring these two components.¹³² Therefore, the inclusion of indicators related to the labor footprint or based on GNI could be a reasonable next step in extending the guide.

In general, my research suggested some channels through which developed countries like the US gain from the liberalization of trade and investment. Chapters 3 and 4 demonstrated that most of the value added and newly generated jobs generated via trade were in services and due to service-related inputs into the production process. Chapter 4 showed that the aggregate impact of China on US jobs in the context of the US-China relationship was small. Despite the role China likely played in the decline of US manufacturing, these losses were offset by new US jobs in services. Furthermore, I found in Chapter 5 that the US received much income from countries like China due to US-owned intangible assets (which include services) and investment activities abroad. This investment nexus reduces the interpretability of the US-China trade deficit given that part of the US ‘deficit’ reflects US income or income that belongs neither to the US nor to China. These insights make tariff wars with China even more counterproductive from the US perspective. Finally, all chapters showed how gross exports – and following Chapter 5, even the exports of value-added with respect to the national income generated - are incomplete indicators of a country’s economic benefits from trade. Relying solely on gross trade statistics or any one GVC indicator create misperceptions as to what sectors to prioritize. I urge policymakers to consider a more diverse set of indicators in assessing the benefits of trade and in crafting strategies of how to best position their country in the new global economy.

The analytical limitations of conventional (i.e., gross) trade balances have also been underscored in this thesis. Adam Smith observed (in 1776) that, in countering the perceived threat of mercantilism, “nothing, however, can be more absurd than this whole doctrine of the balance of trade”. This assertion is not only still true today, but arguably even more so. The election of President Trump led to a resurgence of interest in and debate about the US trade balance. Although policymakers and the media still pay close attention to gross export figures and bilateral trade balances as indicators of the impact of trade on the economy, most

¹³² The OECD discusses these future ambitions in the official background note accompanying the TiVA database, stating that “measuring these [trade in jobs and trade in income] flows will form an important part of the research programme in coming years”: http://www.oecd.org/sti/ind/TIVA_FAQ_Final.pdf
The OECD already provides data on trade in employment here:
http://www.oecd.org/sti/ind/TIVA_FAQ_Final.pdf

economists would agree that the trade balance is relatively unimportant. Indeed, as my research indicated, the current phase of globalization has made traditional trade balance indicators even less meaningful. The current fixation on bilateral asymmetries in trade is misguided because trade balances bear little relation to the competitiveness or health of the economy, and do not adequately reflect the true nature of economic interdependencies between countries.

Lastly, my research depended heavily on the WIOD database and input-output techniques. Chapter 2 (subsection 2.3.5) outlined general data constraints, the proportionality assumption, and other limitations inherent in IO-analysis, which also apply to my analyses. Looking forward, the OECD is committed to continue extending its own Trade in Value Added (TiVA) database by adding new countries, years, and indicators (e.g., involving trade in emissions and employment). As of 2018, TiVA covered 64 economies, 36 industries, and a period from 2005 to 2015. The next steps of my research could involve doing sensitivity checks by replicating the analyses using other multiregional input-output tables like TiVA or Eora. Beyond more detailed country- and industry-coverage, there are also efforts underway to separate input-output tables for export-processing vs. non-processing firms and domestic vs. foreign-owned firms. This requires data broken down by firm type. Opening the ‘black-box’ of firm heterogeneity would be fruitful for my analyses because foreign-owned firms (e.g., MNE affiliates) are likely to repatriate income. Foreign-owned (or export-oriented) firms also have different production structure than the average domestic firm. They use different technologies and produce exports with a higher than average imported input intensity relative to the output of domestic (or non-exporting) firms. I strongly endorse the above-mentioned initiatives as well as other ongoing or potential initiatives of the input-output community (see also Los (2017) and Johnson (2018) for reflections related to improving IO-data and methods). Additional analytical tools would allow for a deeper analysis into the topics I explored in this thesis.

In conclusion, the structure of trade has changed. The growing importance of intermediates in trade and the liberalization of capital and labor markets are driving a wedge (at the country level) between gross exports, the domestic value-added generated by exports, and the national income sustained by foreign final demand. New measures of trade based on value added, employment, and income are now much more relevant in terms of assessing the benefits of trade. Therefore, before drawing conclusions with respect to the importance of different sectors in trade, the repercussions of trade for employment, trade balances, trade and investment policies, and many other issues that are currently being debated and headlining the news, one has to measure what crosses borders in the correct way.

