



WORKING PAPER

1/2015
(revised May 2016)

Servicification of Firms and Trade Policy Implications

Magnus Lodefalk
Economics

ISSN 1403-0586

Servicification of Firms and Trade Policy Implications

Magnus Lodefalk^{1*}

Affiliation:

¹Lodefalk: Örebro University, 70182 Örebro, Sweden

***Corresponding author:** Magnus Lodefalk

Mailing address: Department of Economics, Örebro University, 70182 Örebro, Sweden

E-mail: magnus.lodefalk@oru.se

Phone: +46 722217340

Abstract

In the OECD countries, the decline of manufacturing and its employment implications have long been matters of concern. Recently, policymakers in several countries have set out to achieve reindustrialization. The servicification of firms is related to these concerns and aspirations. However, servicification and particularly its role in trade policy have received limited attention. I review micro-level evidence and discuss implications. I find that imported, domestic and exported services are all important to contemporary firm competitiveness and participation in international value chains. Therefore, historic policymaking divides between trade in manufactures and services, between export and import interests, and among modes of supply are becoming less relevant. I conclude by suggesting potential steps forward.

1. Introduction

No, we will not go back to an economy weakened by outsourcing, bad debt, and phony financial profits. Tonight, I want to speak about how we move forward, and lay out a blueprint for an economy that's built to last — an economy built on American manufacturing, American energy, skills for American workers, and a renewal of American values. [...] So we have a huge opportunity, at this moment, to bring manufacturing back. But we have to seize it. Tonight, my message to business leaders is simple: Ask yourselves what you can do to bring jobs back to your country, and your country will do everything we can to help you succeed.

President Barack Obama, State of the Union Address, 2012

The state of manufacturing in OECD countries and the offshoring of manufacturing to emerging economies have been matters of concern for at least a decade (Schettkat and Yocarini 2006; Nickell, Redding, and Swaffield 2008; Gresser 2007; Robert-Nicoud 2006; Pisano and Shih 2009).¹ However, the manufacturing industry has recently been considered a potential 'comeback kid' (Kelleher 2014; Celasun et al. 2014; Hagerty 2014; Harrison 2015).² Policymakers in several countries intend to achieve a renewal in manufacturing that will strengthen and expand the industrial base (e.g. European Commission 2012, 2014; National Science and Technology Council 2012; Warwick 2013; Schück 2014; Ministry of Enterprise and Innovation 2016).³

Aspirations of reindustrialisation are related to the trend towards the servicification of manufacturing – the increasing use, production and sale of services (Lodefalk 2013a; Tomiyama 2002; European Commission 2014).⁴ Case studies illustrate this more pertinent role of services in manufacturing. Evidence ranges from small firms to large multinationals and from basic and

¹ Kaldor (1966) has previously emphasised the importance of manufacturing to economic growth.

² Although there are related hopes that offshore production will move back to OECD countries, Dachs and Zanker (2015) provide European evidence that this is only a limited phenomenon.

³ Indian prime minister Narendra Modi recently launched a programme – Make in India – to transform India into a manufacturing centre (Choudhury 2014; The Economist 2015).

⁴ Other concepts used to describe an increased focus on services in manufacturing include servitization and servicification (Lodefalk 2013a). The 'smile curve' is a related but distinct concept that refers to increases in profits or value added on the primary and tertiary ends of the value chain of a manufacturing industry and decreases in those metrics in the middle stages, i.e., manufacturing and assembly (Kimura 2003). Servicification is a more general concept that focuses solely on services and often refers to changes within firms that involve increasing dependence on services for their customer offer, with services becoming important or even indispensable to remain competitive.

food-related industries to the engineering and environmental industries, see, e.g., (National Board of Trade 2010, 2013a, 2014). These case studies also suggest that a wide range of services is used and supplied by manufacturing firms, including financial, transport, environmental and research and development (R&D) services.

There are several reasons that manufacturing firms might want to focus more on services, in addition the basic reality that some services (e.g., transportation) are necessary for trade (Lodefalk 2014). First, services may help firms become more productive, for example, through the use of logistics, management or engineering services that save time and materials and/or also improve coordination (Nordås 2010).⁵ Hiring individuals to provide such services can also augment productivity by contributing to the firm's ability to absorb frontier technologies.⁶

Second, in the presence of more intense foreign competition, firms can differentiate themselves by adding services to products, bundling them with products, or offering them in connection with the sale, during the life or at the end of the life of a manufactured product (Kelle 2013).⁷ For example, firms can differentiate their offers by being attuned to changes in demand and considering additional aspects of manufactured goods (Nordås 2008). Firms may decide to employ and market services to reduce their products' negative environmental and social impact (for example, by repurchasing or recycling used products) . Firms can also add digital solutions to differentiate their offers, such as products with 'intelligent' systems of built-in sensors that can

⁵ Examples of this effect are provided by, e.g., Arnold et al. (2015) and Duggan, Rahardja, and Varela (2013). Using panel data for Indian firms from 1993 to 2005 and input-output data, the former study finds that reforms in certain services affected manufacturing firms' productivity both positively and significantly. The latter study finds similar effects using industry-level restrictions on foreign direct investment in services, input-output, and firm-level data for Indonesia from 1997 to 2009. See also Damijan et al. (2015); Beverelli, Fiorini, and Hoekman (2015); Growth Analysis (2010).

⁶ For 13 OECD countries in 2002, on average, more than one-quarter of the 44% of the population employed in service-related occupations in manufacturing had a post-secondary education (Pilat 2005).

⁷ Additionally, adding services can smooth firm revenues over time and possibly make revenues more resilient to economic crises (Crozet and Milet 2014; Ariu 2014). It can also transform mere contact with the customer into a closer and more prolonged relationship that could involve the provision of services related to competitors' products.

communicate with each other, other devices and the manufacturer across wireless networks to provide additional customer value (Cernat and Kutlina-Dimitrova 2014; National Board of Trade 2015b). An illustrative example of differentiation through services is Apple Computer Inc.'s entry into the entertainment services industry through the launch of the iPod and the integrated iTunes online music store. This second role of services seems considerable, according to descriptive statistics for Germany (Kelle 2013).⁸

Third, firms can use services to overcome barriers to foreign market entry in the form of exports or foreign direct investment (FDI) and to sustain foreign market sales. Examples of such services include distribution, interpretation, matchmaking and monitoring services.⁹ A firm can also exploit migrants' foreign market knowledge and networks, for example, through their consultancy services or by hiring them, to facilitate entering their country of origin or destination (see, e.g., Hatzigeorgiou and Lodefalk 2016, 2014).

Fourth, firms need services to establish, join and manage international production networks and value chains, including headquarters or business partner services, such as data processing and R&D services (Kelle 2013; Golub, Jones, and Kierzkowski 2007; Jones and Kierzkowski 1990; National Board of Trade 2015b). Services enable such networks and value chains (Debaere, Görg, and Raff 2013).

⁸ Related to this motive is anecdotal evidence that manufacturing firms view services sales as a way to boost revenues and profits (see, e.g., National Board of Trade 2012; Tuvhag 2012). Matthieu and Emmanuel (2015) provide micro-econometric evidence from France that suggests an impact of beginning to sell services on subsequent manufacturing firm performance (profits, jobs, total sales and goods sales). A related study is Breinlich, Soderbery, and Wright (2014), who note a shift within and among UK manufacturing firms towards services sales in the 1997-2007 period. They have developed a multiproduct firm model in which firms can devote scarce expertise either to goods or services or to a combination of the two. Next, they econometrically analyse how firms react to the decline of EU tariffs on manufactured goods. The results suggest that tariff liberalisation is partly driving the shift towards services sales in UK manufacturing firms.

⁹ For example, Shepherd (2013) studies an international sample of firms in developing countries, finding that longer border clearance times are associated with an increased probability of exporting through a third-party distributor. Related evidence on the role of export intermediaries is provided by Bernard, Grazi, and Tomasi (2010).

A fifth reason that manufacturing firms might want to focus on services is the outsourcing/offshoring of material inputs while concentrating on other competencies.¹⁰ Offshoring might even be easier today than in the past and therefore, it is more prevalent with respect to goods, which might reduce the relative share of material inputs of a firm's total production value.¹¹ Although very novel, 3D-printing technologies could accelerate the concentration on competencies other than physical production so as to transform manufacturing firms into providers of blueprints, digital solutions and 'ink' from either themselves or external providers (National Board of Trade 2016).

Despite this background, the servicification of firms—and particularly the role of servicification in foreign trade and trade policy—has received only limited attention in the literature. Therefore, in this paper I review novel micro-level evidence on servicification and analyse servicification's potential trade policy implications. The major policy conclusion—that goods and services might need to be treated in a more integrated manner in trade policymaking—is also consistent with the fact that the services industry, which is large and increasing in OECD countries, is an important user and exporter of manufactured goods (e.g. Malchow-Møller, Munch, and Skaksen 2015).

In sections two and three, I summarise empirical firm-level evidence on servicification and its potential impact on the international competitiveness of firms. I find that firms in several countries have become increasingly service oriented and that there are indications that both foreign and domestic services play key roles in both contemporary firms' international

¹⁰ In the extreme, manufacturing firms may even turn into so-called factoryless goods producers.

¹¹ The evidence on this issue is mixed. Fiorini, Jansen, and Xie (2015) expect structural changes in developed and developing countries to be related, but could not confirm such a pattern, whereas Baldwin, Forslid, and Ito (2015) findings indicate that integration into international value chains contributes to an increase in the foreign services value added of a country's exports.

competitiveness and firms' participation in international value chains. In section four, I analyse trade policy implications. I find that historic divides in trade policymaking between trade in manufactured goods and services, between export and import interests, and among modes of supply are becoming less relevant. I also discuss potential measures to better align trade policy and policymaking with the needs of contemporary manufacturing and service firms. In section five, I provide concluding remarks.

2. Empirical evidence on servicification

Cross-national and industry-level studies indicate the increasing importance of services in manufacturing across OECD countries and industries (United States International Trade Commission 2013; Pilat et al. 2008; Görzig and Stephan 2002; Pilat 2005; Nordås 2010, 2008; Falk and Peng 2012; Montresor and Vittucci Marzetti 2011; Lanz and Maurer 2015; De Backer, Desnoyers-James, and Moussiégt 2015).¹² However, only recently have we seen the emergence of studies that exploit detailed micro-level data to analyse this phenomenon in depth.¹³

Lodefalk (2013a) uses Swedish input-output data, finding that the share of services in total inputs doubled during the 1975-2005 period. He then analyses comprehensive micro-level data (1997-2006) to consider the reorganisation of manufacturing firms into enterprise groups and the industrial reclassification of activities. These results confirm that manufacturing has not declined as much as previously thought. More importantly, manufacturing not only increasingly

¹² The use and importance of services for manufacturing in developing countries has been highlighted in a few studies (Neely, Benedetinni, and Visnjic 2011; World Bank 2012; Fernandes and Paunov 2012; Azad 1999; Roy 2015; Oddone and Padilla 2014; Anukoonwattaka, Scagliusi, and Mikic 2015). The appearance of or improved access to services is arguably essential for manufacturing firms in less-developed countries (Nordås 2008).

¹³ In addition to the evidence discussed below, there is somewhat related evidence for Austria (Walter and Dell'mour 2010) and Italy (Federico and Tosti 2012).

purchases services from domestic and foreign providers but also produces services itself.¹⁴ Diversification into services is also much greater—approximately 60% higher—when all of the activities of manufacturing enterprise groups are considered, as opposed to when only the activities of manufacturing establishments or firms are considered. He also finds that the growth rate of services exports has been substantially higher in manufacturing than in service industries.¹⁵ However, servicification is unevenly spread across industries, as measured by the use and sale of services. In addition, there is no one-to-one relation between intensity in the use of services and intensity in the sale of services across industries.

The role of services exports in German manufacturing has been analysed in numerous studies (Kelle and Kleinert 2010; Kelle 2013; Stille 2003). Analysing firm-level financial and trade data, Kelle and Kleinert (2010) conclude that manufacturing firms accounted for one-quarter of producer services exports in 2005. For some services, the manufacturing industry is quite dominant, such as in the export of research and development (R&D) and engineering services (Kelle 2013). More generally, from 2001 to 2005, the growth of services exports in manufacturing outperformed the growth of goods exports. Nevertheless, it is possible that these statistics have underestimated the importance of services embedded in the exports of goods. According to (Stille 2003), more than half of the services exported by a group of German manufacturing industries in 2000 were not explicitly registered as such but were included in the sales of goods.

Crozet and Milet (2014) provide the first firm-level analysis of the share of services in production sales in France using a large panel of manufacturing firms for the 1997-2001 and

¹⁴ Comparing data for 1985 and 2005, Baldwin, Forslid, and Ito (2015) find that for Thailand, foreign services account for a substantial and increasing share of the value added from services in machinery exports.

¹⁵ Currently, manufacturing industries account for a major share of services exports (Growth Analysis 2010). In Sweden, the telecom industry is the second-largest exporter of services after the transport industry.

2003-2007 periods.¹⁶ The share of services as a portion of sales has steadily increased over time. This pattern is evident across manufacturing industries. The authors primarily attribute this trend to increases within firms with respect to the sale of services, although firm entries and exits also contribute to a higher share of services in sales. In 2007, approximately 83% of the sample firms sold services. On average, the share of services was 11% of sales. However, for more than one-quarter of the firms, services accounted for the majority of sales.

In addition, Neely, Benedetinni, and Visnjic (2011) study the services offered by an international sample of incorporated manufacturing companies with at least 100 employees. Information on services offered is retrieved from the business descriptions of companies in a commercially available database. The authors find that approximately 30% of firms offer services and that for most countries, this share was stable in the years studied (2007, 2009, and 2011). However, heterogeneity across countries is considerable. At the high end is the United States (USA), with an average of 55% of firms offering services, and at the low end is Bermuda, with approximately 18% of firms offering services. Interestingly, although only 1% of Chinese firms offered services in 2007, this share has since increased to 19%.¹⁷

Finally, novel statistics at the industry level also reveal the share of services exports in manufacturing; however, these statistics are likely to underestimate the actual importance of services. Traditional statistics show that in 2013, the share of services was 28% of gross exports from the EU and 30% of gross exports from the USA.¹⁸ However, when the value added by the services industry to manufacturing was considered, services accounted for approximately 50% of

¹⁶ The authors exclude merchanting from their measure of servicification.

¹⁷ On average, the sample consists of 12,311 companies from a population of 50,000.

¹⁸ Conventional statistics indicate that in 2013, the share of services of the value of the gross exports of the EU and the USA amounted to 28% and 30%, respectively (WTO 2015b). In the world economy, the share of services was 21% of the gross value of world exports (WTO 2014). Nevertheless, the value of the world exports of commercial services (manufactures) was approximately 5.4 (5.0) times its 1990 value.

gross exports from both the EU and USA in 2009 (OECD 2014). Nevertheless, even with value-added trade statistics, the share of exports of services in manufacturing is likely to be underestimated. That manufacturing subsidiaries may be classified as service businesses might not be fully captured, even with value-added trade statistics.¹⁹ Another problem is that the expansion of the in-house production of services in manufacturing firms is not accounted for in these statistics. The inclusion of in-house production would likely result in a higher share of services contained (embodied) in or added to (embedded in) industry exports.²⁰ Moreover, neither FDI in services nor services sales by foreign affiliates (FATS) are included in the aforementioned statistics, although local establishments and their sales are important modes of delivery of trade in services.²¹ Furthermore, there are some indications that companies export bundles of goods and services while neglecting to specify the services component separately in contracts, as in the case of an installer accompanying a new secure radio communication system (National Board of Trade 2012; Stille 2003).²² The fact that available statistics clearly underestimate the share of services included in manufacturing exports is suggested by value-

¹⁹ The reason is that value-added trade statistics are based on input-output tables, which are based on national accounts, which in turn rest on the industry classification of firms and establishments.

²⁰ Examples of embodied services include, e.g., legal, R&D and marketing services, and examples of embedded services include, e.g., training services and long-distance monitoring of the good while in operation.

²¹ Services are commonly regarded as less storable and more heterogeneous than goods, with services typically requiring production close to consumption and the involvement of the customer in production. Therefore, actual meetings between producers and consumers and the local establishment of services providers are more commonplace with respect to services than with respect to goods. Egger, Merlo, and Wamser (2015) find the distance to foreign markets to be significantly and positively associated with the number of foreign establishments of services multinational enterprises (MNEs) but not of goods MNEs, using German MNE cross-sectional data. It may be added that for comparison, it would be preferable to include statistics on foreign affiliates sales in both services and goods trade statistics (see, e.g., Li, Whalley, and Chen 2015).

²² Companies may also offer bundles of goods and services from other countries to its foreign customers. Such a service should be recorded in statistics as the merchandising of services if the products could be unbundled, but there is a risk that it instead is recorded as a goods export under merchandising, resulting in an underestimation of trade in services (United Nations Economic Commission for Europe 2015). The issue may become more important over time because there are indications that the merchandising of services is increasing.

chain analyses of products as diverse as shoes, suit jackets and smartphones (Low 2014; Ali-Yrkkö et al. 2011; National Board of Trade 2007; Ali-Yrkkö and Rouvinen 2013).²³

3. Empirical evidence of the impact of services on firm exports

Although there have been studies on selected services (e.g., business services) and trade, few such studies analyse the general effects of servicification on foreign trade. To the best of our knowledge, the most detailed study to date is (Lodefalk 2014). He regresses the intensity of manufacturing firm exports in Sweden on the share of services produced in-house and the share of services purchased in output while controlling for firm, industry and year heterogeneity.²⁴ He finds premia in terms of higher exports and productivity for firms that have larger shares of in-house service production.²⁵ The final econometric estimate confirms that as the share of in-house services increases, firms' export intensity also increases. The elasticity of export intensity with respect to the share of services produced in-house is 0.6, on average, when second-order effects are considered. The strongest links exist between hiring managers and professionals and export intensity.²⁶

A complementary perspective is provided by studies of the impact of importing services (or of the barriers to such imports) on the trade of manufacturing. In this vein, Nordås and Rouzet (2015) and Pasadilla and Wirjo (2014) exploit the new services trade restrictiveness

²³ In addition, Rentzhog and Anér (2014) add that trade in services might be underestimated due to the inadequate measurement not only of services delivered through the temporary movement of persons but also of small cross-border transactions of digital services.

²⁴ Unfortunately, the study does not explore how increased service usage and production affect the intensity of service exports.

²⁵ Malchow-Møller, Munch, and Skaksen (2015) regress services trade in manufacturing on firm characteristics. They observe positive services export premia in terms of firm size but negative premia in terms of physical capital intensity and positive services import premia with respect to most firm characteristics.

²⁶ Managers and professionals have been classified amongst numerous other occupations as services-related (Pilat 2005). Such occupations appear to be relatively more in need in services firms and in servicifying manufacturing firms than in other manufacturing firms, as shown for Sweden in Lodefalk (2013a).

index (STRI) provided by the OECD and bilateral trade data. Estimating a simple gravity model while considering sample selection bias using a cross-sectional sample of 40 countries for the 2012-2013 period, Nordås and Rouzet (2015) find that restrictions on importing services are associated with less trade in manufacturing. Interestingly, the negative association with trade is twice as strong for manufacturing exports compared with services exports. The most harmful barriers to manufacturing exports are in the air, telecom and maritime services industries. Pasadilla and Wirjo (2014) provide correlations between restrictions and gross manufacturing exports for the Asia-Pacific Economic Cooperation (APEC) economies in 2009. The correlations are negative, suggesting a negative impact of restrictions on manufacturing.²⁷ Finally, Egger, Merlo, and Wamser (2015) analyse the relation between policy variables, including the STRI and the presence of trade agreements, and the aggregate foreign activity of a cross-section of goods and services German multinational enterprises in 2005 and across 79 countries, using logistic regression.²⁸ They find negative associations not only between services trade restrictions and foreign activity but also between the presence of bilateral investment treaties and foreign activity. Interestingly, these results are somewhat similar for both goods and services enterprises. However, the coefficients for the presence of services trade agreements are only statistically significant for services enterprises.

Miroudot, Sauvage, and Shepherd (2013) study formal and informal barriers to cross-border trade in services by comparing domestic trade patterns with international trade patterns for a large number of countries and industries, drawing on Novy (2013). They find that on average, trade costs barely changed for trade in services over the 1995-2007 period, whereas they

²⁷ Hoekman (2014) presents firm-level evidence in a developing country context.

²⁸ The outcome variables are number of foreign parents, subsidiaries, direct investment, sales and employment. The variables are computed as logarithms of the odds ratio, where the odds ratio is equal to the normalised share in all foreign activity, with the benchmark being goods activity in the United States.

declined substantially for trade in goods. Looking at a subsample of four major developed economies (the USA, Canada, the EU, and Japan) and two developing economies (China and India) in 2007, the estimated average ad valorem barriers to trade are in the triple digits for services (169%), almost twice as large as those for goods (95%). However, the costs of trade in services have decreased for China since its entry into the World Trade Organization (WTO). The authors suggest that this finding indicates the potential for regulatory reform to substantially reduce barriers to trade in services.

The role of services traded through the movement of persons and their impact on firm exports is studied by Lodefalk (2016), who uses panel data for Sweden for the 1998-2007 period. The results suggest that firms that hire recently arrived persons from a foreign market are positively associated with subsequent exports to that market. This link is strongest for services, especially for more complex services, and weakest for homogeneous merchandise. The author also exploits indicators of various trade barriers, finding that the hiring of persons recently arrived from abroad seems to assist firms in overcoming informal barriers to export. Finally, the author exploits the STRI data to compute the distance to best practices in terms of openness to services imports through the temporary movement of persons (mode of supply 4). He shows that there is ample scope for improvement towards the country that is 'best in class'.²⁹

²⁹ The National Board of Trade (2015c) measures costs related to visas and work permits in Sweden. There are substantial and highly variable costs involved. Importantly, uncertainties and delays are perceived as negatively affecting business. Some categories of firms are said to be particularly vulnerable to these obstacles, e.g., start-up firms that need to draw on specialised skills from abroad and corporations that rely heavily on global hubs that serve their activities in many countries.

4. Discussion of trade policy implications

Manufacturing firms increasingly purchase domestic and imported services, produce services themselves, and provide domestic and foreign customers with services; in short, they become increasingly service oriented: they ‘servicify’.

The evidence suggests that servicification promotes firms’ competitiveness abroad. Nevertheless, there are substantial barriers to trade in services – barriers that are considerably higher than those to trade in manufactured goods, as indicated above. These barriers risk to restrict the foreign competitiveness of manufacturing firms that servicify (and of services firms).³⁰ For example, being able to provide manufacturing but not embedded or ancillary services can place an exporting manufacturing firm at a disadvantage.³¹ Likewise, restrictions on cross-border data flows that are required for the proper functioning of many current and new manufactured goods could substantially disrupt the business of servicifying manufacturing firms (Chander 2015). Another example is the case in which a firm that needs to hire or bring key personnel home from abroad to provide essential input into an important export order never knows if and when this person will arrive. Arguably, such uncertainties and delays are rarely acceptable for material inputs, because ‘just-in-time’ delivery is required to conserve resources.³²

Below, I discuss trade policy and policymaking from the perspective of servicifying manufacturing and contemporary services firms. The discussion starts off with the question of why barriers to trade still are so high for trade in services. Next, I identify policymaking issues

³⁰ In fact, it is possible that barriers to the import of services have contributed to an expansion of more costly in-house service activities in manufacturing firms.

³¹ See, e.g., the related theoretical analysis in Horn and Shy (1996). Moreover, the increased linkages between manufacturing and services industries imply that there could be secondary negative repercussions for the private sector in general.

³² For actual business cases, see, e.g., National Board of Trade (2015c) and National Board of Trade (2014).

that either obstruct the liberalisation of trade in services in general or do not align with servicifying firms. Finally, I discuss potential steps for reforming trade policy and policymaking.

4.1 Why are barriers to trade in services so high?

The relatively high barriers to trade in services are partially related to the shorter history of trade liberalisation negotiations for services.³³ However, success has also been relatively limited, even after the breakthrough General Agreement on Trade in Services (GATS). Overall, the GATS appears to have been poorly used as a vehicle for liberalising trade in services and binding actual market openings, resolving disputes on trade in services, and notifying and discussing trade issues.³⁴

One reason for the relatively limited success in liberalising services trade in recent decades is that such negotiations are inherently complex, especially compared to goods negotiations. Trade in services is not limited to cross-border exchange; it also includes consumption abroad, FDI and the temporary presence of natural persons. The modal structure and related issues of interpretation can complicate negotiations. Furthermore, trade restrictions subject to negotiations are non-tariff, such as prohibitions, quotas and regulations, instead of tariff measures. The latter means that more branches of government are more often *de facto* involved in domestic consultations that feed into negotiation positions than they are involved in negotiations on liberalising trade in goods.³⁵ This also means that barriers to services trade are

³³ For an insider's account of the process behind the establishment of the GATS, see, e.g., Feketekuty (2013).

³⁴ For a brief appraisal of the usage of the GATS, see, e.g., Rentzhog and Anér (2014). Wolfe (2013) summarises the evidence of a poor notification record under the GATS.

³⁵ In goods negotiations, real ownership of the issues typically belongs to a few ministries, e.g., for foreign affairs, industry/trade and justice, whereas for services, this ownership belongs to numerous additional ministries, e.g., health, culture, education and environment. Even in the liberalisation of a single type of service, several branches of government are likely to be involved.

difficult to measure and commitments to reduce them can only be compared with difficulty.³⁶ Adding to this complexity, for services, national treatment is negotiable under the GATS, whereas for merchandise, national treatment is not negotiable under the GATT. Therefore, in the GATS, negotiations on the trade liberalisation of a single industry involve eight parameters: market access and national treatment times four modes of delivery (Adlung and Mamdouh 2014). For any government and in particular, for countries with limited institutional capacity, this means that negotiations on services are demanding. For developing countries that prioritise agricultural or non-agricultural goods liberalisation, this issue can affect both the degree and the character of their involvement, for example, to condition liberalisation of services on meaningful concessions from developed countries in agricultural negotiations.³⁷

Another reason for limited progress in liberalisation of trade in services is that several countries have already liberalised unilaterally. For example, in infrastructural services, foreign businesses might be relatively uninterested in spending scarce resources to lobby their governments for foreign market access. The final reason for limited progress of liberalisation could be that popular sentiments against services liberalisation are so strong that even though they are fragmented, they limit governments' political impetus to liberalise (e.g. Sendén et al. 2013; Calmfors 2006).

Turning to the role of dispute settlement, parties have referred to the GATS in only 23 cases of consultations to resolve trade disputes, whereas the corresponding number for trade in goods under the General Agreement on Tariffs and Trade (GATT) is 396 (WTO 2015a). Even

³⁶ Negotiations are therefore a barter market in which reciprocity is difficult to assess, especially with respect to the marginal reduction of trade barriers. Altenberg (2015) argues that reciprocity is an inefficient mechanism for negotiations on behind-the-border issues.

³⁷ Developing countries have long argued that there is a backlog of issues that should be prioritised before entering into negotiations in new areas (for a recent example, see, e.g., Arun 2015). This view has not been conducive to progress in the Doha negotiations on liberalising services trade.

specialised agreements under the GATT have been referred to more often than the GATS.³⁸ The relatively infrequent use of the GATS to resolve disputes may have limited its contribution to an open and predictable trading environment for services.

The limited bindings of market openings for services trade mean that the substantial unilateral liberalisation that has been achieved in recent decades can more easily be reversed during times of hardship, for example, in the wake of the most recent financial crisis.³⁹ Some assessments gauge the commitments from the Uruguay round to be more than twice as restrictive as actual policies, on average, leaving substantial room for policy discretion and reversal (e.g. Mattoo and Gootiiz 2009; Miroudot and Pertel 2015). Such uncertainty can reduce firms' willingness to invest in the capacity to export services abroad.⁴⁰ Overall, relatively limited liberalisation and non-binding or otherwise restricted market access to trade in services is likely to put firms at a disadvantage as they servicify.⁴¹

³⁸ Between 1995 and 2016, the corresponding numbers of specialised GATT agreements are as follows: antidumping (106); subsidies and countervailing measures (104); technical barriers to trade (50); and sanitary and phytosanitary measures (42).

³⁹ According to a simple count using data from Global Trade Alert (2015), countries have implemented at least 90 measures in the last few years that almost certainly have a negative effect on foreign private services industries. In the calculations, I include measures that were recorded in the 2013-2014 period and implemented by any country and that relate to any of the following two-digit UN Central Product Classification sectors: 51-53; 60-64; 71-74; 81-89; and 97-98. However, the majority of measures recorded relate to the manufacturing industry.

⁴⁰ On the negative effect of trade policy uncertainty on trade, see, e.g., Handley (2012); Carballo, Handley, and Limão (2016).

⁴¹ With respect to the liberalisation and clarification of rules for trade in services in preferential trade agreements (PTAs), there appears to have been some success both in terms of binding market access and liberalisation, particularly for the 'offensive' interests of the US (Roy, Marchetti, and Lim 2006; Horn, Mavroidis, and Sapir 2010). However, little is currently known about the actual implementation of these rules. Conceptually, it is also questionable why liberalisation in PTAs would be easier because barriers to services trade are largely non-discriminatory in nature, even though they limit foreign competition.

4.2 Issues in trade policymaking for servicifying firms

In addition to the internal dynamics of services trade negotiations, there are issues in trade policymaking that generally may limit liberalisation of trade in services or in other ways be misaligned with servicifying firms.

First, there is a disconnect in trade policy between efforts to liberalise trade in manufactured goods and trade in services – whether through the WTO or through preferential trade agreements (PTAs). This disconnect is unfortunate as manufacturing and service activities become increasingly entwined.

An illustrative example of how the separate (and arguably dismal) treatment of services affects servicifying manufacturing firms is that their industries rarely appear to be consulted when governments prepare for negotiations on trade in services (see, e.g., National Board of Trade 2010; Ministry of Foreign Affairs and Trade 2014). The National Board of Trade (2012) argues that this has resulted in the neglect of services industries that are key for manufacturing, such as maintenance and repair along with rentals and leasing. The particularly slow progress in liberalising and binding commitments on trade in services is likely to be a major disadvantage to servicifying manufacturing firms.⁴² One explanatory factor for the neglect of manufacturing in consultations on trade in services could be problematic official statistics. As previously discussed, official statistics overestimate the decline in manufacturing and grossly underestimate exports of manufacturing services, especially when delivered through a presence abroad.

Even when negotiations on trade in services and in manufactures infrequently intersect, trade-offs seem to be made between export interests in manufactures and export (or even competing domestic import) interests in services. The result is that servicifying firms, and export

⁴² The final steps in liberalising the import of services are likely to have the strongest impact on manufacturing, according to computable general equilibrium simulations (Nordås 2008).

service interests in general, seem to lose (National Board of Trade 2013a).⁴³ What is arguably needed instead is a dual-track approach.

Finally, the separation of negotiations might have been conducive to differential approaches to liberalisation. The practice of listing sectoral market openings for trade in services rather than sectoral restrictions, as in goods negotiations, might not have served transparency or future liberalisation efforts well.⁴⁴

Potential explanations for the separation of trade policy on goods and services include the omission of trade in services in the predecessor to the WTO – the GATT – and the discussions preceding the Uruguay round of trade negotiations that led to the GATS. During the creation of the multilateral trading system in the late 1940s, liberalisation of trade in services was not emphasised. This neglect is understandable because cross-border trade in services was limited to a few industries, such as shipping.⁴⁵ Much later, digitisation and subsequent information and communication technologies facilitated cross-border trade in services, such as engineering services, and enabled the splintering of production, and even detailed tasks, into components (Baldwin 2006; Grossman and Rossi-Hansberg 2008, 2012).⁴⁶ Nevertheless, even in the late 1940s, trade in services was not excluded from the mandate of this envisaged system. Indeed, services were recognised as ‘substantial elements of international trade’ (United Nations

⁴³ The liberalisation that has taken place has been made predominantly unilaterally and to some extent, through PTAs (Adlung 2009; Roy, Marchetti, and Lim 2006).

⁴⁴ It should be added that when a country has listed a sector as open, it does so to inscribe any departures from full market access, similar to the listing of duty rates in a tariff schedule, as emphasised by one of the referees. Moreover, in the GATS, there is no legal obligation behind the practice of positive listing of sectoral openings.

⁴⁵ However, trade in services through the commercial presence and movement of services providers or customers is, of course, an old phenomenon.

⁴⁶ Because of these developments, some services can now be stored and their production can more easily be separated from their consumption. Consequently, when produced, many services such as music or even blueprints for printable manufactured goods can be provided at a low marginal cost (Breman 2014).

Conference On Trade And Employment 1948).⁴⁷ However, the proposed organisation was never established; there remained only a provisional agreement on trade in goods (the GATT), which evolved into the WTO.

The current separation of negotiations over and administration of trade in goods and trade in services also seems to stem from the dynamics of the discussions between proponents and opponents preceding the Uruguay round of trade negotiations. As the new round of trade negotiations was launched, Brazil and India accepted the inclusion of services only if their negotiations were separate from negotiations on goods.⁴⁸

Second, an arguably less-useful divide in contemporary trade policy is that between export and import interests: most countries still typically favour export interests. However, manufacturing firms increasingly rely on imported services; they may need to transfer or hire scarce service professionals across borders and they increasingly export service-intensive products and ancillary services. With trade in manufactured goods increasingly becoming dependent on imports and exports of services and on international value chains, it is in countries' economic interest to liberalise at home while seeking openings abroad (OECD 2013).

Third, there is arguably a troubling divide among various modes of service delivery. Servicifying firms (and services firms) that internationalise are likely to use several complementary modes. For example, when customising a product for a foreign customer, cross-border visits are commonplace. Later, when the product is exported, persons may accompany it. Meanwhile, software updates may be provided electronically, and data may be transferred across

⁴⁷ Indeed, there are limited bilateral agreements that include services such as shipping, for example, so-called friendship, commerce, and navigation treaties (Marchetti and Mavroidis 2011; Alschner 2013). Nevertheless, the modern notion of trade in services was not developed until the 1970s (Drake and Nicolaidis 1992).

⁴⁸ For an account, see, e.g., Jackson (1998), Hoekman (2009), or the more specific piece by Marchetti and Mavroidis (2011).

the border. Finally, to more regularly accommodate the customer's needs, a local establishment can be needed.⁴⁹

Consequently, there are arguments in favour of mode neutrality in commitments.⁵⁰ In contrast, locking in commitments in a specific mode is likely to distort the behaviour of both firms and customers. Firms may refrain from fully developing their business models according to technological developments and changes in customer behaviour.⁵¹ Locking in may therefore introduce deadweight losses to welfare. A counterargument might be that mode-neutral commitments could be dominated by the concerns of a mode that would be considered as particularly sensitive to liberalise. More analysis of the issue of mode neutrality is therefore needed. What is clear, though, is that from a contemporary business perspective, mode neutrality is preferable to asymmetric, mode-specific commitments.

4.3 Potential steps for reforming trade policymaking

Recognising the issues in trade policy, we need to consider potential steps for reforming trade policymaking so as to better align it with modern manufacturing and services firms. Care must be taken, however, to avoid introducing new asymmetries to trade policymaking.

A first step to either bridging or dismantling the discussed divides would be to engage in domestic cross-sectorial consultations.⁵² Governments could consistently consider the views of manufacturing firms and related services subsidiaries in preparation for negotiations concerning

⁴⁹ Real-world examples that illustrate the range and extent of services that may be needed along with the usage of different modes of delivery are provided in, e.g., National Board of Trade (2014) and Maurer et al (2016).

⁵⁰ The need for mode neutrality is illustrated in a case study by the National Board of Trade (2013a) of a mid-sized firm in the food industry and in the cases described by the National Board of Trade (2014).

⁵¹ It should be recognised that governments might still be more liberal than in their schedules of commitments. However, such policies can be revised at any time.

⁵² Such consultations would consider business in the other sector not only as users/importers of the products. of the first sector but also as producers/exporters of the products.

trade in services.⁵³ Broader consultations would likely lead to shifts in the prioritisation of services and perhaps in priorities regarding modes of supply along with barriers at home and abroad.⁵⁴ Support for services trade liberalisation from manufacturing businesses can also be instrumental in attaining the critical mass needed to seriously commit to negotiations not only in the WTO but also, for example, in negotiations on the Trade in Services Agreement (TiSA) and bilateral agreements. Likewise, it would make sense for governments to consistently consider the views of services firms when preparing for negotiations concerning trade in goods. The services industry exports a significant amount of goods (Malchow-Møller, Munch, and Skaksen 2015; Lööf 2010).⁵⁵

In reviewing consultation processes, governments could also pay more attention to small and medium-sized enterprises (SMEs). Paying more attention to SMEs in manufacturing could also muster support for substantial negotiations to liberalise trade in services. SMEs contribute non-trivially to foreign trade, but their specific concerns are less explored (Cernat, Norman-López, and T-Figueras 2014; Manson 2015).⁵⁶ Regarding services, there are indications that new firms contribute to the overall servicification of manufacturing (Crozet and Milet 2014). SMEs also rank formal and informal non-tariff barriers to trade as more trade-restrictive than transport and tariff costs. Meanwhile, large firms that already have addressed or even are benefitting from

⁵³ Although subsidiary firms that specialise in services but are part of manufacturing enterprise groups may be small in size, they are important for the overall business of the enterprise group.

⁵⁴ Admittedly, the manufacturing industry is not very vocal about liberalising trade in services. Businesses often accept restrictions as given. Moreover, firms and organisations in manufacturing often view themselves and their offerings as non-services businesses (National Board of Trade 2012).

⁵⁵ Beyond more inclusive consultations, there have been proposals to integrate negotiations. One proposal is to negotiate on trade in clusters of manufactures and related services (National Board of Trade 2012).

⁵⁶ More generally, the heterogeneity of firms within industries that has been incorporated into the economics of trade still remains to be incorporated into trade policymaking (Lodefalk 2013b). Regarding the trade in services of SMEs, official statistics in, e.g., Sweden, do not contain information about the distribution of trade across foreign countries.

such barriers may be more frequently consulted and active in providing responses than SMEs (National Board of Trade 2012; OECD Working Party on SMEs and Entrepreneurship 2009).

It is difficult to see any substantial downsides to the broadening of consultations, but that assessment likely hinges on either existing or additional resources being reallocated/added to the responsible part of government. An unknown parameter is, of course, business's response. If businesses do not engage in consultations, little may be added in terms of support for liberalising trade in services in ways that benefit servicifying firms. Both the level of consultations and the manner in which they are conducted might need to be experimented with to enable meaningful outcomes.

In negotiations, countries might also need to pay more attention to certain issues to promote the foreign competitiveness of contemporary manufacturing and services firms. One such issue is the cross-border movement of persons, for example, through, but not limited to, Mode 4 liberalisation of trade in services at home and abroad. Cross-border movement of persons is highly restricted and delivery through Mode 4 accounts for the smallest share of trade in services. Nevertheless, case studies and business surveys highlight the continued importance of the movement of persons for firms and trade despite the possibility of using digital communication tools such as Skype (Harvard Business Review 2009; National Board of Trade 2013b).⁵⁷ The servicification of firms can contribute to this interest. Because services are intangible and commonly more heterogeneous than traditional manufactures, informal barriers to trade are more troublesome. The movement of persons can assist firms in this regard by transferring tacit information and establishing personal relations that foster trust in business relations (Lodefalk 2016). The National Board of Trade (2015a) concludes that liberalisation in

⁵⁷ See also Denstadli et al. (2013); Gustafson (2012); Westermark (2013); (Keely 2003).

this area is a win-win and that even unilateral liberalisation to enable the cross-border movement of persons would be beneficial from an export perspective. It therefore argues that countries should also consider improving processes related to visas and work permits to increase firm competitiveness.⁵⁸ This objective would likely include both facilitating these processes and (importantly) making them predictable, transparent and rapid because firms in this field also benefit from certainty and ‘just-in-time’ supply.⁵⁹ Admittedly, the liberalisation of even the temporary cross-border movement of persons has been regarded as a sensitive issue by many OECD countries. Considering its importance, though, it would seem appropriate to aim for negotiations on processes and fixed timetables to facilitate the highly restricted temporary cross-border movement of persons while paying attention to the concerns of both sending and receiving countries.

A final proposal for negotiations might be to consider adding a fifth mode of supply (Mode 5) to international trade rules, as proposed by Cernat and Kutlina-Dimitrova (2014). Servicifying manufacturing means that domestic intermediary services, for example, R&D and design, could carry custom duties on manufactures. These extra tariffs might not be trivial. One estimate is that between one-quarter and one-half of manufacturing exports consists of such services. However, before adding this dimension to negotiations and trade rules, more analysis of suitable modalities of negotiations and likely impacts on trade liberalisation is needed.⁶⁰ One concern to consider is whether jointly negotiating the liberalisation of some goods and services might negatively affect the prospect for liberalisation of those goods. As mentioned, the

⁵⁸ Whether or not visas and work permits are within the premises of the GATS is a debated issue.

⁵⁹ Agarwal and Lodefalk (2015) find that piecemeal steps have been taken in this direction.

⁶⁰ It also remains to analyse the actual burden of tariffs and non-tariff measures for services delivered through ‘Mode 5’. On the one hand, many manufactures with high services content may be subject to low or even zero tariffs. On the other hand, such manufactures can be subject to extensive rules and regulations, which vary substantially across countries.

negotiation of liberalisation of trade in services is already complex and trade barriers are usually substantially higher for trade in services.⁶¹

5. Concluding remarks

In recent years, reindustrialisation has become an increasingly popular concept among policymakers. As a result, several governments have adopted strategies to promote domestic manufacturing as a way of creating jobs and economic growth. As I have demonstrated in this article, however, recent research challenges several notions about manufacturing and services firms. Contemporary manufacturing firms often import, use, produce and export services – services surround, embody, and are embedded in and ancillary to exporting manufactures. Likewise, services firms export a significant amount of goods.

I find that trade policy does not currently reflect these realities. First, barriers to trade in services abound and are much less regulated by multilateral trade agreements than are barriers to trade in goods. Second, countries continue to focus on tearing down trade barriers abroad while reluctantly dismantling them at home. Third, trade policy commitments in services are commonly made in four asymmetrically liberalised modes of supply. This may complicate using and switching among several modes of trade in services for manufacturing and services firms. In conclusion, current trade policy is likely to limit the competitiveness of firms and, ultimately, welfare.

I argue that trade policymaking requires a new paradigm attuned to this new reality. Liberalising services trade then becomes not an industry issue but instead a general issue of

⁶¹ Additional trade policy implications of servicification are discussed in National Board of Trade (2012). For reflections on the GATS and ways to enable the successful liberalisation of trade in services, which exceeds the scope of this paper, see, e.g., Hoekman and Mattoo (2011, 2008), Messerlin (2015) and Rentzhog and Anér (2014).

increasing firm competitiveness, and vice versa. Additionally, because imports of services are critical for subsequent exports of goods, the mercantilist undercurrent of trade policymaking seems outdated. Reducing that undercurrent would reduce tensions in trade negotiations and might influence policymakers to increase liberalisation and to bind those commitments.⁶²

Because of servicification, mode neutrality might become another way to facilitate competitiveness. In addition, the reduction of unduly burdensome regulatory barriers to trade in services becomes less sensitive. Because imports from many destinations are critical to exporting goods, there is no need to refrain from liberalising non-tariff barriers that discriminate against foreign competitors because reducing barriers for one foreign country would reduce barriers for all of them.

A few practical steps for policymakers and officials might therefore include considering the interests of manufacturing when crafting and implementing policies on trade in services, and vice versa; preparing the ground for negotiations on processes and fixed timetables to facilitate the highly restricted cross-border movement of persons, an area in which there is likely to exist a strong business interest; and possibly also, after further analysis, considering reducing tariffs on services embodied and embedded in manufactures and their sales.

However, beyond a paradigm shift and some initial steps, a framework might be needed to systematically highlight the interconnectedness of areas of trade, interests and modes of supply. Ideally, such a framework should help identify negotiation priorities regardless of the trade policy silo to which issues traditionally belong. This framework would need to go beyond inter-ministerial and inter-industry consultations.

⁶² Whether or not reducing the undercurrent not only reduces tensions but also results in liberalisation and commitments does, of course, depend on other aspects of negotiations, e.g., the progress in other issue areas of the negotiations.

Interestingly, there have been proposals to identify clusters of intimately linked goods and services, clusters around which negotiators could gather to identify and address key barriers (National Board of Trade 2012). For example, the National Board of Trade (2014) has recently identified services that are considered indispensable for environmental goods, arguing that trade in these services should therefore be liberalised in tandem. Hoekman (2014, 2013) suggests a ‘think supply chain’ approach in which industry representatives and officials from regulatory bodies, trade ministries and international organisations, such as the WTO, cooperate to facilitate the reduction of regulatory barriers that are unnecessarily harmful to a particular international supply chain. This work could also provide information that improves the public’s understanding of the issues involved, thereby rendering some issues less contentious. This framework would also provide feedback about on-going and future negotiations in the WTO and elsewhere. Regardless of the approach, it is clear that trade policymaking might need to be redesigned to accommodate for today’s firms, which increasingly venture into other industries – such as servicifying manufacturers or services firms that integrate manufactures into their offers – and are becoming increasingly dependent on international value chains.

Statistics must also be developed and existing statistics fully utilised to ensure that jobs related to and value added in complex and servicifying firms are properly considered in policymaking. For example, improvements are needed in the areas of developing official statistics at the enterprise group level (Lanz and Maurer 2015; Lodefalk 2013a); integrating internationally linked input-output databases such as the WIOD (World Input Output Data) into the toolbox of statistical offices and their products; developing bilateral micro-data on trade in services for SMEs; designing a classification of intermediate services (Lanz and Maurer 2015); revising industry classifications so that they better reflect current servicifying manufacturing

firms and changes in service firms (De Backer, Desnoyers-James, and Moussiégt 2015). As firms increasingly produce and sell abroad, which is likely to be further enabled, e.g., by 3D-printing technologies, it might also be important to incorporate foreign affiliates' sales of goods in official statistics on trade in goods, thus facilitating comparison with trade in services statistics (Li, Whalley, and Chen 2015).⁶³

Finally, more research is needed on the roles of services in manufacturing firms, including those in developing countries, on potential heterogeneity in the impact of services across firms and the implications of these services for trade policy. A relevant research agenda could also include how firms bundle and deliver goods and services, their sequencing and complementarity in trade, how servicification affects trade margins, and how firms address duties on services that are either embodied in goods or embedded in their sales.

Acknowledgements

This paper is based partially on my blog column Lodefalk (2015). I gratefully acknowledge insightful comments from Holger Görg, Andreas Hatzigeorgiou, Bernard Hoekman, Andreas Maurer, Hildegunn Kyvik Nordås, Magnus Rentzhog, the editor and two anonymous referees as well as financial support from the Jan Wallander and Tom Hedelius Research Foundation. The usual caveats apply.

⁶³A contribution to statistics on trade and barriers to services worth mentioning is the recent Integrated Trade Intelligence Portal on Services (I-TIP services), a joint effort of the WTO and the World Bank. For an overview of statistical issues regarding services trade in the presence of fragmented production, see Maurer et al (2016).

References

- Adlung, Rudolf. 2009. *Services Liberalization from a WTO/GATS Perspective: In Search of Volunteers*. Staff Working Paper ERSD-2009-05. Brussels: World Trade Organization.
- Adlung, Rudolf, and Hamid Mamdouh. 2014. "How to Design Trade Agreements in Services: Top Down or Bottom-Up?" *Journal of World Trade* 48 (2):191-218.
- Agarwal, Natasha, and Magnus Lodefalk. 2015. *Atithi Devo Bhava*. Observer Research Foundation, Issue Brief 91.
- Ali-Yrkkö, Jyrki, and Petri Rouvinen. 2013. *Implications of Value Creation and Capture in Global Value Chains - Lessons from 39 Grassroots Cases*. ETLA Reports no 16.
- Ali-Yrkkö, Jyrki, Petri Rouvinen, Timo Seppälä, and Pekka Ylä-Anttila. 2011. "Who Captures Value in Global Supply Chains?: Case Nokia N95 Smartphone." *Journal of Industry, Competition and Trade* 11 (3):263-78.
- Alschner, Wolfgang. 2013. "Americanization of the BIT Universe: The Influence of Friendship, Commerce and Navigation (FCN) Treaties on Modern Investment Treaty Law." *Goettingen Journal of International Law* 5 (2):455-86.
- Altenberg, Per. 2015. *The Nature of Trade Negotiations Must Evolve to Better Reflect 21st Century Trade*. Washington, DC: Cato Institute.
- Anukoonwattaka, Witada, Marco Scagliusi, and Mia Mikic. 2015. *Servicification and Industrial Exports from Asia and the Pacific. ESCAP Trade Insights, No. 10*. New York: United Nations.
- Ariu, Andrea. 2014. *Crisis-Proof Services - Why Trade in Services Did not Suffer During the 2008-2009 Collapse*. Working Paper no 1691. Frankfurt: European Central Bank.

- Arnold, Jens Matthias, Beata Javorcik, Molly Lipscomb, and Aaditya Mattoo. 2015. "Services Reform and Manufacturing Performance: Evidence from India." *Economic Journal* 126 (590):1-39.
- Arun, S. 2015. "India Opposes Attempts of Rich Nations To Stall WTO's Doha Round Talks." *The Hindu*, 4 December.
- Azad, A K. 1999. "Inter-industry Linkages of Services in the Bangladesh Economy (With a Case Study of the Ready-made Garments Industry) And Potential Service Trade." Paper presented at the WTO 2000 South Asia Workshop, New Delhi, India, , 20-21 December 1999.
- Baldwin, Richard E. 2006. *Globalisation: The Great Unbundling(s)*. Helsinki: Economic Council of Finland.
- Baldwin, Richard E., Rikard Forslid, and Tadashi Ito. 2015. *Unveiling the Evolving Sources of Value Added in Exports*. Japan External Trade Organisation, Institute of Developing Economics, mimeo.
- Bernard, Andrew B., Marco Grazzi, and Chiara Tomasi. 2010. *Intermediaries in International Trade: Direct Versus Indirect Modes of Export*. Department of Economics, University of Trento, Italia.
- Beverelli, Cosimo, Matteo Fiorini, and Bernard Hoekman. 2015. *Services Trade Restrictiveness and Manufacturing Productivity: The Role of Institutions*. London, UK: Centre for Economic Policy Research.
- Breinlich, Holger, Anson Soderbery, and Greg C. Wright. 2014. *From Selling Goods to Selling Services: Firm Responses to Trade Liberalization*. CEPR Discussion Paper no 10116, London: Economic and Social Research Council.

- Breman, Anna. 2014. "Diginomics - Nya Ekonomiska Drivkrafter." *Ekonomisk Debatt* (6):28-38.
- Calmfors, Lars. 2006. "Industriarbetarna har Betalat Byggjobbarnas Billiga Varor." *Dagens Nyheter*. <http://www.dn.se/debatt/industriarbetarna-har-betalat-byggjobbarnas-billiga-varor/>.
- Carballo, Jeronimo, Kyle Handley, and Nuno Limão. 2016. Trade Collapse and Policy Uncertainty in the Great Recession, mimeo.
- Celasun, Oya, Gabriel Di Bella, Tim Mahedy, and Chris Papageorgiou. 2014. *The U.S. Manufacturing Recovery: Uptick or Renaissance?* IMF Working Paper 28. Washington, DC: International Monetary Fund.
- Cernat, Lucian, and Zornitsa Kutlina-Dimitrova. 2014. "Thinking in a Box: A 'Mode 5' Approach to Services Trade." *Journal of World Trade* 48 (6):1109-26.
- Cernat, Lucian, Ana Norman-López, and Ana Duch T-Figueras. 2014. *SMEs are More Important Than You Think! Challenges and Opportunities for EU Exporting SMEs*. Chief Economist Note no 3. Brussels: European Commission.
- Chander, Anupam. 2015. *Robots, the Internet of Things, and the Future of Trade*. Legal Studies Research Paper, No. 465. Davis, CA: University of California Davis.
- Choudhury, Gaurav. 2014. "Look East, Link West, says PM Modi at Make in India launch." *Hindustan Times*, 25 September. <http://www.hindustantimes.com/business/look-east-link-west-says-pm-modi-at-make-in-india-launch/story-mGj6f6mlUmos0BAi27R11O.html>.
- Crozet, Matthieu, and Emmanuel Milet. 2014. *The Servitization of French Manufacturing Firms*. Working Paper 2014-10. Paris: CEPIL.

- Crozet, Matthieu, and Emmanuel Milet. 2015. *Should Everybody Be in Services? The Effect of Servitization on Manufacturing Firm Performance*. Geneva: Institut d'Economie et Econométrie, Université de Genève.
- Dachs, Bernhard, and Christoph Zanker. 2015. "Backshoring of Production Activities in European Manufacturing." *European Manufacturing Survey Bulletin* 3:1-8.
- Damijan, Jo e, Crt Kostevc, Philipp Marek, and Matija Rojec. 2015. *Do Manufacturing Firms Benefit from Services FDI? - Evidence from Six New EU Member States*. IWH Discussion Paper no 5. Halle: Leibniz-Institut für Wirtschaftsforschung, Halle.
- De Backer, Koen, Isabelle Desnoyers-James, and Laurent Moussiégt. 2015. *Manufacturing or Services - That is (not) the Question: The Role of Manufacturing and Services in OECD Economies*. OECD STI Policy Paper no 19. Paris: OECD.
- Debaere, Peter, Holger Görg, and Horst Raff. 2013. "Greasing the Wheels of International Commerce: How Services Facilitate Firms' International Sourcing." *Canadian Journal of Economics* 46 (1):78-102.
- Denstadli, Jon Martin, Mattias Gripsrud, Randi Hjorthol, and Tom Erik Julsrud. 2013. "Videoconferencing and Business Air Travel: Do New Technologies Produce New Interaction Patterns?" *Transportation Research Part C: Emerging Technologies* 29:1-13.
- Drake, William J., and Kalypso Nicolaïdis. 1992. "Ideas, Interests, and Institutionalization: "Trade In Services" and the Uruguay Round." *International Organization* 46 (1):37-100.
- Duggan, Victor, Sjamsu Rahardja, and Gonzalo Varela. 2013. *Service Sector Reform And Manufacturing Productivity : Evidence from Indonesia*. World Bank Policy Research Working Paper 6349. Washington, DC: The World Bank.

- Egger, Peter, Valeria Merlo, and Georg Wamser. 2015. "Cross-country Services Versus Manufacturing Activity of Multinational Firms in Response to Services Versus Goods Policy." *World Economy*. doi: 10.1111/twec.12332.
- European Commission. 2012. *A Stronger European Industry for Growth and Economic Recovery - Industrial Policy Communication Update, Communication from the Commission to the European Parliament, The Council, The European Economic and Social Committee and the Committee of the Regions*. Brussels: European Commission.
- . 2014. *For a European Industrial Renaissance, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions*. Brussels: European Commission.
- Falk, Martin, and Fei Peng. 2012. "The Increasing Service Intensity of European Manufacturing." *Service Industries Journal* 33 (15-16):1686-706.
- Federico, Stefano, and Enrico Tosti. 2012. *Exporters and Importers of Services: Firm-Level Evidence on Italy*. Rome: Bank of Italy, Economic Research and International Relations Area.
- Feketekuty, Geza. 2013. "Origin of the World Trade Organization Agreement on Trade in Services." By B. Krist, The Washington International Trade Association, America's Trade Policy - Towards a 21st Century Policy, Interview, November 14, 2013.
- Fernandes, Ana M., and Caroline Paunov. 2012. "Foreign Direct Investment in Services and Manufacturing Productivity: Evidence for Chile." *Journal of Development Economics* 97 (2):305-21.
- Fiorini, Matteo, Marion Jansen, and Weisi Xie. 2015. *Globalization and Structural Change: Upheaval in the Nineties or in the Noughties*, mimeo.

- Global Trade Alert. 2015. Global Trade Alert Database: Centre for Economic Policy Research.
- Golub, Stephen S., Ronald W. Jones, and Henryk Kierzkowski. 2007. "Globalization and Country-Specific Service Links." *Journal of Economic Policy Reform* 10 (2):63-88.
- Görzig, Bernd, and Andreas Stephan. 2002. *Outsourcing and Firm-Level Performance*. DIW Discussion Paper no 309: German Institute for Economic Research.
- Gresser, Edward. 2007. *Healthy Factories, Anxious Workers - or, Why Lou Dobbs is Wrong*. Progressive Policy Institute:
- Grossman, Gene M., and Esteban Rossi-Hansberg. 2008. "Trading Tasks: A Simple Theory of Offshoring." *American Economic Review* 98 (5):1978-97.
- . 2012. "Task Trade between Similar Countries." *Econometrica* 80 (2):593-629.
- Growth Analysis. 2010. *Svensk Tjänstehandel - Omfattning, Utveckling och Betydelse*. Stockholm: Swedish Agency for Growth Policy Analysis.
- Gustafson, Per. 2012. "Managing Business Travel: Developments and Dilemmas In Corporate Travel Management." *Tourism Management* 33 (2):276-84.
- Hagerty, James R. 2014. "Why U.S. Manufacturing Is Poised for a Comeback (Maybe): Some Say a Renaissance Is Already Under Way. Here's the Case They Make—and the Skeptics' Response." *Wall Street Journal*, June 1. <http://www.wsj.com/articles/why-u-s-manufacturing-is-poised-for-a-comeback-maybe-1401475962>.
- Handley, Kyle. 2012. *Exporting under Trade Policy Uncertainty: Theory and Evidence*. Staff Working Paper ERSD-2011-20. Geneva: World Trade Organization.
- Harrison, Virginia. "Made in Britain: U.K. Factories are Back in Fashion." Last modified January 6, 2015. <http://money.cnn.com/2015/01/06/luxury/uk-factories-fashion/>.

- Harvard Business Review. 2009. *Managing Across Distance in Today's Economic Climate: The Value of Face-to-Face Communication*. Cambridge, MA: Harvard Business Review, Analytic Services.
- Hatzigeorgiou, Andreas, and Magnus Lodefalk. 2014. "Trade, Migration and Integration – Evidence and Policy Implications." *World Economy* 38 (12):2013-48.
- . 2016. "Migrants' Influence on Firm-Level Exports." *Journal of Industry, Competition and Trade*. doi: 10.1007/s10842-015-0215-7.
- Hoekman, Bernard. 2013. "Adding Value." *Finance & Development* 50 (4):22.
- . 2014. *Supply Chains, Mega-Regionals, and Multilateralism: A Road Map for the WTO*.
- Hoekman, Bernard M. 2009. *The Political Economy of the World Trading System*. New York: Oxford University Press.
- Hoekman, Bernard, and Aaditya Mattoo. 2008. *Services Trade and Growth*. Washington, DC: The World Bank.
- . 2011. *Services Trade Liberalization and Regulatory Reform: Re-Invigorating International Cooperation*. The World Bank.
- Horn, Henrik, Petros C. Mavroidis, and André Sapir. 2010. "Beyond the WTO?: An Anatomy of EU and US Preferential Trade Agreements." *World Economy* 33 (11):1565-88.
- Horn, Henrik, and Oz Shy. 1996. "Bundling and International Market Segmentation." *International Economic Review* 37 (1):51.
- Jackson, John H. 1998. *The World Trade Organization – Constitution and Jurisprudence*. Chatham House Papers. London: Royal Institute of International Affairs.
- Jones, Ronald W., and Henryk Kierzkowski. 1990. The Role of Services in Production and International Trade: A Theoretical Framework. In *The Political Economy of International*

- Trade: Essays in Honor of Robert E. Baldwin*, edited by R. W. Jones and A. O. Krueger. Oxford: Blackwell.
- Kaldor, N. 1966. *Causes of the Slow Rate of Economic Growth of the United Kingdom: An Inaugural Lecture*. Cambridge: Cambridge University Press.
- Keely, Charles B. 2003. "Globalization Transforms Trade-Migration Equation." *International Migration* 41 (1):87-92.
- Kelle, Markus. 2013. "Crossing Industry Borders: German Manufacturers as Services Exporters." *World Economy* 36 (12):1494-515.
- Kelle, Markus, and Jorn Kleinert. 2010. "German Firms in Service Trade." *Applied Economics Quarterly* 56 (1):51-71.
- Kelleher, James B. 2014. "New Report Calls U.S. a 'Rising Star' of Global Manufacturing." *Reuters*, April 25, 2014. <http://www.reuters.com/article/2014/04/25/us-usa-manufacturers-costs-idUSBREA3O0AW20140425>.
- Kimura, Tatsuya. 2003. *The "Smile Curve" Phenomenon in the Japanese Assembly-Type Manufacturing Industry*. Fujitsu Research Institute Paper no 167.
- Lanz, Rainer, and Andreas Maurer. 2015. *Services and Global Value Chains - Some Evidence on Servicification of Manufacturing and Services Networks*. WTO Working Paper ERSD no 3. Geneva: World Trade Organization.
- Li, C. D., J. Whalley, and Y. Chen. 2015. "Foreign Affiliate Sales and the Measurement of Trade in Both Goods and Services." *China Economic Review* 36:394-405.
- Lodefalk, Magnus. 2013a. "Servicification of Manufacturing--Evidence from Sweden." *International Journal of Economics and Business Research* 6 (1):87-113.

- . 2013b. *Tackling Barriers to Firm Trade: Liberalisation, Migration and Servicification*. Örebro: Örebro Universitet.
- . 2014. "The Role of Services for Manufacturing Firm Exports." *Review of World Economics* 150 (1):59-82.
- . 2015. "Tear Down the Trade Policy Silos! Or, How the Servicification of Manufacturing Makes Divides in Trade Policy-Making Irrelevant." VoxEU.org, 16 January. <http://www.voxeu.org/article/servicification-manufacturing-and-trade-policy>.
- . 2016. "Temporary Expats for Exports: Micro-Level Evidence." *Review of World Economics*. doi: 10.1007/s10290-016-0254-0.
- Lööf, Hans. 2010. "Are Services Different Exporters?" *Applied Economics Quarterly* 56 (1):99-117.
- Low, Patrick. 2014. "How Trade Really Adds Up." *South China Morning Post*, March 6. <http://www.scmp.com/business/economy/article/1440804/how-trade-really-adds>.
- Malchow-Møller, Nikolaj, Jakob R. Munch, and Jan Rose Skaksen. 2015. "Services Trade, Goods Trade and Productivity Growth: Evidence from a Population of Private Sector Firms." *Review of World Economics* 151 (2):197.
- Manson, Alex. 2015. "Modernizing the WTO - The World Trade Organization Needs to Adapt if it's to Stay Relevant." *Wall Street Journal*, April 20. www.wsj.com/articles/modernizing-the-wto-1429548251.
- Marchetti, Juan A, and Petros C Mavroidis. 2011. "The Genesis of the GATS (General Agreement on Trade in Services)." *European Journal of International Law* 22 (3):689-721.

- Mattoo, Aaditya, and Batshur Gootiiz. 2009. *Services in Doha - What's on the Table?* Policy Research Working Paper Series: 4903. Washington, DC: The World Bank.
- Maurer, Andreas, Joscelyn Magdeleine and Rainer Lanz. 2016. Measuring Trade in Services in a World of Global Value Chains. In *Research Handbook on Trade in Services*, edited by Pierre Sauvé and Martin Roy. Edward Elgar Publishing, forthcoming.
- Messerlin, Patrick A. 2015. *The Transatlantic Trade and Investment Partnership: The Services Dimension*. Special Report No. 106. Brussels: Centre for European Policy Studies.
- Ministry of Enterprise and Innovation. 2016. *Smart industri - en nyindustrialiseringsstrategi för Sverige*. N2015:38. Stockholm: Swedish Government.
- Ministry of Foreign Affairs and Trade. 2014. *Characteristics of New Zealand's Commercial Services Exporters*. Auckland: Ministry of Foreign Affairs and Trade.
- Miroudot, Sébastien, and Kätlin Pertel. 2015. *Water in the Gats: Methodology and Results*. Paris: Organisation for Economic Cooperation and Development (OECD).
- Miroudot, Sébastien, Jehan Sauvage, and Ben Shepherd. 2013. "Measuring the Cost of International Trade In Services." *World Trade Review* 12 (4):719-35.
- Montresor, Sandro, and Giuseppe Vittucci Marzetti. 2011. "The Deindustrialisation/Tertiarisation Hypothesis Reconsidered: A Subsystem Application to the OECD7." *Cambridge Journal of Economics* 35 (2):401-21.
- National Board of Trade. 2007. *Adding Value to the European Economy - How Anti-Dumping Can Damage the Supply Chains of Globalised European Companies: Five Case Studies from the Shoe Industry*. Stockholm: National Board of Trade.
- . 2010. *At Your Service: The Importance of Services for Manufacturing Companies and Possible Trade Policy Implications*. Stockholm: National Board of Trade.

- . 2012. *Everybody is in Services - The Impact of Servicification in Manufacturing on Trade and Trade Policy*. Stockholm: National Board of Trade.
- . 2013a. *Just Add Services - A Case Study on Servicification and the Agri-Food Sector*. Stockholm: National Board of Trade.
- . 2013b. *Making Trade Happen*. Stockholm: National Board of Trade.
- . 2014. *Making Green Trade Happen - Environmental Goods and Indispensable Services*. Stockholm: National Board of Trade.
- . 2015a. *How Cross-Border Movement of Persons Facilitates Trade: The Case of Swedish Exports*. Stockholm: National Board of Trade.
- . 2015b. *No Transfer, No Production - a Report on Cross-Border Data Transfers, Global Value Chains, and the Production of Goods*. Stockholm: National Board of Trade.
- . 2015c. *Trade Costs of Visas and Work Permits - A Trade Facilitation Perspective on Movement of Persons*. Stockholm: National Board of Trade.
- . 2016. *Trade Regulation in a 3D Printed World - A Primer*. Stockholm: National Board of Trade.
- National Science and Technology Council. 2012. *A National Strategic Plan for Advanced Manufacturing*. Washington, DC: National Science and Technology Council.
- Neely, Andy, Ornella Benedetinni, and Ivanka Visnjic. 2011. "The Servitization of Manufacturing: Further Evidence." Paper presented at the 18th European Operations Management Association Conference, University of Cambridge, July 2011.
- Nickell, Stephen, Stephen Redding, and Joanna Swaffield. 2008. "The Uneven Pace of Deindustrialisation in the OECD." *World Economy* 31 (9):1154-84.

- Nordås, Hildegunn Kyvik. 2008. *The Impact of Services Trade Liberalisation on Trade in Non-Agricultural Products*. Paris: OECD.
- . 2010. "Trade in Goods and Services: Two Sides of the Same Coin?" *Economic Modelling* 27 (2):496-506.
- Nordås, Hildegunn Kyvik, and Dorothée Rouzet. 2015. *The Impact of Services Trade Restrictiveness on Trade Flows: First Estimates*. Paris: OECD.
- Novy, Dennis. 2013. "Gravity Redux: Measuring International Trade Costs with Panel Data." *Economic inquiry* 51 (1):101-21.
- Oddone, Nahuel, and Ramón Padilla. 2014. *Upgrading Value Chains Through Professional and Supporting Services: Lessons from Three Agro-Industry Chains in El Salvador and Guatemala*. CEPAL Technical Report. New York: United Nations.
- OECD. 2013. *Interconnected Economies: Benefiting from Global Value Chains*. Paris: OECD.
- . 2014. *Global Value Chains: Challenges, Opportunities, and Implications for Policy. Report prepared for submission to the G20 Trade Ministers Meeting Sydney, Australia, 19 July 2014*. Sydney: OECD, WTO, and the World Bank.
- OECD Working Party on SMEs and Entrepreneurship. 2009. *Top Barriers and Drivers to SME Internationalisation*. Paris: OECD.
- Pasadilla, Gloria O., and Andre Wirjo. 2014. *Services and Manufacturing: Patterns of Linkages*. APEC: APEC Policy Support Unit.
- Pilat, Dirk. 2005. *Measuring the Interaction Between Manufacturing and Services*. STI Working Paper no 5. Paris: OECD.
- Pilat, Dirk, Agnes Cimper, Karsten Olsen, and Colin Webb. 2008. The Changing Nature of Manufacturing in OECD Economies. In *Staying Competitive in the Global Economy:*

- Compendium of Studies on Global Value Chains*, edited by C.-o. Organisation for Economic and Development. Paris: Organisation for Economic Co-operation and Development.
- Pisano, Gary P., and Willy C. Shih. 2009. "Restoring American Competitiveness." *Harvard Business Review* 87:114-.
- Rentzhog, Magnus, and Emilie Anér. 2014. *The New Services Era - Is GATS up to the Task?* Geneva: International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum.
- Robert-Nicoud, Frédéric. 2006. *Off-Shoring of Business Services and Deindustrialization: Threat or Opportunity - and for Whom?* CEP Discussion Paper no 734. London: Centre for Economic Performance.
- Roy, Amrita. 2015. "Structural Change and the Changing Relationship between the Industrial and the Service Sector." *Indian Growth and Development Review* 8 (1):73-92.
- Roy, Martin, Juan A Marchetti, and Hoe Lim. 2006. *Services Liberalization in the New Generation of Preferential Trade Agreements (PTAs): How Much Further Than the GATS?* WTO Staff Working Paper no ERSD-2006-07. Geneva: World Trade Organization.
- Schettkat, Ronald, and Lara Yocarini. 2006. "The Shift to Services Employment: A Review of the Literature." *Structural Change and Economic Dynamics* 17 (2):127-47.
- Schück, Johan. 2014. "Nästa Avtalsrörelse Avgör om Löfven ska Lyckas." *Dagens Nyheter*, September 26. <http://www.dn.se/ekonomi/johan-schuck-nasta-avtalsrorelse-avgor-om-lofven-ska-lyckas/>.

- Sendén, Marie Gustafsson, Ulrika Stavlöt, Lars Calmfors, Henry Montgomery, and Girts Dimdins. 2013. "Why Do People Dislike Low-Wage Trade Competition with Posted Workers in the Service Sector?" *Journal of Socio-Economics* 47:82-93.
- Shepherd, Ben. 2013. "Trade Times, Importing and Exporting: Firm-Level Evidence." *Applied Economics Letters* 20 (7/9):879-83.
- Stille, Frank. 2003. "Produktbegleitende Dienstleistungen gewinnen weiter an Bedeutung." *Wochenbericht* 70 (21):335-42.
- The Economist. 2015. "Stuck on the Runway." *The Economist*, 8 August. <http://www.economist.com/news/business/21660529-indian-manufacturing-peaked-mid-1990s-can-its-decline-be-reversed-stuck-runway>
- Tomiyama, T. 2002. *Service Engineering to Intensify Services Contents in Product Life Cycles*. Japan Environmental Management Association for Industry.
- Tuvhag, Emmylou. 2012. "Tjänsteexporten har räddat Sverige." *Svenska Dagbladet*, October 24. <http://www.svd.se/tjansteexporten-har-raddat-sverige>.
- United Nations Conference On Trade And Employment. 1948. *Final Act and Related Documents*. New York: United Nations Conference On Trade And Employment.
- United Nations Economic Commission for Europe. 2015. *Guide to Measuring Global Production*. ECE/CES/38. New York: United Nations.
- United States International Trade Commission. 2013. *The Economic Effects of Significant U.S. Import Restrictions, Eighth Update 2013 - Special Topic: Services' Contribution to Manufacturing*. Investigation No. 332-325, Publication 4440. Washington, DC: United States International Trade Commission, .

- Walter, Patricia, and Renee Dell'mour. 2010. *Firm Level Analysis of International Trade in Services*. Working Paper no 4. Basel: Bank for International Settlements, Irving Fischer Committee on Central Bank Statistics.
- Warwick, Ken. 2013. *Beyond Industrial Policy - Emerging Issues and New Trends*. STI Policy Paper no 2. Paris: OECD.
- Westermark, Kristina. 2013. *Proximity and Learning in Internationalisation: Small Swedish IT Firms in India*, Acta Universitatis Stockholmiensis, Stockholm.
- Wolfe, Robert. 2013. *Letting the Sun Shine in at the WTO: How Transparency Brings the Trading System to Life*. Staff Working Paper ERSD-2013-03. Geneva: World Trade Organization.
- World Bank. 2012. *Increasing Local Procurement By the Mining Industry in West Africa*. Report No. 66585-AFR. Washington, DC: World Bank.
- WTO. 2014. *International Trade Statistics 2014*. Geneva: World Trade Organization.
- .2015. "World Trade Organization homepage - Disputes by Agreement." Last modified January 5..
- . 2015b. WTO Statistics Database. Geneva: World Trade Organization.