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**Servicification of Manufacturing Firms Makes Divides in
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Servicification of Manufacturing Firms Makes Divides in Trade Policy-Making Antiquated

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Abstract

The decline of manufacturing in OECD countries and job implications has been a long-time concern. Recently, policy-makers have set out for reindustrialisation. A trend related to these concerns and aspirations is the servicification of manufacturing – the increase in use, produce and sales of services. However, servicification of firms and its role for foreign trade and policy have only received limited attention. This paper reviews micro-level evidence and discusses trade policy implications. Servicification is found in several countries, including China, and there are indications that imported, domestic and exported services are key for the competitiveness of today's manufacturing firms and their participation in international value chains. Therefore, the historic divides in trade-policy-making between trade in manufactures and services, between offensive and defensive interests, and between modes of supply are largely antiquated. Potential trade policy implications also include to: reform how governments consult business for trade negotiations; facilitate cross-border movement of persons; and cut tariffs on services embodied and embedded in manufactures and their sales.

JEL classification: F13, F15, L16, L24, L60, O14

Key words: Servicification, services, manufacturing, deindustrialization, offshoring, onshoring, trade, trade policy, GATT, WTO, Mode 4

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1. Introduction

The state of manufacturing in OECD countries and its offshoring to emerging economies have been concerns for at least a decade (Gresser, 2007; Nickell, Redding, & Swaffield, 2008; Robert-Nicoud, 2006; Schettkat & Yocarini, 2006). However, recently the industry has been considered a potential “comeback kid” (Celasun, Di Bella, Mahedy, & Papageorgiou, 2014; Hagerty, 2014; Harrison, 2015; Kelleher, 2014). Policy-makers are setting out for a renewal of manufacturing that will strengthen and expand the industrial base (European Commission, 2012, 2014; NSTC, 2012). As an example, the new prime minister of Sweden, Stefan Löfven, has set out to reindustrialise the country and make it the world leader in manufacturing, this as part of the strategy to make the unemployment rate the lowest one in the EU by 2020 (Schück, 2014).

A trend related to these aspirations is the servicification of manufacturing – the increase in use, produce and sale of services (European Commission, 2014; Lodefalk, 2013b; Tomiyama, 2002).¹ Case studies illustrate this more pertinent role of services in today’s manufacturing. Evidence range from small firms to large multinational and from basic and food industries to the engineering industry, see e.g. (National Board of Trade, 2010, 2013a). The case studies suggest that a wide range of services is used and supplied by manufacturing firms, such as, rental, environmental and research and development (R&D) services.

There are several potential reasons why manufacturing firms may want to focus more on services, besides the basic fact that some services such as transportation are necessary for foreign trade (Lodefalk, 2014). First, services may help firms to become more productive, for example, through the use of services in logistics, management or engineering that save time, materials and improve coordination (Nordås, 2010).² Hiring employees in services-related occupations may also augment productivity by contributing to ability of the firm to absorb frontier technologies.³

Second, in the presence of fiercer foreign competition, firms may differentiate their offers by adding services to products, bundling them with products, or offer them in connection with the sale of manufactures (Kelle, 2013). In this way, they could also attune to changes in demand towards services and the environmental and social aspects of manufactured goods (Schettkat & Yocarini, 2006).⁴ An illustrative example could be the entry of Apple Computer Inc. into the entertainment services industry through the launch of iPod and the integrated

¹ Other concepts used to describe an increased focus on services in manufacturing include servitization, servicification (Lodefalk, 2013a)

² Examples of such an effect are, e.g., provided by Arnold, Javorcik, Lipscomb, and Mattoo (2014) and Duggan, Rahardja, and Varela (2013). Using panel of Indian firms in 1993-2005 and Input-Output data, the former study finds that reforms in certain services sectors positively and significantly affected manufacturing firms’ productivity. The latter study finds similar effects, i.a., using industry-level data on restrictions to foreign direct investment in services, Input-Output data, and firm-level data for Indonesia in the period 1997-2009.

³ For 13 OECD countries, in 2002, on average, more than a quarter of the 44% who were employed in service-related occupations in manufacturing had post-secondary education (Pilat, 2005).

⁴ Additionally, adding services may smoothen firm revenues over time and possibly make revenues more resilient to economic crises (Ariu, 2014; Crozet & Milet, 2014). It may also turn the contact with the customer into a closer and prolonged relation, which could even incorporate the provision of services related to competitors manufactures.

iTunes on-line music store. This second role of services seems to be considerable according to descriptive statistics for Germany (Kelle, 2013).⁵

Third, firms may use services to overcome barriers to foreign market entry and to sustain foreign market sales. Examples of such services include distribution, interpretation, match-making and monitoring services.⁶

Fourth, but not least, manufacturing firms need services to establish, join and manage international production networks and value chains, including head-quarter or business partner services such as data processing and R&D services (Kelle, 2013). Services are enablers of such networks and value chains (Debaere, Görg, & Raff, 2013).

However, servicification of manufacturing firms and particularly its role for foreign trade and trade policy have only received limited attention. Therefore, in this paper I review novel micro-level evidence and analyse potential trade policy implications. I find that firms in several countries servicify and there are indications that foreign and domestic services have a key role for the foreign competitiveness of today's manufacturing and participation in international value chains. I conclude that the historic divides in trade-policy-making between trade in manufactures and services; between offensive and defensive interests; and between modes of supply, are largely antiquated.

The rest of the paper is outlined as follows. I start by summarizing the empirical firm-level evidence on servicification, in section two. Next, in section three, I review empirical studies on the potential impact of servicification on the foreign competitiveness of manufacturing firms. Trade policy implications are discussed in section four. Finally, in section five, I make concluding remarks.

2. Empirical evidence on servicification

Cross-country and industry-level studies indicate the rising importance of services in manufacturing across OECD-countries and industries (Nordås, 2008, 2010; Pilat, 2005) (Pilat, Cimper, Olsen, & Webb, 2008) (Görzig & Stephan, 2002) (Falk & Peng, 2012; USITC, 2013).⁷ However, only recently have studies emerged that exploit detailed micro-level data to analyse the phenomenon in-depth.⁸

⁵ 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). A related study is Breinlich, Soderbery, and Wright (2014), who note a shift within and among UK manufacturing firms towards services sales in the period 1997-2007. They develop a multiproduct firm model where firms may devote scarce expertise to goods or services, or a combination of both. Then they econometrically analyse how firms react to the decline of EU tariffs on manufactures. The results suggest that tariff liberalization is partly driving the shift towards services sales in UK manufacturing firms.

⁶ For example, Shepherd (2013) studies an international sample of firms in developing countries and finds that longer border clearance times are associated with an increased probability to export through a third-party distributor.

⁷ The use and importance of services for manufacturing in developing countries has also been highlighted in a few studies (World Bank, 2012) (Fernandes & Paunov, 2012) (Azad, 1999) (Neely, Benedetinni, & Visnjic, 2011). The appearance or improved access to services is arguably essential for manufacturing firms in less developed countries (Nordås, 2008).

⁸ Besides the evidence discussed below, there are somewhat related pieces for Austria (Walter & Dell'mour, 2010) and Italy (Federico & Tosti, 2012).

For Sweden, (Lodefalk, 2013a) starts out with input-output data to find that the share of services in total inputs has doubled in the 1975-2005 period. He then analyses comprehensive micro-level data (1997-2006) that also consider the reorganisation of manufacturing firms into enterprise groups and industrial reclassification of activities. The results confirm that manufacturing has not declined as much as previously considered. More importantly, manufacturing increasingly buys services from domestic and foreign providers and itself produces services. Diversification into services is also much greater – approximately 60% higher – when the total of activities of manufacturing enterprise groups are considered, compared to when only those of manufacturing establishments or firms are. He also finds that the growth rate of manufacturing's exports of services has been substantially higher in manufacturing than in the services industry.⁹ 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 the intensity in use and sale of services across industries.

The role of services exports in German manufacturing is analysed in a number of studies (Kelle, 2013; Kelle & Kleinert, 2010; Stille, 2003). Analysing firm-level financial and trade data, Kelle and Kleinert (2010) conclude that manufacturing firms accounted for a quarter of exports of producer services in 2005. For some services, the manufacturing industry is very dominant, such as in the export of R&D and engineering services (Kelle, 2013). More generally, from 2001 to 2005, the growth of services exports in manufacturing outperformed growth in exports of manufactures. Still, it is possible that these statistics have underestimated the importance of services embedded in the exports of manufactures. 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 as but were included in the sales of manufactures.

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 firms in the 1997-2001 and 2003-2007 periods.¹⁰ The share of services in sales has steadily increased over time. The pattern is evident across manufacturing industries. The authors mainly attribute the trend to within-firm increases in sales of services although the entry and exit of firms also contributes. In 2007, approximately 83% of the sample firms sold services. On average, the share of services in sales was 11%. However, for more than a quarter of the firms, services accounted for the majority of sales.

In addition, Neely et al. (2011) studies offers of services of an international sample of incorporated manufacturing companies with at least 100 employees. Information on offers of services are retrieved from the business descriptions of companies in the commercially available database that is used. They find that approximately 30% of firms offer services and for most countries the share has been fairly stable in the years studied (2007, 2009, and 2011). However, the heterogeneity across countries is large. At the high end is the USA, with an average share of 55% of firms offering services, and at the low end is Bermuda, with a share of approximately 18%. Interestingly, Chinese firms had an average share of 1% in 2007 but their share had increased to 19%.¹¹

⁹ Today, manufacturing industries account for major shares of exports of services (Growth Analysis, 2010). In Sweden, the telecom industry is the second largest exporter of services after the transport industry.

¹⁰ The authors exclude merchanting from their measure of servicification.

¹¹ The sample consists, on average, of 12,311 companies out of a population of 50,000 ones.

Finally, novel statistics at the industry-level also shed light on the share of services exports in manufacturing, yet are likely to underestimate their actual importance. According to traditional statistics, in 2013, the share of services in gross exports was 28% for the European Union and 30% for the United States.¹² However, when the value-added of the services industry to manufacturing is considered, services accounted for approximately 50% of gross exports of both countries in 2009 (OECD, 2014). Still, 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 services businesses might not be fully captured even with value-added trade statistics.¹³ Another problem is that the expansion in in-house production of services in manufacturing firms is not accounted for. Their inclusion would be likely to result in a higher share of embodied or embedded services in the export of the industry. Moreover, neither the FDI in services, nor services sales by foreign affiliates are included in the aforementioned statistics, although local establishment and their sales are important modes of delivery for trade in services. Furthermore, there are some indications that companies export bundles of manufactures and services while omitting to specify the services component separately on the contract, such as, an installer accompanying a new secure radio communication system (National Board of Trade, 2012; Stille, 2003). That available statistics grossly underestimate the share of services in the exports of manufacturing is also suggested from value-chain analyses of products as diverse as shoes, smart phones and suit jackets (Ali-Yrkkö & Rouvinen, 2013; Ali-Yrkkö, Rouvinen, Seppälä, & Ylä-Anttila, 2011; Low, 2014; National Board of Trade, 2007).¹⁴

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

While there are previous studies on selected services – such as business services – and trade, few exist that more generally analyse the effects of servicification on the foreign trade of manufacturing. To the best of our knowledge, the most detailed study to date is (Lodefalk, 2014). He regresses manufacturing firm exports-intensity in Sweden on the share of services in in-house production and the share of purchased services in output, using a fractional and censored estimator while controlling for firm, industry and year specificities.¹⁵ He finds stylised premia in terms of exports and productivity for firms that have a larger share of services in in-house production. The final econometric estimate confirms that the higher the share of in-house services, the higher the export intensity of firms. The elasticity of export intensity with respect to the share of services in in-house production is 0.6 on average, when second-order effects are accounted for. The strongest links are between the hiring of managers and professionals and exports.

¹² Conventional statistics indicate that, in 2013, the share of services in the value of gross exports of the EU and the USA amounted to 28% and 30%, respectively (WTO, 2015b). Meanwhile, in the world economy, the share of services in the gross value of world exports was 21% (WTO, 2014). Nevertheless, the value of world exports of commercial services (manufactures) was approximately 5.4 (5.0) times the value in 1990.

¹³ 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 or establishments.

¹⁴ In addition, Rentzhog and Anér (2014) add that trade in services may be underestimated because of inadequate measurement of services delivered through the temporary movement of persons and of small cross-border transactions of digital services.

¹⁵ Unfortunately, the study does not explore how increased services usage and production affect the intensity in exports of services.

A complementary perspective is provided by studying the impact of import of services or barriers to such import on the trade of manufacturing. In this vein, Nordås and Rouzet (2014) and Pasadilla and Wirjo (2014) exploit the new services trade restrictiveness index (STRI) of the OECD and bilateral trade data. Nordås and Rouzet (2014) find that restrictions on the import of services are associated with less trade in manufacturing, estimating a simple gravity model while considering sample selection bias on a cross-section sample of 40 countries in the period 2012-2013. Interestingly, the negative association with trade is twice as strong for exports of manufacturing compared with for services. The barriers that appear to be most negative for exports of manufactures are those in the air, telecom and maritime services industries. Pasadilla and Wirjo (2014) provide correlations between restrictions and gross manufacturing exports of economies of the Asia-Pacific Economic Cooperation (APEC) in 2009. The results are negative, suggesting a potentially negative impact of restrictions on manufacturing.

Miroudot, Sauvage, and Shepherd (2013) study barriers to cross-border trade in services by comparing domestic trade patterns with international ones for a large number of countries and industries. Essentially, they adopt the theory-consistent and top-down approach of Novy (2013) that captures both formal and informal barriers to trade. On average, they find that trade costs have barely changed for services trade in the 1995-2007 period, while it has declined substantially for trade in goods. Looking at the subsample of four major developed economies (USA, Canada, EU and Japan) and two developing economies (India and Japan) in 2007, the estimated average ad valorem barriers to trade are in three digits for services (169%) and almost twice as large as for goods (95%). However, the costs of services trade have fallen for China after its entry into the WTO. The authors suggest that this indicates the potential role of regulatory reform in substantially reducing barriers to trade in services.

The role of services traded through the movement of persons and its impact on the export of firms is studied by Graneli and Lodefalk (2014), using panel data for Sweden in the period 1998-2007. Their results suggest that firms that hire recently arrived persons from a foreign market are positively associated with subsequent exports there. The link is the strongest for services and, in particular, for more complex services, and the weakest for homogeneous merchandise. The authors also exploit indicators on various trade barriers and it appears as if temporary movement of persons assists the export of firms through the provision of up-to-date foreign links. Finally, the authors exploit the STRI to compute the distance to best practice in terms of openness to import of services through the temporary movement of persons (Mode 4 of supply). They show that there is ample scope for improvement towards the country that is "best in class".

4. Discussion of trade policy implications

In a nutshell, manufacturing firms increasingly buy domestic and imported services and themselves produce and provide customers with services, in short, they servicify. The evidence available suggests that servicification promote the competitiveness of firms abroad. Nevertheless, there are substantial barriers to trade in services – barriers that are considerably higher than for trade in manufactures, as indicated above. These barriers would seem to non-trivially restrict the foreign competitiveness of manufacturing firms that servicify. For

example, being able to provide the manufacture but not the embedded or ancillary services can disadvantage the export of the manufacturing firm.¹⁶

Admittedly, the relatively high barriers to trade in services are partly related to the relative short contemporary history of trade liberalization negotiations on services. However, the success has also been relatively limited even after the breakthrough of establishing the General Agreement on Trade in Services (GATS). The GATS appears to have been poorly used as a vehicle for resolving disputes on trade in services, notifying and discussing trade issues, liberalising trade in services, or even for binding actual market openings.¹⁷ Only in 23 cases of consultations to resolve trade disputes have the parties referred to the GATS, while the corresponding number for trade in goods under the GATT is 396 (WTO, 2015a). Even specialized agreements under the GATT have been more referred to than the GATS.¹⁸ The relative 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 means that the substantial unilateral liberalisation that has been made in the last decades can more easily be reversed in times of hardship, as illustrated in the wake of the financial crisis.¹⁹ Such uncertainty can reduce the willingness of manufacturing firms to invest in the capacity to export services abroad.²⁰ All in all, the relatively limited liberalization and unbound market access for trade in services is likely to put manufacturing firms at a disadvantage as they servicify.

Besides the internal dynamics of services trade negotiations, the disconnect between the efforts to liberalise trade in manufactures and trade in services – whether in the WTO or in PTAs – is unfortunate as manufactures and services activities become increasingly entwined. Potential explanations for this separation include: the omission trade in services trade in the predecessor to the WTO – the GATT; and the discussions preceding the Uruguay round of trade negotiations that lead to the GATS. In the run-up to create the multilateral trading system in the late 1940s, liberalization of trade in services was not in focus. This neglect is understandable since foreign trade in services was limited to a few industries such as shipping. Much later did digitization and subsequent information and communication technologies release cross-border trade in services, such as, engineering services, and enable

¹⁶ See, e.g., the related theoretical analysis in Horn and Shy (1996). Moreover, the increased interlinkages between the manufacturing and the services industries also imply that there may be secondary negative repercussions on the private sector at large.

¹⁷ For a brief appraisal of the usage of the GATS, see e.g. Rentzhog and Anér (2014). Wolfe (2013) summarises evidence on the poor notification record under the GATS.

¹⁸ The corresponding numbers for specialised GATT-agreements are, for: antidumping (106); subsidies and counter-vailing measures (104); technical barriers to trade (50); and sanitary and phytosanitary measures (42).

¹⁹ According to a simple count using data from the Global Trade Alert (2015), countries have implemented at least 90 measures in the last few years that almost certainly affect foreign private services industries negatively, and additional ones that may have a negative effect. In the calculations, I have included such measures that were: recorded in the period 2013-2014; 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, since world trade is dominated by trade in manufactures, the majority of measures recorded relate to manufacturing sectors.

²⁰ With respect to liberalization and clarification of rules for trade in services in preferential trade agreements (PTAs), there appears to have been some success both in terms of bindings of market access and liberalization, in particular, for US offensive interests (Horn, Mavroidis, & Sapir, 2010; Roy, Marchetti, & Lim, 2006). However, little is so far known about actual implementation. Conceptually, it is also somewhat questionable why liberalization in PTAs would be easier since barriers to services trade to a large extent are non-discriminatory in nature, yet limit foreign competition.

the splintering of production and even detailed tasks into their components (Baldwin, 2006; Grossman & Rossi-Hansberg, 2008, 2012).²¹ Still, even in the late 1940s, trade in services was not excluded from the mandate of the envisaged system. In fact, services were recognized as “substantial elements of international trade” (UNCTE, 1948).²² However, as the proposed organization never was put in place, only a provisional agreement on trade in goods (the GATT) remained, which evolved to the WTO.

Today’s separation of negotiations and administration of trade in goods and in services also seem 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 were to be launched, Brazil and India both only accepted the inclusion of services if their negotiations would be separated from negotiations on goods.²³

One illustrative example of how the separate (and arguably dismal) treatment of services affects servicified manufacturing industries is that they rarely appear to be consulted when governments prepare for negotiations on trade in services, see e.g. (National Board of Trade, 2010) and (Ministry of Foreign Affairs and Trade, 2014). National Board of Trade (2012) argues that this has resulted in neglect of services sectors that are key for manufacturing such as maintenance and repair as well as rental and leasing. Considering the overall low progress in liberalization trade in services, this particularly limited progress is likely to be a major drawback to servicified manufacturing firms.²⁴ A partial explanatory factor for the neglect of manufacturing in consultations on trade in services could be the problems with official statistics. As have been discussed, official statistics overestimate the decline in manufacturing and grossly underestimate the export of services of manufacturing, especially when it is delivered through presence abroad.

Even when negotiations on trade in services and in manufactures infrequently touch, trade-offs seem to be made between offensive interests in manufactures and offensive (or even defensive) interests in services. The result would seem to be that servicified manufacturers, and offensive services interests in general, come off the losers (National Board of Trade, 2013a).²⁵ What would arguably be needed is instead a dual-track approach.

Finally, the separation of negotiations has probably been conducive to differential approaches to liberalization. The practice of listing market openings for trade in services rather than market restrictions, as in goods negotiations, has not served transparency and future liberalization efforts well.

²¹ Because of these developments, many services can now be stored and their production can more easily be separated from their consumption. Consequently, when produced, many services can be provided at low marginal cost, such as, music or even blueprints to printable manufactures (Bremser, 2014).

²² In fact, there existed already limited bilateral agreements that included some services, such as shipping, for example in so-called Friendship, Commerce, and Navigation treaties (Alschner, 2013; Marchetti & Mavroidis, 2011). Still, the modern notion of trade in services was not envisaged until the 1970s (Drake & Nicolaidis, 1992).

²³ For an account, see, e.g., Jackson (1998), Hoekman (2009), or the more specific piece by Marchetti and Mavroidis (2011).

²⁴ The last steps to liberalise import of services is likely to have the strongest impact on manufacturing, according to computable general equilibrium simulations (Nordås, 2008).

²⁵ The liberalisation that has taken place has instead been predominantly made unilaterally and to some extent through PTAs (Adlung, 2009; Roy et al., 2006).

Another antiquated divide is the one between offensive and defensive interests in trade policy. With trade in manufactures increasingly being dependent on both imports and exports of services as well as on international value chains, the offensive interest of countries is not to be defensive but to open up at home while seeking openings abroad (OECD, 2013).

Manufacturing firms increasingly rely on imported services, may need to transfer or hire services professionals across borders, and increasingly export services-intensive products and ancillary services. Low formal barriers to trade in homogeneous manufactures are simply not enough for the industry.

A third obsolete divide is arguably between different modes of delivery of services. Servicified manufacturing firms that internationalise are likely to use several complementary modes. For example, when customizing the manufacture for the foreign customer, cross-border visits are commonplace. Later, when the manufacture is exported, persons installing it and instructing the customer may accompany the product. Meanwhile, software updates may be provided electronically and data transferred across the border. Finally, to accommodate more regularly to the needs of the customer, a local establishment is conceivably needed. There are consequently arguments to avoid locking-in the mode of delivery.²⁶ Locking-in is likely to hamper manufacturing firms in developing their business models according to technological developments and changes in customer behavior.

One first step to bridge or dismantle the discussed divides, would be for governments to consistently sound out the views also of manufacturing firms and related services subsidiaries in preparations for negotiations on trade in services.²⁷ The broadening of consultations would likely lead to shifts in the prioritization of services sectors and perhaps on priorities regarding modes of supply as well as barriers at home and abroad. In reviewing the consultation processes, governments should probably also pay more attention to small and medium-sized enterprises (SMEs). SMEs are contributing non-trivially to foreign trade but their specific concerns are less explored (Cernat, Norman-López, & T-Figueras, 2014).²⁸ As regards services, there are indications that new firms contribute to the overall servicification of manufacturing (Crozet & Milet, 2014). SMEs also rank non-tariff formal and informal barriers to trade as more trade restrictive than transport and tariff costs. Meanwhile, large firms may already handle and even benefit such barriers and also be more frequently consulted and active in providing response than SMEs (National Board of Trade, 2012; OECD, 2009).²⁹

To unleash the foreign competitiveness of manufacturing firms of today, countries should also pay more attention to cross-border movement of persons, for example, through, but not limited to, Mode 4 liberalisation of trade in services. Despite the possibilities to use digital communication tools such as Skype, case studies and business surveys highlight the continued

²⁶ The need for mode-neutrality is illustrated in the case study by the National Board of Trade (2013a) of a mid-sized firm in the food-industry.

²⁷ The subsidiary firms that specialise in services but are part of manufacturing enterprise groups may be small in size but important for the overall business of the enterprise group.

²⁸ More generally, the heterogeneity of firms within industries that has been incorporated into the economics of trade still has to be incorporated in trade policy-making (Lodefalk, 2013b). As regards the trade in services of SMEs, official statistics in, e.g., Sweden do not contain information about the distribution of trade across foreign countries.

²⁹ Beyond more inclusive consultations, there have been some proposals for integration of negotiations. One proposal is to negotiate on trade in clusters of certain manufactures and related services (National Board of Trade, 2012).

importance of movement of persons for firms and trade (Harvard Business Review, 2009; National Board of Trade, 2013b).³⁰ Servicification of manufacturing may contribute to this interest. Since services are intangible and commonly more heterogenous than traditional manufactures, informal barriers to trade are more troublesome in their trade. Movement of persons may assist firms in this regard, by transferring tacit information and establishing personal relations that foster trust in business relations (Graneli & Lodefalk, 2014). Therefore, to reduce informal barriers to trade, it would seem worthwhile to facilitate the movement of persons. The National Board of Trade (2015) concludes that liberalisation in this area is a win-win and that even unilateral opening up for cross-border movement of persons would be beneficial from an export perspective. It therefore argues that countries also should consider improving processes related to visas and work permits to become more competitive.

A final proposal worth considering is to add a fifth mode of supply (Mode 5) to international trade rules and negotiations on services, as discussed by Cernat and Kutlina-Dimitrova (2014). Servicified manufacturing means that services may carry custom duties on manufactures, for example software installed in the product before export, although services are exempted from duties if they are provided cross-border. The extra tariffs raised are not likely to be trivial.³¹

5. Concluding remarks

Governments have an important role to play to facilitate the foreign trade of manufacturing firms. However, their approach trade liberalization needs to be fundamentally reformed to attune to the realities of firms today. The servicification of manufacturing and the internationalization of value-chains largely imply that the historic divides in policy-making between trade in manufactures and services, between offensive and defensive interests, and between modes of supply are antiquated. Finally, more research is also needed on the role of services for manufacturing firms, including in developing countries, and its implications for trade policy. A research agenda would likely include how firms bundle and deliver manufactures and services, their sequencing and complementarity in trade, how servicification affects trade margins, and how firms handle duties on services that are embodied in manufactures or embedded in their sales.

³⁰ See also Denstadli, Gripsrud, Hjorthol, and Julsrud (2013); Gustafson (2012); Westermark (2013).

³¹ Further trade policy implications of servicification are discussed in National Board of Trade (2012). For reflections on the GATS and ways to enable successful liberalization of trade in services, which lies outside the remit of this paper, see, e.g., Rentzhog and Anér (2014), Hoekman (2008) and Hoekman and Mattoo (2011).

References

- Adlung, R. (2009). SERVICES LIBERALIZATION FROM A WTO/GATS PERSPECTIVE: IN SEARCH OF VOLUNTEERS. WTO, Economic Research and Statistics Division, Staff Working Paper ERSD-2009-05.
- Ali-Yrkkö, J., & Rouvinen, P. (2013). Implications of Value Creation and Capture in Global Value Chains - Lessons from 39 Grassroots Cases: ETLA Reports no 16.
- Ali-Yrkkö, J., Rouvinen, P., Seppälä, T., & Ylä-Anttila, P. (2011). Who captures value in global supply chains?: case Nokia N95 smartphone. *Journal of industry, competition and trade*, 11(3), 263-278. doi: 10.1007/s10842-011-0107-4
- Alschner, W. (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), 455-486. doi: 10.3249/1868-1581-5-2-alschner
- Ariu, A. (2014). Crisis-Proof Services - Why Trade in Services Did not Suffer During the 2008-2009 Collapse: European Central Bank, Working Paper no 1691.
- Arnold, J. M., Javorcik, B., Lipscomb, M., & Mattoo, A. (2014). Services Reform and Manufacturing Performance: Evidence from India. *The Economic Journal*, n/a-n/a. doi: 10.1111/eoj.12206
- 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 prepared for presentation at WTO 2000 South Asia Workshop, New Delhi, India, 20-21 December 1999. Retrieved from <http://siteresources.worldbank.org/INTRANETTRADE/Resources/Azad-text.pdf>
- Baldwin, R. E. (2006). Globalisation: the great unbundling(s). Prime Minister's Office, Economic Council of Finland.
- Breinlich, H., Soderbery, A., & Wright, G. C. (2014). From Selling Goods to Selling Services: Firm Responses to Trade Liberalization. CEPR Discussion Paper no 10116.
- Breman, A. (2014). Diginomics - nya ekonomiska drivkrafter. *Ekonomisk Debatt*(6), 28.
- Celasun, O., Di Bella, G., Mahedy, T., & Papageorgiou, C. (2014). The U.S. Manufacturing Recovery: Uptick or Renaissance? *IMF Working Paper*: International Monetary Fund.
- Cernat, L., & Kutlina-Dimitrova, Z. (2014). Thinking in a box: A 'Mode 5' Approach to Services Trade. *Journal of World Trade*, 48(6), 1109-1126.

- Cernat, L., Norman-López, A., & T-Figueras, A. D. (2014). SMEs are more important than you think! Challenges and opportunities for EU exporting SMEs. Brussels: DG Trade, Chief Economist Note no 3.
- Crozet, M., & Milet, E. (2014). The Servitization of French Manufacturing Firms. CEPII Working Paper 2014-10.
- Debaere, P., Görg, H., & Raff, H. (2013). Greasing the wheels of international commerce: how services facilitate firms' international sourcing
- Lubrifier les rouages du commerce international: comment les services facilitent l'approvisionnement international . . . *Canadian Journal of Economics/Revue canadienne d'économique*, 46(1), 78-102. doi: 10.1111/caje.12006
- Denstadli, J. M., Gripsrud, M., Hjorthol, R., & Julsrud, T. E. (2013). Videoconferencing and business air travel: Do new technologies produce new interaction patterns? *Transportation Research Part C: Emerging Technologies*, 29, 1-13. doi: 10.1016/j.trc.2012.12.009
- Drake, W. J., & Nicolaïdis, K. (1992). Ideas, interests, and institutionalization: "trade in services" and the Uruguay Round. *International Organization*, 46(1), 37-100. doi: 10.1017/S0020818300001454
- Duggan, V., Rahardja, S., & Varela, G. (2013). Service sector reform and manufacturing productivity : evidence from Indonesia. *World Bank Policy Research Working Paper*(6349).
- 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*. (COM/2012/582 final). 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*. (COM/2014/014 final). Brussels.
- Falk, M., & Peng, F. (2012). The increasing service intensity of European manufacturing. *The Service Industries Journal*, 1-21. doi: 10.1080/02642069.2011.639872
- Federico, S., & Tosti, E. (2012). Exporters and importers of services: firm-level evidence on Italy: Bank of Italy, Economic Research and International Relations Area.

- Fernandes, A. M., & Paunov, C. (2012). Foreign direct investment in services and manufacturing productivity: Evidence for Chile. *Journal of Development Economics*, 97(2), 305-321.
- Global Trade Alert. (2015). Global Trade Alert Database. Retrieved January 7, 2015, from Centre for Economic Policy Research <http://www.globaltradealert.org>
- Graneli, A., & Lodefalk, M. (2014). Temporary Expats for Export: Firm-Level Evidence. Örebro University, Working Paper 2014:4.
- Gresser, E. (2007). Healthy factories, anxious workers - or, why Lou Dobbs is wrong *Policy Report*. Progressive Policy Institute.
- Grossman, G. M., & Rossi-Hansberg, E. (2008). Trading Tasks: A Simple Theory of Offshoring. *American Economic Review*, 98(5), 1978-1997. doi: <http://www.aeaweb.org/aer/>
- Grossman, G. M., & Rossi-Hansberg, E. (2012). Task Trade between Similar Countries. *Econometrica*, 80(2), 593-629. doi: <http://www.econometricsociety.org>
- Growth Analysis. (2010). Svensk tjänstehandel - omfattning, utveckling och betydelse. Sweden: Swedish Agency for Growth Policy Analysis.
- Gustafson, P. (2012). Managing business travel: developments and dilemmas in corporate travel management. *Tourism management*, 33(2), 276-284. doi: 10.1016/j.tourman.2011.03.006
- Görzig, B., & Stephan, A. (2002). Outsourcing and firm-level performance. DIW Discussion Paper no 309: German Institute for Economic Research.
- Hagerty, J. R. (2014, June 1, 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. *The Wall Street Journal*. Retrieved from <http://www.wsj.com/articles/why-u-s-manufacturing-is-poised-for-a-comeback-maybe-1401475962>
- Harrison, V. (2015, January 6, 2015). Made in Britain: U.K. factories are back in fashion. *CNN Money*.
- Harvard Business Review. (2009). Managing Across Distance in Today's Economic Climate: The Value of Face-to-Face Communication: Harvard Business Review, Analytic Services.
- Hoekman, B. M. (2009). *The political economy of the world trading system*. New York: Oxford University Press.

- Horn, H., Mavroidis, P. C., & Sapir, A. (2010). Beyond the WTO?: an anatomy of EU and US preferential trade agreements. *The World Economy*, 33(11), 1565-1588. doi: 10.1111/j.1467-9701.2010.01273.x
- Horn, H., & Shy, O. (1996). Bundling and international market segmentation. *International Economic Review*, 37(1), 51.
- Jackson, J. H. (1998). *The World Trade Organization – Constitution and Jurisprudence*: Royal Institute of International Affairs.
- Kelle, M. (2013). Crossing Industry Borders: German Manufacturers as Services Exporters. *The World Economy*, 36(12), 1494-1515. doi: 10.1111/twec.12111
- Kelle, M., & Kleinert, J. (2010). German Firms in Service Trade. *Applied Economics Quarterly*, 56(1), 51-71. doi: <http://ejournals.duncker-humboldt.de/loi/aeq>
- Kelleher, J. B. (2014, April 25, 2014). New report calls U.S. a 'rising star' of global manufacturing. *Reuters*. Retrieved from <http://www.reuters.com/article/2014/04/25/us-usa-manufacturers-costs-idUSBREA3O0AW20140425>
- Lodefalk, M. (2013a). Servicification of Manufacturing--Evidence from Sweden. *International Journal of Economics and Business Research*, 6(1), 87-113. doi: <http://www.inderscience.com/ijebr>
- Lodefalk, M. (2013b). *Tackling barriers to firm trade : liberalisation, migration and servicification*. Örebro: Örebro universitet.
- Lodefalk, M. (2014). The role of services for manufacturing firm exports. *Review of World Economics*, 150(1), 59-82. doi: 10.1007/s10290-013-0171-4
- Lodefalk, M. (2015). Tear down the trade policy silos! Or how the servicification of manufacturing makes divides in trade policy-making irrelevant. VoxEU.org, forthcoming.
- Low, P. (2014, December 24). How trade really adds up. *South China Morning Post*. Retrieved from <http://www.scmp.com/business/economy/article/1440804/how-trade-really-adds>
- Marchetti, J. A., & Mavroidis, P. C. (2011). The Genesis of the GATS (General Agreement on Trade in Services). *The European Journal of International Law*, 22(3), 689-721. doi: 10.1093/ejil/chr051
- Ministry of Foreign Affairs and Trade. (2014). CHARACTERISTICS OF NEW ZEALAND'S COMMERCIAL SERVICES EXPORTERS (R. a. A. U. Economic Division, Trans.): Ministry of Foreign Affairs and Trade.

- Miroudot, S., Sauvage, J., & Shepherd, B. (2013). Measuring the cost of international trade in services. *World Trade Review*, 12(4), 719-735. doi: 10.1017/S1474745613000049
- 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: National Board of Trade, Sweden.
- National Board of Trade. (2010). At Your Service: The Importance of Services for Manufacturing Companies and Possible Trade Policy Implications. National Board of Trade Report 2010:2, Sweden.
- National Board of Trade. (2012). Everybody is in Services - The Impact of Servicification in Manufacturing on Trade and Trade Policy: National Board of Trade, Sweden.
- National Board of Trade. (2013a). Just Add Services - A case study on servicification and the agri-food sector: National Board of Trade, Sweden.
- National Board of Trade. (2013b). Making Trade Happen. National Board of Trade, Sweden.
- National Board of Trade. (2015). How Cross-Border Movement of Persons Facilitates Trade: The Case of Swedish Exports. National Board of Trade Report 2015, Sweden, forthcoming.
- Neely, A., Benedetinni, O., & Visnjic, I. (2011). The servitization of manufacturing: Further evidence. Academic paper presented at the 18th European Operations Management Association Conference, Cambridge, July 2011: University of Cambridge.
- Nickell, S., Redding, S., & Swaffield, J. (2008). The Uneven Pace of Deindustrialisation in the OECD. *World Economy*, 31(9), 1154-1184. doi: <http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291467-9701/issues>
- Nordås, H. K. (2008). The Impact of Services Trade Liberalisation on Trade in Non-Agricultural Products: OECD Publishing.
- Nordås, H. K. (2010). Trade in goods and services: Two sides of the same coin? *Economic Modelling*, 27(2), 496-506. doi: 10.1016/j.econmod.2009.11.002
- Nordås, H. K., & Rouzet, D. (2014). The Impact of Services Trade Restrictiveness on Trade Flows: First Estimates: OECD Publishing.
- Novy, D. (2013). Gravity redux: measuring international trade costs with panel data. *Economic inquiry*, 51(1), 101-121. doi: 10.1111/j.1465-7295.2011.00439.x
- NSTC. (2012). *A National Strategic Plan for Advanced Manufacturing*.
- OECD. (2009). Top Barriers and Drivers to SME Internationalisation. OECD: OECD Working Party on SMEs and Entrepreneurship, Report.

- OECD. (2013). *Interconnected Economies: Benefiting from global value chains*: OECD, Synthesis Report.
- 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: OECD, WTO, and the World Bank.
- Pasadilla, G. O., & Wirjo, A. (2014). *Services and Manufacturing: Patterns of Linkages Policy Brief*. APEC: APEC Policy Support Unit.
- Pilat, D. (2005). *Measuring the Interaction Between Manufacturing and Services*. OECD STI Working Paper. Working Paper. Organisation for Economic Co-operation and Development. Paris.
- Pilat, D., Cimper, A., Olsen, K., & Webb, C. (2008). The Changing Nature of Manufacturing in OECD Economies. In C.-o. Organisation for Economic & Development (Eds.), *Staying Competitive in the Global Economy: Compendium of Studies on Global Value Chains* (pp. 103-140): Paris and Washington, D.C.: Organisation for Economic Co-operation and Development.
- Rentzhog, M., & Anér, E. (2014). The New Services Era - Is GATS up to the Task? *The E15 Initiative*. Geneva: International Centre for Trade and Sustainable Development (ICTSD) and World Economic Forum.
- Robert-Nicoud, F. (2006). Off-Shoring of Business Services and Deindustrialization: Threat or Opportunity - and for Whom? *CEP Discussion Paper no 734*. Centre for Economic Performance.
- Roy, M., Marchetti, J. A., & Lim, H. (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.
- Schettkat, R., & Yocarini, L. (2006). The Shift to Services Employment: A Review of the Literature. *Structural Change and Economic Dynamics*, 17(2), 127-147. doi: <http://www.sciencedirect.com/science/journal/0954349X>
- Schück, J. (2014, 26 September). Nästa avtalsrörelse avgör om Löfven ska lyckas. *Dagens Nyheter*. Retrieved from <http://www.dn.se/ekonomi/johan-schuck-nasta-avtalsrorelse-avgor-om-lofven-ska-lyckas/>
- Shepherd, B. (2013). Trade times, importing and exporting: firm-level evidence. *Applied Economics Letters*, 20(7/9), 879-883.

- Stille, F. (2003). Produktbegleitende Dienstleistungen gewinnen weiter an Bedeutung. *Wochenbericht*, 70(21), 335-342.
- Tomiyama, T. (2002). Service engineering to intensify services contents in product life cycles *ECP Newsletter* (Vol. 19): Japan Environmental Management Association for Industry.
- UNCTE. (1948). *FINAL ACT AND RELATED DOCUMENTS*. UNITED NATIONS CONFERENCE ON TRADE AND EMPLOYMENT.
- USITC. (2013). The Economic Effects of Significant U.S. Import Restrictions, Eighth Update 2013 - Special Topic: Services' Contribution to Manufacturing. United States International Trade Commission, Investigation No. 332-325, Publication 4440.
- Walter, P., & Dell'mour, R. (2010). Firm level analysis of international trade in services *IFC Working Papers*: Bank for International Settlements, Irving Fischer Committee on Central Bank Statistics.
- Westermarck, K. (2013). *Proximity and Learning in Internationalisation : Small Swedish IT firms in India*. Acta Universitatis Stockholmiensis, Stockholm. Retrieved from <http://urn.kb.se/resolve?urn=urn:nbn:se:su:diva-92603>
- Wolfe, R. (2013). Letting the sun shine in at the WTO: How transparency brings the trading system to life. WTO, Economic Research and Statistics Division, Staff Working Paper ERSD-2013-03.
- World Bank. (2012). Increasing Local Procurement By the Mining Industry in West Africa. World Bank Report No. 66585-AFR.
- WTO. (2014). International Trade Statistics 2014 *International Trade Statistics*. Geneva: World Trade Organization.
- WTO. (2015a). World Trade Organization homepage - Disputes by agreement. Retrieved January 5, 2015, from World Trade Organization http://www.wto.org/english/tratop_e/dispu_e/dispu_agreements_index_e.htm?id=A22
- WTO. (2015b). WTO Statistics Database. Retrieved January 2, 2015, from World Trade Organization