The Service Economy: Understanding Sectoral Differences in Patterns of Lobbying for Trade in the United States *

Leonardo Baccini[†] Iain Osgood[‡] Stephen Weymouth[§]

December 6, 2017

Abstract

Despite the size of the service sector and the growth of services trade, the trade politics literature devotes little attention to service firms' trade policy objectives and political activities. To better understand the nature of service firms' participation in trade politics, we study the lobbying and formal public positions of US service industries on trade agreements, as well as reports from Industry Trade Advisory Committees. We document for the first time that service firms and associations are highly active in the politics of US trade agreements and, compared to goods-producing industries, are much less likely to show evidence of industrial disagreement. We explain this undifferentiated support for trade agreements among politically active service industries by focusing on the stark US comparative advantage in services, and its relative openness to service imports and investment. Service firms have little to lose from reciprocal trade agreements, and much to gain. The service sector is therefore a key player in the US pro-trade coalition, which in part explains the present era of expanding global integration and deepening trade accords despite tough times for uncompetitive US manufacturing.

Keywords: services, lobbying, trade agreements, comparative advantage, industrial fragmentation.

---

*We thank Neal Beck, Mark Brawley, Marc Busch, Matt Castle, Steve Chaudoin, Jeff Frieden, Bobby Gulotty, Gordon Hanson, Brad Jensen, Naoko Matsumura, Krzysztof Pelc, Dennis Quinn, Pietra Rivoli, Peter Rosendorff, Nita Rudra, Beth Simmons, Erik Voeten, and Hye Young You, along with seminar participants at Georgetown University, McGill University, New York University, Rice University, and the University of Toronto, and panel participants at MPSA 2017 and APSA 2017. A special thanks to In Song Kim for kindly sharing the LDA reports on trade agreements with us. Rohan Carter-Rau, Nadia Docrat, George Ghabrial, and Jeff Sauer provided excellent research assistance. Leo Baccini acknowledges the support of the FRQSC grant (Établissement de nouveaux professeurs-chercheurs), 2017-NP-198967. All errors are our own.

[†]McGill University; leonardo.baccini@mcgill.ca

[‡]University of Michigan; iosgood@umich.edu

[§]Georgetown University; stephen.weymouth@georgetown.edu

1 Introduction

The backlash against globalization has contributed to several recent political shocks. From Britain's vote to exit the EU to the election of Donald Trump as president of the United States, several of the world's democracies are protesting globalization's uneven distributive consequences and the decline of traditional sources of employment. For instance, the movement of manufacturing activities to developing countries with lower production costs has precipitated painful wage adjustments and job losses in the United States.[1] This process has been shown to contribute to political polarization and weaker support for incumbents,[2] while vulnerability to import competition and offshoring has activated firms' protectionist demands[3] and eroded support for trade among voters and their elected leaders.[4] Indeed, the most politically consequential phenomenon in the global economy today may be the *deindustrialization* of the industrialized world.

While global competition has contributed to steep declines in manufacturing across wealthy countries, a focus on trade's losing industries ignores the largest part of the world economy: services. For many developed economies, the pain of deindustrialization is attenuated by growth in the service sector.[5] This is particularly true in the US, where services are 77% of GDP, 80% of employment, and an increasing share of US exports, offsetting the wide US current account deficit in manufacturing.[6] The relative size of the sector and the increasing tradability of services should make services firms salient actors in US trade politics, yet we know little about their involvement in, or relative support for, trade liberalization.[7] If firms in the service sector are active and united in support of trade, their engagement in trade politics may help explain the wave of new trade accords over the past two decades despite painful job losses in manufacturing and consequent voter discontent.

[1] Autor, Dorn, and Hanson 2013.

[2] Margalit 2011; Feigenbaum and Hall 2015; Autor, Dorn, Hanson et al. 2016; Jensen, Quinn, and Weymouth 2017.

[3] Broz and Werfel 2014; Jensen, Quinn, and Weymouth 2015.

[4] Feigenbaum and Hall 2015; Owen 2016; Owen and Johnston 2017; Walter 2017. For approaches that de-emphasize the distributive economic consequences of trade, see Mansfield and Mutz 2013, Inglehart and Norris 2017, and Rho and Tomz 2017.

[5] Services represent around 75% of GDP in Organization for Economic Co-operation and Development (OECD) countries and 70% of the global economy Francois and Hoekman 2010.

[6] As of 2015, services accounted for 33% of all US exports – up from 28% in 1992. Feenstra and Sasahara 2017 find that growth in US exports generated 4.1 million additional jobs in services between 1995 and 2011.

[7] In one of the first studies examining the politics of trade in services, Chase 2008 examines labor groups' lobbying in the motion picture industry. He finds that low-skilled occupations were most likely to oppose the movement of motion picture production abroad. With a few notable exceptions (Manger, 2009; Kim and Manger, 2016; Gootiiz and Mattoo, 2015), very little attention has been paid to firms' objectives regarding services liberalization.

We therefore explore the trade policy objectives and lobbying activities of firms in the largest sector of the US economy by examining sectoral differences in firm and association lobbying on US preferential trade agreements (PTAs), the most consequential US trade policy reforms over the past two decades. To better understand the relative strength and cohesion of the services lobby in comparison to other sectors, we first investigate the engagement of services industries in trade politics. We then study the degree of industrial *division* among services firms at the disaggregated industry level, as well as the degree to which lobbying over trade is *firm-centric*, as opposed to being conducted through industry trade associations.

Several distinct features of services contribute to sectoral differences in trade policy objectives among US firms. Traded services are more skill-intensive than most manufacturing or non-tradable services.[8] Thus, as a relatively skill-abundant country, the US enjoys a sharp comparative advantage in services, as evidenced by a significant trade surplus in services ($262B in 2015) that contrasts with the large and growing trade deficit in goods. The US is by far the leading services exporter (see Figure 1). Of course, export volumes understate the reach of US services firms, as many services require the consumer and producer to be in the same location. We show below that US service multinationals invest vastly more to serve foreign markets than foreign firms do in the US. These imbalances are not a consequence of greater barriers to services trade and investment in the US. The US is in fact much more open to services trade and investment than its trade partners, providing a clear motive for services liberalization in US trade agreements.

These facts inform our argument that firms in most US services industries will generally not divide into pro-trade and anti-trade factions, in sharp contrast to goods-producing industries, where such intra-industry splits regularly occur. While cognizant of within-services variation in export competitiveness, in general we expect the overwhelming US comparative advantage in services to generate relatively undifferentiated support for trade agreements in US services industries. There is little rationale for intra-industry disagreement over trade policy between services exporters and non-exporters, or between services multinationals and non-multinationals, two explanations that have been advanced to explain intra-industry disagreement in the goods-producing sectors.[9]

To examine these claims, we gather new data on all formal trade policy lobbying activities of US firms on the implementing legislation of US trade agreements.[10] In contrast to previous studies using Lobbying Disclosure Act (LDA) data,[11] we retrieve information on the 'direction' of lobbying for each report (i.e. whether firms and associations lobby in favor of or against each agreement), which is essential to examining the degree of fragmentation. We also employ data

[8]Jensen 2011; Gervais and Jensen 2013. While a technical consultant may find it profitable to travel internationally to deliver a report to a foreign client, international travel for the purpose of cutting hair (almost) never occurs.

[9]Milner 1988; Jensen, Quinn, and Weymouth 2015.

[10]This portion of the analysis therefore necessarily excludes the US-Israel agreement and NAFTA.

[11]Kim 2017.

on the public positions taken by firms and associations on US trade agreements. Public position-taking is an alternative mode of political engagement and has the advantage of being less costly than lobbying. We then provide the first systematic analysis of reports issued by a unique public–private partnership jointly managed by the US Department of Commerce and the Office of the United States Trade Representative (USTR): Industry Trade Advisory Committees (ITACs). These committees incorporate industry's voice in trade policymaking by detailing the technical advice and policy recommendations of industries across both manufacturing and services.

We find that the service sector is highly active in the politics of trade agreements and exhibits much less fragmentation over trade liberalization in comparison with good-producing industries. In particular, trade policy lobbying and position-taking in the service sector is more often conducted by trade associations than by individual firms, suggesting that service industries more often share a common position. Intra-industry disagreements, which regularly occur in goods-producing industries, are exceptionally rare among services industries. Our analysis across three independent modes of political engagement (lobbying, position-taking, and ITAC participation) reveals strong and consistent support for trade liberalization across much of the service sector.

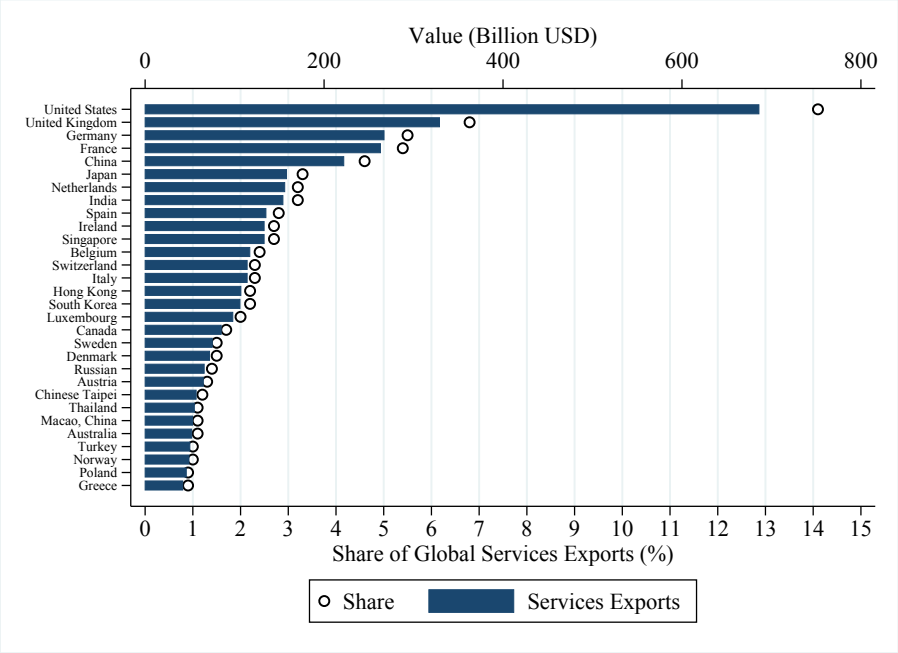
We also provide evidence consistent with our primary theoretical mechanism, showing that manifestations of intra-industry disagreement are less likely in industries that have a greater comparative advantage (i.e. those that export more than they import). This finding on the role of export competitiveness links our motivation – the US enjoys a comparative advantage in many more services industries than in goods industries – with our main findings regarding the differential patterns of trade support across industries.

Our paper contributes to a growing literature on firms' political engagement over trade policy. Focusing on the manufacturing sector, recent advances in trade theory suggest that political stances toward trade liberalization reflect differences in firm size and productivity, and the location of firms' global operations.[12]While the largest services firms may still reap most of the gains of liberalization, the intra-industry cleavages predicted by firm-centered approaches are unlikely given the exorbitant factor-based comparative advantage of the US service sector. Foreign competition is so enfeebled in services that smaller, non-exporting firms simply do not engage politically over liberalization since it entails no costs to them.[13] As we show here, the opportunities for US services firms to gain and expand their market share in foreign countries encourage them to support trade agreements. Unlike US manufacturers, which face stiff competition from abroad, US service firms face minimal competition from service firms in PTA partner countries, and stand to gain export opportunities from comprehensive trade agreements that include liberalizing service provisions. The service sector is thus a key (yet overlooked) player in the US pro-trade coalition, and its push

[12]Chase 2003; Manger 2009, 2012; Kim 2017; Baccini, Pinto, and Weymouth 2017.

[13]We also note that very large firms are still active as individuals in services, just less so than in manufacturing because there is less incentive to pay the costs of individually lobbying if the industry association is active and its liberalization objectives align with those of the firm.

Figure 1: Top Commercial Services Exporters



Note: 2014 data from the World Trade Organization's 2015 *World Trade Report* (`https://www.wto.org/english/res_e/booksp_e/world_trade_report15_e.pdf`).

for market access helps explain the nature of trade liberalization over the past two decades in the face of painful losses for less competitive industries.

2 Theory

Three striking facts motivate our exploration of the participation of the services sector in US trade politics. First, services liberalization is an important feature of US trade agreements. Nearly all trade agreements since NAFTA have included chapters devoted to both trade in services generally and to specific areas like financial services, express delivery, or electronically supplied services. With the exception of the US trade agreement with Jordan, every US agreement is based on a negative-list scheduling modality, which means that all services are liberalized unless otherwise indicated in specific reservations. US PTAs represent a significant step beyond World Trade Organization (WTO) commitments, increasing market access for US services.[14]

Second, modern trade policymaking includes a number of features that are difficult to explain without considering the objectives of service exporters. US PTAs extend beyond the liberalization of tariffs (which are not levied on services) to include deep provisions that protect investment

[14]Roy 2016. On telecommunications, see Manger 2009. On financial services, see Cameron and Tomlin 2000; Roy, Marchetti, and Lim 2007. On insurance, see Cameron and Tomlin 2000.

Table 1: Proportion of industries that lobbied or took a position on any US PTA across sectors.

	Proportion of industries:	
Sector	Lobbying	Position-taking
Goods	0.80	0.96
Services	0.34	0.77
Utilities	0.71	0.93
Construction	0.19	0.77
Wholesale and retail	1.00	1.00
Transportation	0.30	0.70
Information	0.59	0.97
Finance	0.98	1.00
Real estate	0.25	0.58
Professional services	0.33	0.96
Management	0.00	1.00
Administrative	0.11	0.80
Education	0.12	0.88
Health care	0.03	0.36
Arts and entnmnt.	0.08	0.52
Hospitality	0.47	0.53
Other services	0.17	0.67

Notes: The proportion of all 6-digit NAICS industries in each sector or subsector that has had at least one firm or association lobby or take a position on a US trade agreement.

and intellectual property rights, and regulate competition and government procurement. All US PTAs include national treatment provisions, and several agreements include provisions that allow the temporary movement of people. The investment chapters of PTAs regulate cross-border trade through commercial presence, which is critical for the service sector. Services lobbying in favor of comprehensive agreements therefore helps explain the recent evolution of trade policy.

Finally, we find that services firms are highly engaged in trade politics. Our analysis indicates that service firms and associations account for more than 50% of lobby spending on implementing legislation for trade agreements. Services firms and associations also extensively participate in public campaigns for trade agreements. Walmart, Citigroup, and Oracle have each publicly supported and lobbied for several US trade agreements, as have associations like the American Council of Life Insurers, the Motion Picture Association of America, and the National Retail Federation. These instances illustrate a broader phenomenon: the service sector has often provided greater public support for US trade agreements than the goods-producing sectors.[15] Table 1 illustrates this extensive participation across the services subsectors. Many services subsectors participate in lobbying and position-taking at rates that are comparable to producers of goods.

[15]More services firms participated in the public campaigns for the trade agreements with Singapore, Chile, the CAFTA countries, Bahrain, Morocco, Oman, Peru, Colombia, Panama, and Korea than did goods-producing firms. Likewise, more services associations than goods associations supported the agreements with Singapore, Chile, Bahrain, Morocco, and Oman.

2.1 Trade's concentrated benefits and intra-industry disagreement

The recent literature on the distributive consequences of global integration emphasizes that very large firms are the primary beneficiaries of trade-liberalizing agreements.[16] This is true generally, but also within industries, where usually a small number of firms control an overwhelming share of export sales, imports of intermediates, and FDI. Two predictions follow from these asymmetries. First, there is likely to be a strong base of support for trade liberalization among the very largest corporations across all industries. Second, intra-industry divisions over trade openness are likely to occur when liberalization creates both opportunities and threats for the same industry. Such divisions occur regularly in goods-producing industries, particularly manufacturers. Whether such divisions occur in services has not been examined, and is the focus of our investigation.

The most obvious manifestation of private intra-industry disagreements are public disagreements on whether to support or oppose a given trade agreement. Some firms may publicly oppose an agreement that other firms support; or an industry association may adopt a different position than some of the firms in its industry. For example, the Korea-US Free Trade Agreement (KORUS) received both public support and opposition from US firms producing auto parts. Various tooling, chemicals, and textile industries were also divided. Examining US trade agreements below, we document that 5.9% of six-digit North American Industrial Classification (NAICS) industries had at least one firm or association express support as another opposed a US trade agreement. This figure is 9.4% if only industries in which a public position was taken are considered.

Public disagreements are unlikely to represent the full measure of industries' private divisions over trade, however. Industries may seek to minimize public exposure of internal disagreements. Firms may be unable or unwilling to defend their own interests when associations are sidelined by internal disagreements, especially smaller firms which lack the political experience and resources of very large corporations. For these reasons, we look for complementary observable implications of industrial fragmentation over trade policy.

The first of these is firm-centric public position-taking. Public campaigns in support of trade agreements are a regular and highly organized part of American producers' efforts on behalf of trade agreements. In many goods-producing industries, however, a small number of firms express public support while the industry's association remains on the sidelines. For example, industries producing textile products, leather goods, and paper saw public support for CAFTA-DR from individual firms while their association was silent. A logical explanation for such behavior is that the industry was divided and so the trade association refrained from taking any public stance. Analogously, firm-centric patterns of lobbying constitute indirect evidence that the membership of an industry's association did not share the same preference. Lobbying was undertaken by individual firms as the association could find no common interest to represent in Washington.[17]

[16] Baccini, Pinto, and Weymouth 2017.

[17] Bombardini and Trebbi 2012; Kim 2017.

What forces divide industries over whether or not to support trade agreements, and so explain these patterns? The current literature identifies three: export and import competition in final products; the foreign sourcing of intermediates; and, FDI.[18] While differing in the details, these explanations share three necessary conditions for intra-industry disagreement. First, there must be some potential to benefit from increased international trade and investment, but firm heterogeneity mean that only some firms can take advantage. The standard explanation for intra-industry heterogeneity is firm productivity: only firms that are highly productive, and so bigger, can absorb the high fixed costs associated with exporting or developing global supply chains.[19] Second, the firms located in the industry's home market must face the potential for losses due to liberalization. In the case of trade, this takes the form of greater import competition; in the case of foreign sourcing, greater competition in the home market arises as domestic competitors reduce costs by sourcing or producing their products overseas. Third, trade agreements can only induce disagreement if they significantly reduce existing barriers to trade and investment, thus activating the two conditions above. For example, exporters and non-exporters in the same industry would not disagree about a trade agreement that secures unilateral liberalization from a trade partner.

2.2 Divisions over selling into foreign markets

A first argument for intra-industry disagreement over trade centers on intra-industry heterogeneity in export ability. Where trade is intra-industry, reciprocal liberalization creates greater competition in the home market from foreign firms but also new opportunities for foreign sales among larger firms capable of exporting.[20] Consequently, industries will be divided between large, export-capable firms that support trade, and smaller firms that cannot export, and so oppose liberalization. A parallel argument for intra-industry disagreement involves selling into foreign countries via offshore affiliates, known as horizontal foreign direct investment. Investment liberalization could generate intra-industry disagreement if two countries are capable of mutually selling a significant volume of goods or services into one another's markets through foreign branches, because usually only a small number of very large firms undertake foreign investment in any given industry.

These sources of disagreement are unlikely to hold in services industries for two reasons. First, the US enjoys a clear comparative advantage in services. To illustrate, we calculate a measure of revealed comparative advantage.[21] An index value greater than one reveals a country's

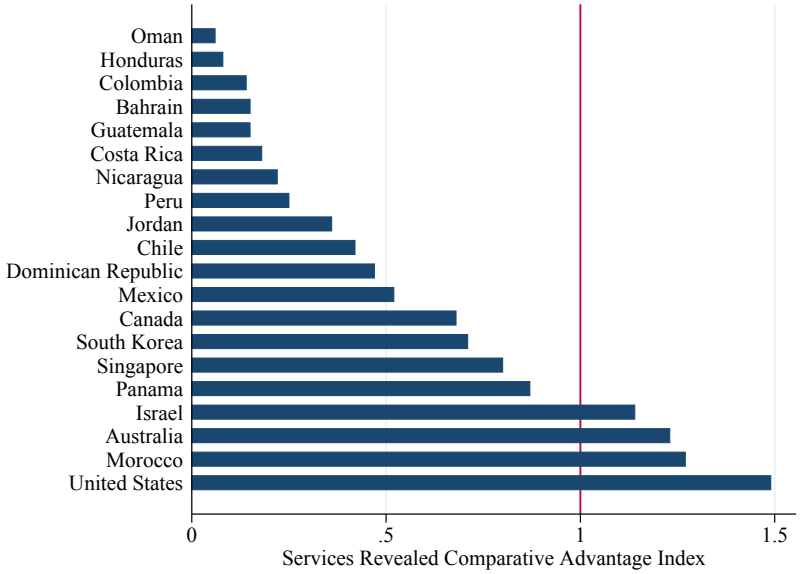
[18]On ordinary trade competition, see Milner 1987; Madeira 2016; Plouffe 2017. On the globalization of production, see Milner 1988.

[19]On the empirics of firm heterogeneity, see Bernard, Jensen, Redding et al. 2012 for a complete review. On models of firm heterogeneity and trade see, among others, Melitz 2003; Bernard, Eaton, Jensen et al. 2003. On models of firm heterogeneity and global production, see Antras and Helpman 2004; Helpman, Melitz, and Yeaple 2004.

[20]Melitz 2003.

[21]Balassa 1965.

Figure 2: Revealed Comparative Advantage in Services: US vs. Trade Partner Countries



Note: The revealed comparative advantage index in services is the value of a country's services exports as a share of all exports, divided by the proportion of services in all global exports. Countries with a value greater than one have a comparative advantage in services.

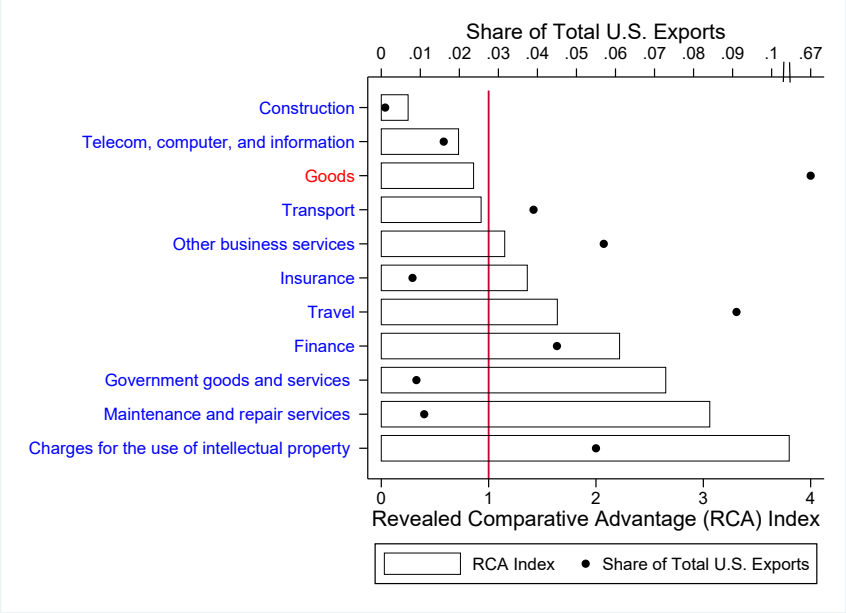
comparative advantage in the particular sector. Using data from 2005, the US services RCA is 1.49. The US also has a markedly higher RCA in services than its trade agreement partners, so there is relatively little potential for foreign competition for market share inside the US (see Figure 2).[22] Examining variation across services subsectors, we find evidence of comparative advantage in most industries. Figure 3 shows that only the *Construction* and *Information Services* industries have revealed comparative advantage indexes that are lower than goods.

Second, and not unrelatedly, the United States is already very open to both services imports from foreign countries and to foreign investment in services. Table 2 reports the average level of restrictions on services trade using three indices of services trade restrictions. We report averages for country income terciles, along with the global and US averages.[23] US restrictions are quite low in comparison with both the global average and to other high-income countries. The table also compares the US level of services restrictions with the average restrictiveness of the top 20

[22]Data on relative FDI between the US and its trade partners show a similar asymmetry. Examining all sectors, the ratio of the stock of US foreign investment to the stock of its trade agreement partners in the US varies from 1.29 or 1.46 at the lowest, for South Korea and Canada respectively, to 2.08 (Mexico), 3.4 (Panama), and 7.42 (Singapore). All other ratios exceed 10. Data on FDI in services specifically is only available for a smaller set of countries, but is less than 1 for only one (Korea): 1.36 (Canada), 3.59 (Australia), 4.90 (Panama), 6.79 (Mexico), and 31.95 (Singapore). The ratio for the Middle East and Latin America regions is 1.75 and 17.62, respectively.

[23]The indices are standardized to range between 0 and 1.

Figure 3: Revealed Comparative Advantage in US Services Industries



Note: Industries in blue are services. The revealed comparative advantage index is the value of US industry i exports as a share of total US exports (merchandise plus services), divided by the proportion of industry i global exports in total global exports. An index value greater than one reveals a comparative advantage in industry i for the United States.

importers of US services exports. The US has fewer restrictions than its export destinations in all cases. To the extent that foreign services firms are capable of penetrating the US through export or investment, relatively few barriers impede them from doing so.

2.3 Intra-industry disagreement due to heterogeneous ability to source abroad

Industries may be divided over trade liberalization when only some firms can benefit from new opportunities to source intermediates from the trade agreement partner, while others cannot. As with divisions over selling, we think this is unlikely to apply in services for several reasons. First, many service sectors – like professional services, finance, and health care – mostly use non-tradable inputs, like non-offshoreable labor tasks and land. They make less use of the material inputs and capital goods of which the US is a major importer, and so are unlikely to be divided between firms that can and cannot source intermediates abroad.[24] For services industries that do rely on upstream inputs, these inputs are often skilled, labor-intensive services, in which the US holds a

[24]Labor costs as a share of revenue are only 10.0% in manufacturing in the US; in information, finance, professional services, education, health care, and the arts, they are 21.7, 14,4, 39.3, 43.8, 39.2, and 31.9%, respectively. Labor costs are much lower in the wholesale and retail trade sectors, in which purchases from abroad are a major component of costs. Material inputs as a share of costs are 59.5% in manufacturing; comparable data for services are not provided by the US government.

Table 2: Services Trade Restrictions by Income Tercile

	STRI	STRD	PayInv
United States	0.227	0.140	0.000
Top US destinations	0.310	0.238	0.118
All US destinations	0.304	0.272	0.152
High Income	0.241	0.218	0.063
Middle Income	0.611	0.278	0.227
Low Income	0.966	0.326	0.306

Notes: Top US destinations refer to the 20 importers of US services by import volumes. Income categories are GDP per capita terciles. The OECD's Services Trade Restrictiveness Index (STRI) (Nordås and Rouzet, 2015) includes measures affecting trade in 18 service sectors in 40 countries. The World Bank's Services Trade Restrictions Database (STRD) (Borchert, Gootiiz, and Mattoo, 2014) covers restrictions in five main industries (finance, telecoms, retail, transport, and professional services). Quinn and Toyoda (2008) measure impediments to financial payments for services (PayInv) recorded on the current account.

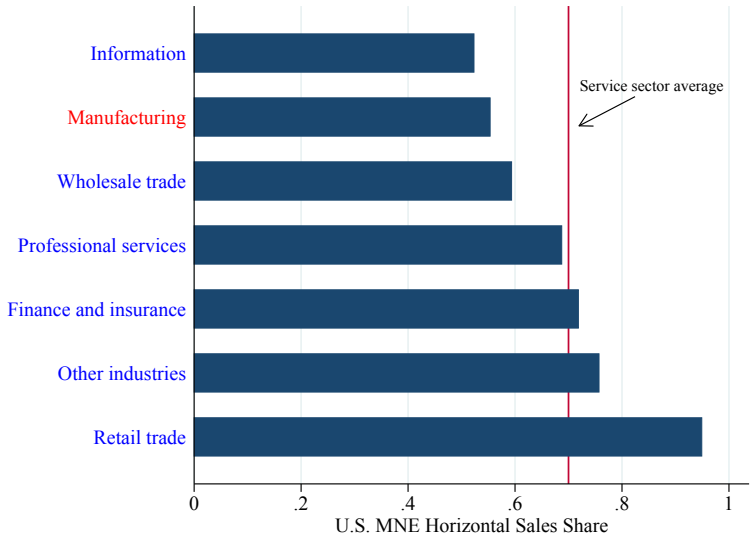
significant comparative advantage as we emphasize above. Finally, where there are opportunities to productively source services intermediates abroad – as in offshorable tasks like call centers, tax preparation, computer programming, and medical coding – the US is already extremely open to services imports.[25] US PTAs therefore create little *new* opening of US markets that will redistribute profits within an industry from firms that cannot source intermediates offshore to those that can. We also note that the US has not concluded preferential agreements with the major hubs of services offshoring, such as India, which might generate sharper redistributive effects.

Setting aside imported intermediates, are US services industries likely to be divided between firms that can and cannot offshore production of their final products? This explanation is unlikely to hold for similar reasons to those cited above. With a few exceptions, the production of services abroad is inefficient for US corporations given the US's relative abundance of skilled labor and services know-how. The offshoring of final production goes to where comparative advantage is greater, not weaker. There are also strong limits on the potential for foreign production of services – even if it is cheaper – because of the proximity burden: many services must be produced where they are delivered. Finally, the US is already very open to services imports, so trade agreements do not significantly reduce US barriers to services trade. Of course, trade agreement may make foreign investment more viable through provisions on investment and dispute settlement, although such provisions are likely most relevant for services firms that produce abroad *to sell abroad* rather than to export back to the US

These figures are calculated using data from the Economic Census of the United States in 2012, available from https://factfinder.census.gov.

[25]The wholesale and retail sectors are highly significant exceptions which rely on foreign-made products to stock warehouses and shelves.

Figure 4: Horizontal FDI: Manufacturing vs. Services



Note: Industries in blue are services. Horizontal sales shares represent total MNE affiliate sales to the host country as a share of total MNE affiliate sales. The source is publicly available BEA data and correspond to the year 2014.

The service sector's focus on investing abroad primarily to sell into foreign markets – in comparison with manufacturing's greater emphasis on investing abroad to sell back home – is illustrated by data on the sales of US multinational abroad. Using Bureau of Economic Analysis (BEA) data on foreign affiliate sales by destination, Figure 4 reports the share of local (i.e., host country) sales in total US MNE affiliate sales abroad. On average, services industries' sales to the host country account for a much larger share of MNE affiliate sales in comparison with manufacturing, though there is some variation across services industries. With the exception of information services,[26] the figure reveals that vertical FDI – foreign investment for the purpose of sales back to the US or to third countries – is much more prevalent in manufacturing than in services. For services, horizontal FDI for the purpose of selling services to the local market prevails.

Overall, services industries should be relatively undivided over trade liberalizing agreements, whether due to variation in ability to sell into, or to source from, foreign markets. We also expect services industries to lobby and take positions more often via their associations than will manufacturing industries, who will be more likely to do so as individual firms.[27]

[26]Information services transform information into a commodity for distribution, and include publishing, motion pictures, broadcasting, and data processing, hosting and related services.

[27]Our argument does not imply strong support for liberalization among all US services firms or for all services industries. Relatively non-tradeable services, like construction, may be disinterested in trade liberalization though they may still benefit from liberalization of foreign investment.

2.4 The nature of trade liberalization in services

Any analysis of the differences between lobbying in manufacturing and services must address the fact that commitments to liberalization in PTAs differ substantially between goods and services.[28] Commitments to liberalize goods (in particular, the operation of rules on national treatment and most-favored nation) are nearly comprehensive. In contrast, the liberalization of services usually features significantly more identified exemptions ('reservations') to market access in specified sectors, and to national treatment, MFN, or other key principals. These exceptions, contained in agreement annexes, may be quite narrow or quite broad, and typically occur in the dozens.[29]

Two examples are particularly prominent. First, the US maritime and air transport industries receive significant restrictions on the operation of domestic transport by foreign corporations. Reservations on transport typically account for 20% of all US reservations in its PTAs. Second, the US typically places a large number of restrictions and added burdens on the foreign ownership or operation of certain types of financial institutions. Many of these relate to state-based banking regulations that have some discriminatory impact on foreign owners. Reservations on financial services, mainly banking, typically account for just over 30% of all US reservations in its PTAs.

Do these reservations (and the less comprehensive nature of services liberalization) then account for the lack of disagreement over services liberalization among US producers? For example, suppose that competitive US services firms secure liberalization abroad, while less competitive US services firms are able to defend themselves from foreign competition through carefully crafted reservations. In this case, US trade agreements would look more like unilateral liberalization by the US's foreign partners, and so provoke no opposition from uncompetitive US firms who would remain protected behind a wall of carveouts and exceptions.

Looking over the reservations in US trade agreements as a whole, we see some specific examples that do look like defensive protectionism. The US maritime shipping sector is relatively uncompetitive by global standards, and the exemptions from national treatment on domestic shipping do look anti-competitive (even if US maritime shipping still faces intense competition on international shipping). However, many other examples look less obviously like defensive protectionism. Many of the copious reservations in banking are relatively insignificant, and are more focused on defending the complex structure of the US financial regulatory system. The US is also

[28] These differences reflect long-standing disparities in the treatment of goods and services in the GATT/WTO. For services liberalization under the General Agreement on Trade in Services (GATS), countries identify the specific service industries to which they will apply market access and national treatment obligations, along with any exceptions to those obligations. Services commitments thus "bind" the specified market access and national treatment for the particular industry, guaranteeing that conditions will not change in ways that would harm firms in other countries.

[29] Roy, Marchetti, and Lim (2007) find that services commitments in US PTAs tend to significantly reduce services trade barriers beyond countries' GATS offers.

highly competitive in exports of financial services, making it unlikely that the industry is demanding protection from America's much smaller PTA partners.

Examining the number of reservations (see Figure 3) in each industry across all US trade agreements, we see several patterns that suggest that US reservations are not primarily about defensive protectionism and so are not likely to be the primary explanation for industrial unity in services. First, US reservations vary relatively little across trade partners, and reservations are often cut and pasted from one agreement to the next.[30] US industries do not demand vastly more reservations with more competitive producers of services, suggesting that reservations may be more about legal compliance than protection. Second, the number of US reservations across industries is uncorrelated with US competitiveness in services. The small number of uncompetitive US service industries are not systematically receiving more reservations. Finally, the US has fewer reservations than all of its trade partners but for Canada, Australia, Guatemala, Nicaragua, Bahrain, and Oman. The US trade partners that have noticeably fewer reservations look more like states with stunted service sectors, again suggesting that reservations are not mainly about evading competition. Overall, we think it is unlikely that reservations are a primary cause of industrial harmony in services though they may serve such a role in a few instances. We highlight that further investigation of these reservations is a valuable site for future research.

3 Data and Empirical Strategy

We now introduce two complementary datasets on the political activities of American industries. We describe the collection of the datasets and their relative merits, and introduce our four measures of industrial fragmentation as well as the main explanatory variables in our models of differences between goods and services industries in their trade policy lobbying and position-taking. We then discuss our reduced-form and instrumental variable (IV) strategies for exploring our proposed mechanism, the pronounced US comparative advantage in services.

3.1 Outcomes

One of the contributions of this paper is to assemble a complete dataset of lobbying related to US trade agreements. The LDA imposes strict disclosure requirements on every individual and firm that lobbies the government. Lobbyists must file a registration indicating the amount that firms and associations spend on lobbying. An immense literature in political science and economics considers political contributions,[31] and recent work has examined lobbying expenditures documented in LDA

[30]Table C.2 in the appendix shows that the language similarity among US annexes, which include reservations related to US service industries, is quite high for US PTAs. To obtain these indices, we rely on the Jaccard measures of language similarity implemented by the R package 'textreuse.' For a similar approach, see Wilkerson, Smith, and Stramp 2015.

[31]For an excellent review, see De Figueiredo and Richter 2014.

Table 3: Reservations on services across US trade agreements.

	Total reservations		Sector with most reservations	
Agreement	By US	By partner	US	Partner
NAFTA				
Canada	55	49	Banking	Transport
Mexico	55	111	Banking	Transport
Jordan	1	15	Communications	Business Services
Chile	44	75	Banking	Banking
Singapore	44	95	Banking	Banking
Australia	45	36	Banking	Transport
Morocco	44	74	Banking	Banking
CAFTA-DR				
Costa Rica	46	61	Banking	Transport
Dominica Rep.	46	53	Banking	Business Services
El Salvador	46	39	Banking	Banking
Guatemala	46	21	Banking	Banking
Honduras	46	64	Banking	Business Services
Nicaragua	46	43	Banking	Business Services
Bahrain	38	25	Banking	Business Services
Oman	45	26	Banking	Business Services
Peru	44	52	Banking	Transport
Colombia	44	66	Banking	Transport
Panama	44	46	Banking	Transport
South Korea	46	129	Banking	Business Services

Notes: Data compiled by the authors from the I-TIP Services database collected by the WTO and the World Bank, available at `https://i-tip.wto.org/services/Search.aspx`.

reports in the context of trade and globalization policy.[32] We collect all LDA reports related to lobbying on the implementation of US trade agreements from Kim's database, available at `http://www.lobbyview.org/#/`.[33]

Our empirical approach requires that we identify whether each firm and association filing an LDA report on a US PTA was in favor of, or opposed to, the trade agreement. That is, we record the 'direction' of lobbying by each participant for each individual trade agreement. This information is generally not stated in the LDA reports, so we use a variety of sources to determine the positions of lobbying firms and associations, including Lexis/Nexis, Factiva, and the Bloomberg Database. Details about the data collection are provided in the appendix.

Lobbying reports do not include standard identifiers for the industries of lobbying clients. We therefore manually match each firm and trade association to sector identifiers using 4-digit NAICS codes from a variety of sources including Compustat, company websites, and online business directories. Of the 282 unique client entries, we were able to assign specific NAICS codes to 245 (159 firms and 86 trade associations). The remaining 37 clients, to which we do not assign a specific NAICS code, are peak associations that include virtually every industry (e.g. the Business

[32]Bombardini and Trebbi 2012; Kim 2017; Goldstein and You 2017; You 2017.

[33]Kim 2017.

Roundtable) and activist groups (e.g. the Council for Citizens Against Government Waste). We exclude these from the analysis. In line with previous studies and with our theoretical framework, we examine these data at the industry-PTA level.

We create two different outcome variables to capture industry lobbying over trade. First, we create a variable *Divided* that equals 1 if at least one firm or association lobbied against a trade agreement in industry i while at least one other firm or association lobbied in favor of the agreement in that same industry.[34] Second, following Bombardini and Trebbi (2012), we construct *Lobby separate* as the share of total (firms' plus associations') lobbying expenditures undertaken by the firms in industry i. This variable provides one measure of the extent of collective action within a sector through associations as opposed to independent action by individual firms.[35]

To corroborate our results using the lobby data, we employ complementary data on public position-taking by firms and associations on US PTAs from NAFTA to the present. Position-taking is an alternative mode of political engagement for firms and associations. Much of this position-taking occurs through the creation of *ad hoc* coalitions to support particular trade agreements. For example, 184 firms and 69 industry associations from goods-producing industries joined the Business Coalition for US Central American Trade, a coalition formed to publicly support CAFTA-DR; 187 service firms and 53 service industry associations did the same. Public statements from these coalitions are supplemented with statements in public submissions to the USTR, Congressional testimony, association press releases, and other idiosyncratic sources.

There are theoretical and empirical reasons to consider this alternative source of data. On the theoretical side, public position-taking is complementary to lobbying: to the extent that an industry cannot decide on a common position on which to lobby, it will not be able to formulate a common public position either. Public position-taking is also less costly than lobbying, which requires researching and retaining a lobbyist. These lower costs mean that significantly more firms and associations participate, and that the variation in position-taking data is correspondingly richer. Likewise, opponents to trade are less likely to be forced to self-censor, which is especially important for our claim that service industries do not generally oppose US PTAs.

On the empirical side, we emphasize that our position-taking data were collected independently. To the extent that our main findings are consistent across both sources of data, we increase the confidence that our main findings are not being driven by the peculiarities of one approach over another. We note several differences in the data collection on position-taking. These data are organized at the 6-digit NAICS level for each US PTA rather than at the 4-digit level, and

[34]We focus on producers rather than labor. Many labor unions representing service workers have lobbied against US trade agreements. This may suggest concerns about the offshoring of services jobs, as in Chase 2008, Walter 2010, 2017, Owen 2016, and Owen and Johnston 2017, or a more general anti-trade orientation among the US labor movement.

[35]The results are similar if we use a variable that divides the number of associations that lobbied in industry i by the number of firms and associations that lobbied in the same industry. We label this variable *Firm-centric Lobby* and we show the results in Table C.3 in the appendix.

firms' and associations' industries were classified independently. It is reassuring that our results are similar using totally independent classifications of firms and associations into industries.

We examine two outcome variables using the position-taking data, analogous to those defined above for the lobbying data. First, we code an industry as *Divided* over a particular agreement if at least one firm or association in the industry publicly supported the agreement and at least one firm or association publicly opposed it, as above. Second, we define a variable, *Positions separate*, as the share of all position-taking in an industry that was conducted by firms.

3.2 Independent variables and controls

Our initial main independent variable is a dummy for the service sector, *Services*. This dummy equals 1 if the industry falls outside of the agriculture, mining, or manufacturing NAICS industries beginning with the numbers 111-114, 211-212, and 31-33.[36] In some models we include intercepts at the subsectoral level – for example, for wholesale, retail, finance, and other business services – to examine variation within the service sector. We later investigate our primary theoretical mechanism – comparative advantage – as an alternative main explanatory variable. We describe this variable's construction and our reduced-form and IV approaches below.

We control for several variables at the more disaggregated industry level. First, it is common for industries to lobby on several agreements in the same report, especially where agreements were concurrently under consideration as with KORUS, and the Panama and Colombia PTAs. Thus, we include a variable counting the number of trade agreements for which clients lobbied or took positions in industry i (*PTA Total*). Second, we control for a variable counting the number of issue areas lobbied by clients in industry i (*Issue Area Total*). Clients in services lobbied for more PTAs and in a larger number of issue areas in comparison with clients in other sectors. Both variables are measured at the 4-digit NAICS level for the lobbying data and at the 6-digit NAICS level for the position-taking data. Our tables of results refer to these as the 'LDA controls.'

We consider two additional controls. First, we use the industry's sales in the 2012 economic census to control for the size of the industry. Second, using the same source, we control for the four-firm concentration ratio, which is commonly thought to be negatively correlated with the difficulty of collective action. Industries in which firms are relatively equal in size may face greater organizational challenges, as no major firms are available to lead collective efforts. Both variables are at the 4-digit NAICS level for the lobbying data and at the 6-digit NAICS level for the position-taking data. We refer to these as 'Industry controls.' Table C.5 has summary statistics.[37]

[36] Agricultural support activities (NAICS 115) and Support activities for mining (NAICS 213) are included among the services industries.

[37] Our main findings are similar if we use a different set of controls including total factor productivity and capital–labor ratio (data from Orbis 2014), though we lose a large number of observations. These results are reported in Table C.6 in the appendix.

3.3 Empirical Strategy

Our initial empirical specifications focus solely on identifying the differences between goods-producing and services-producing industries. To examine the extent of intra-industry disagreements, whether in lobbying or position-taking, we estimate the model:

$$\mathrm{Y}_{ij} = \alpha + \beta \cdot \mathrm{Services}_i + \boldsymbol{\gamma} \cdot \mathbf{x}_i + \delta_j + \epsilon_{ij},$$

where Y_{ij} represents the aforementioned outcome variables and the coefficient of interest is β, which we expect to be negative and statistically significant. α is the intercept; $\boldsymbol{\gamma}$ is a vector of coefficients for the measured control variables $\mathbf{x}_i$; δ_j are PTA intercepts, and ϵ_{ij} is the error term. We estimate ordinary least squares (OLS) models with robust standard errors.[38] Although the outcome *Divided* is dichotomous, we employ a linear model so that we may include PTA fixed effects and avoid the incidental parameter problem with generalized linear models.[39]

4 Results

4.1 Intra-industry divisions over US trade agreements

Table 4 reports our estimates of intra-industry divisions over trade agreements. The upper panel displays the lobbying data, which shows that when *Divided* is the outcome variable (Models 1–3), the coefficient for *Services* is negative and statistically significant in all models. The magnitude of the effect is not trivial: more than 13% of goods-producing industries that lobby on trade agreements evince divisions on those agreements. For services, this number is just above 0. Models 4–6 show the results when *Lobby separate* is the outcome variable. The coefficient for *Services* is negative (and significant), as expected. The magnitude of the effect is remarkable: according to the estimates in Column 4, the proportion of lobby spending from firms is 51% smaller in services than in goods.

In sum, these results are consistent with our claim that services are less fragmented than other sectors over preferential trade liberalization. Among the controls that are significant, *PTA*

[38] Clustering standard errors at the PTA level is problematic, given the small number of clusters. The results hold if we cluster standard errors at the industry level (see Table C.7 in the appendix) and if we use bootstrapped standard errors (see Table C.8 in the appendix).

[39] The results are virtually the same if we use a probit or logit model for *Divided* and fractional regressions, which are particularly suitable when the outcome variable ranges between 0 and 1, for *Lobby separate* and *Positions separate* (see Table C.9 in the appendix).

Table 4: Divisions in lobbying and position-taking

Data on lobbying:

	Divided			Lobby separate		
	(1)	(2)	(3)	(4)	(5)	(6)
Services	−0.130*	−0.133*	−0.085*	−0.513*	−0.486*	−0.429*
	(0.015)	(0.015)	(0.029)	(0.023)	(0.022)	(0.051)
Intercept	0.139*	0.115*	0.110	0.792*	0.876*	−0.521*
	(0.010)	(0.014)	(0.105)	(0.016)	(0.017)	(0.188)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,293	1,293	1,141	1,293	1,293	1,141
R^2	0.067	0.084	0.094	0.279	0.366	0.492

Data on position-taking:

	Divided			Positions separate		
	(1)	(2)	(3)	(4)	(5)	(6)
Services	−0.075*	−0.071*	−0.110*	−0.199*	−0.223*	−0.291*
	(0.007)	(0.007)	(0.012)	(0.013)	(0.014)	(0.015)
Intercept	0.094*	0.102*	0.137	0.710*	0.756*	−0.627*
	(0.006)	(0.015)	(0.096)	(0.007)	(0.027)	(0.106)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	4,277	3,509	1,856	4,277	3,509	3,049
R^2	0.025	0.032	0.197	0.057	0.119	0.285

Notes: * p-value<0.01. OLS with robust standard errors in parentheses. Unit of observation is industry PTA (4-digit NAICS for lobbying data and 6-digit NAICS for position-taking data). *Services* is the dummy capturing service industries. For lobbying data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in industry i while at least one other firm or association lobbied in favor of the trade agreement in that industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. For position-taking data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association publicly supported and at least 1 one firm or association publicly opposed an agreement and (ii) *Positions separate*, which is the share of all public positions taken by firms. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Total is negatively correlated with the outcomes, whereas *Area Total*, *Size*, and *4-firm Conc.* are positively correlated with the outcomes.[40]

These findings from the lobbying-based outcomes are replicated using the independently collected data on public position-taking, which are reported in the bottom panel of Table 4. Intra-industry divisions are substantially less likely to occur in the services industries (a rate of around 2.0%) in comparison with goods-producing industries (a rate of 9.4%). Similarly, position-taking in the services industries is generally more centered around industry associations than individual firms. We do highlight, however, that services firms are certainly still active in position-taking, they

[40]We re-run our main models using 2-digit NAICS dummies for different services industries. The results, reported in Table C.10 in the appendix, indicate that lower fragmentation in services seems to be driven primarily by the retail, professional services, finance, and transportation industries.

are just much more likely to be either accompanied or superseded by their industry associations than goods-producing firms.

Selection bias. A possible concern with these initial findings is that services are less likely to lobby in the first place, since certain services industries are relatively untradable because the industries produce goods that are intangible, perishable, or require face-to-face inter-personal contact. Services industries where this proximity burden remains high are unlikely to have any strong stake in trade agreements, and so are unlikely to lobby on these agreements. If so, there is a risk that our estimates of *Services* are biased downwards. To address this concern, we run a two-stage Heckman model.[41] In the first stage, we predict the probability that an industry will lobby for or against a PTA using the *entire sample* of NAICS 4-digit industries as a selection equation. In the second stage, we run our main models with *Divided* and *Lobby separate* as outcomes. This outcome equation accounts for the correlation between the error terms of the two equations through the inclusion of the inverse Mills ratio.

In order to correctly identify the two-stage selection model, we require an instrument that predicts lobbying but does not affect industrial disagreement. An obvious candidate is a variable capturing the tradability of the industry's output. That is, firms in non-tradable industries are unlikely to lobby over trade, and thus tradability can explain which industries select into trade politics. Moreover, tradability is unlikely to affect the degree of industrial fragmentation over trade under the assumption that industries that lobby over trade are only those that produce tradable outputs. To capture tradability at the 4-digit NAICS level, we use a dummy variable developed by Jensen and Kletzer.[42]

Table C.11 in the appendix reports the results of the Heckman models. The coefficient of *Services* remains negative and significant across all model specifications except Model 3. Note that we have data on tradability for a restricted number of observations in the selection equation (fewer than 800), and so the results are not directly comparable.[43] Importantly, the coefficients for both *Services* and *Tradability* have the expected sign in the selection equation – negative and positive, respectively. The inverse Mills ratios is only significant in Models 4–6, implying that the selection model is not necessary in models in which *Divided* is the outcome.[44] We therefore find no evidence that selection bias affects our results.

[41] Heckman (1979).

[42] Jensen and Kletzer 2010. Industry tradability is characterized according to the geographic concentration of the 6-digit NAICS industry in the United States. When production exceeds local demand, the excess supply must be either consumed or exported to another region. Thus, low concentration implies low tradability. An advantage of this approach is that it can be applied to services as well as goods.

[43] Limited variation in the restricted sample explains why our *Divided* model results are weaker.

[44] As expected, tradability is completely orthogonal to the two outcomes, i.e. $\rho < 0.1$

4.2 The role of comparative advantage

Our explanation for sectoral differences in trade policy positions emphasizes the large comparative advantage enjoyed by the US in services in comparison with agriculture and manufacturing. To further evaluate this logic, we estimate our main models including a variable that captures the strength of the comparative advantage in industry *i*. Our industry-level measure is constructed based on US import and export values at the 4-digit NAICS level for goods[45] and the Extended Balance of Payments (EBOPS) classifications for services.[46] We take average import and export values from the 1990s, so that comparative advantage is measured prior to most US PTAs. Our measure of comparative advantage, *US Net-exporting*, is a dummy variable scoring one if a US industry *i* is net-exporting relative to the world.[47] We expect that *US Net-exporting* will be negatively associated with *Divided*, *Lobby separate*, and *Positions separate*.

We first examine the correlation between *Services* and *US Net-exporting*, which is 0.63 (s.e.=0.03) for the lobbying data and 0.62 (s.e.=0.01) for public position-taking. For some service industries such as retail, professional services, and management of companies, *US Net-exporting* equals one. A notable exception is construction, which is always zero. Given the high correlation between *Service* and *US Net-exporting*, which is in line with our theory, we do not include both covariates at the same time and show the results with only *US Net-exporting* included.[48]

The results appear in Table 5. Examining the results on lobbying first, where *Divided* is the outcome (Models 1–3), the coefficient for *US Net-exporting* is negative and statistically significant. Moreover, *US Net-exporting* is always negative and significant when *Lobby separate* is the dependent variable (Models 4–6). The magnitude of the effect is substantial, although smaller than for *Services*. In our best model specifications, comparative advantage industries are 10% less likely to be divided over trade agreements, and 28% less likely to lobby as firms. These findings are confirmed when we use data on public position-taking. In sum, these results are consistent

[45]The goods trade data are from Comtrade.

[46]The services data are from the World Bank's Trade in Services Database, available at `https://data.worldbank.org/data-catalog/trade-in-services`. We use EBOPS classifications that roughly equate to 2-digit NAICS services industries. In analyzing goods trade, researchers have access to monthly data on US goods exports and imports for over 8,000 product categories. In services, the US trade statistics cover only around 40 categories annually since 2006, and fewer categories prior to that. For the vast majority of US PTA partner countries, there is no disaggregated bilateral services trade data prior to 2006. The mismatch in the level of aggregration between the services and goods data, as well as the relative coarseness of the services data, force us to adopt a summary proxy for comparative advantage.

[47]Our results are similar if we use an ordinal measure of comparative advantage (see Table C.12). While an RCA measure – ideally one capturing US RCA relative to the PTA partner – would be preferable, we are unable to build such a measure at the 2-digit level due to the aforementioned data limitations.

[48]The results are similar if we include *Service*, the coefficient of which is always negative and significant.

Table 5: The role of comparative advantage

Data on lobbying:

	Divided			Lobby separate		
	(1)	(2)	(3)	(4)	(5)	(6)
US Net-exporting	−0.094*	−0.098*	−0.075	−0.245*	−0.275*	−0.071*
	(0.017)	(0.015)	(0.018)	(0.028)	(0.025)	(0.023)
Intercept	0.119*	0.110*	0.224*	0.665*	0.801*	0.797*
	(0.016)	(0.016)	(0.054)	(0.022)	(0.024)	(0.119)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,193	1,193	1,095	1,193	1,193	1,095
R^2	0.037	0.044	0.103	0.057	0.191	0.463

Data on position-taking:

	Divided			Positions separate		
	(1)	(2)	(3)	(4)	(5)	(6)
US Net-exporting	−0.040*	−0.041*	−0.048*	−0.098*	−0.119*	−0.128*
	(0.008)	(0.008)	(0.013)	(0.013)	(0.015)	(0.015)
Intercept	0.085*	0.093*	0.121	0.636*	0.735*	−0.332*
	(0.007)	(0.016)	(0.088)	(0.009)	(0.029)	(0.109)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	4,253	3,489	2,027	4,253	3,489	3,313
R^2	0.008	0.029	0.138	0.038	0.096	0.170

Notes: * p-value<0.01. OLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS for lobbying data and 6-digit NAICS for position-taking data). *US Net-exporting* is the dummy capturing comparative advantage. For lobbying data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. For position-taking data, the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association publicly supported and at least one firm or association publicly opposed an agreement and (ii) *Positions separate*, which is the share of all public positions taken by firms. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

with our proposed mechanism: US industries with a comparative advantage are more likely to homogeneously support trade liberalization.[49]

Offshorability. Our theory suggests that industrial disagreement is lower in services than in merchandise, in part because a strong comparative advantage reduces firms' incentives to offshore production. To account for this mechanism, we rely on a variable capturing offshorability, which is the proportion of vertical sales to the US over the total amount of MNE activities.[50] The first thing to note is that *Offshorability* is highly negatively correlated with *Services* ($\rho = -0.54$). In fact, the

[49]The results hold if we cluster standard errors at the industry level (see Table C.14 in the appendix) and if we use bootstrapped standard errors (see Table C.13 in the appendix).

[50]The data correspond to the year 2014 and are derived from publicly available BEA statistics.

share of vertical sales is 13% for merchandise, whereas it is 5% for services. Second, *Offshorability* is negatively correlated with *Net-exporting* ($\rho = -0.33$). The share of vertical sales is 13% for comparative disadvantage industries, whereas it is 7% for comparative advantage industries.

Table C.15 reports the results of models including both *US Net-exporting* and *Offshorability*. The coefficient of *US Net-exporting* remains negative and significant throughout all models, whereas the coefficient of *Offshorability* has the expected positive sign, though it is significant only in Models 3 and 4. Note that we are unable to run the models with 'Industry controls' for two reasons: we lose a large number of observations and *Offshorability* is highly correlated with *Sales*. However, Models 2 and 4 both include agreement fixed effects.

4.3 Instrumental variables

Our reduced-form estimates show a strong association between patterns of lobbying and comparative advantage. While we have tried to address confounding factors and selection bias, this association should not be interpreted causally. Two threats to identification stand out. First, trade patterns are endogenous to the presence or absence of trade agreements. Though we measure comparative advantage prior to most agreements, it may be that firms anticipate the gains from trade before the actual negotiation and implementation of PTAs. In other words, firms may increase exports in comparative advantage industries knowing that they will be able to shape trade policy in the future through lobbying and political connections. Since we seek to explain industrial fragmentation and not lobbying *per se*, this threat is somewhat mitigated yet it remains a concern. Second, omitted variables may bias our estimates. Unfortunately, potentially relevant confounders such as the degree of product differentiation are simply unavailable for services industries. As a result, all relevant confounders that could affect both outcomes and the main independent variable represent a possible threat to identification.

We use an IV approach to address these concerns. Specifically, we instrument for industry-level *US Net-exporting* using trade data from U.K. trade balances at the 4-digit NAICS level for goods[51] and the EBOPS classifications for services.[52] That is, we construct net-exporting indicators for U.K. industries that we use as instruments for US export competitiveness.[53] We expect that the U.K. and the US will have similar comparative advantages across both goods and services owing to their similar factor endowments, industrial structure, and economic institutions.[54] We also assume that U.K. industry-level trade balances are plausibly exogenous to industrial fragmentation among US firms lobbying over trade agreements except through their correlations with US trade balances.

[51]The goods trade data are from Comtrade.

[52]The services data are from the World Bank's Trade in Services Database. We use the EBOPS classifications that are roughly equivalent to 2-digit NAICS services industries.

[53]Our identification strategy is similar to that of Autor, Dorn, and Hanson (2013), who use Chinese exports to other developed countries to instrument for Chinese exports to the US

[54]The U.K. was the second-largest exporter of services in the 1990s.

As with the US data, we employ average import and export values during the 1990s. Similar to *US Net-exporting*, our instrument *U.K. Net-exporting* scores one if U.K. exports to the rest of the world are larger than U.K. imports from the rest of the world for a specific industry i.[55] Formally, we estimate the following two-stage model. The first stage is:

$$\text{US Net-exporting}_{ij} = \alpha_1 + \beta_1 \cdot \text{U.K. Net-exporting}_i + \boldsymbol{\gamma}_1 \cdot \mathbf{x}_i + \delta_j + \epsilon_{1ij},$$

The second stage is:

$$\text{Y}_{ij} = \alpha_2 + \beta_2 \cdot \text{US } \widehat{\text{Net-exporting}}_i + \boldsymbol{\gamma}_2 \cdot \mathbf{x}_i + \delta_j + \epsilon_{2ij},$$

where *U.K. Net-exporting* is the instrument, US $\widehat{\text{Net-exporting}}$ is the instrumented variable, and all the other variables are the same as in the reduced-form models. We expect that β_1 will be positive and β_2 negative.

To correctly identify our IV models, four assumptions have to hold. First, *U.K. Net-exporting* has to be a strong predictor of *US Net-exporting*. The correlation between the two is 0.77, and it is as high as 0.89 for services, which is in line with Figure 1. Moreover, Table C.16 in the appendix shows the first stage of our IV regressions: the sign of *U.K. Net-exporting* is always positive and significant, and the F-test is always substantively higher than 10. The measure of comparative advantage from other industrialized economies such as France and Germany has a significantly lower correlation with *US Net-exporting*.[56]

Second, while some industries may not be affected by our instrument, those that are should be impacted in the same direction. We have no reason to believe that the U.K. being a net exporter will have effects that are heterogeneous in sign across different industries. The third assumption is that our instrument should be as good as random. While comparative advantage does not vary randomly across industries, Table C.17 in the appendix shows that *U.K. Net-exporting* is weakly correlated with many confounders with the exception of *ln(Sales)*, which we include as a control in some models. While not conclusive, these low correlations provide reassurance of the validity of our instrument.

Fourth, our instrument must meet the exclusion restriction assumption, i.e. it has to affect the outcome only through the instrumented variable. While there is no test to assess the validity of this assumption, we can discuss possible threats to the exclusion restriction and their implausibility. Importantly, U.K. firms may participate in lobbying activities related to US trade agreements. Indeed, comparative advantage should facilitate the entry of U.K. firms into the US market. Once in the US market, U.K. firms, and foreign firms more generally, may find it easier to lobby through

[55] We considered netting out U.K. trade with the US, but bilateral country-industry trade data (as opposed to country-industry global imports and exports data) are incomplete for services industries in the 1990s.

[56] The correlation between France and US comparative advantage is close to zero for services, whereas the correlation between Germany and US comparative advantage is 0.3.

Table 6: Instrumental variable approach for comparative advantage

Second-stage results for data on lobbying

	Divided			Lobby separate		
	(1)	(2)	(3)	(4)	(5)	(6)
US Net-exporting	−0.066*	−0.076*	−0.005	−0.505**	−0.556**	−0.182**
	(0.031)	(0.032)	(0.042)	(0.061)	(0.055)	(0.049)
Intercept	0.101**	0.097**	−0.283*	0.844**	0.998**	−0.678**
	(0.023)	(0.023)	(0.093)	(0.046)	(0.043)	(0.117)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,179	1,179	1,081	1,179	1,179	1,081
K-P LM statistic	230.16**	224.70**	142.63**	230.16**	224.70**	142.63**
Wald F-statistic	460.06**	444.19**	328.23**	460.06**	444.19**	328.23**

Second-stage results for data on position-taking

	Divided			Positions separate		
	(1)	(2)	(3)	(4)	(5)	(6)
US Net-exporting	−0.166**	−0.148**	−0.221**	−0.512**	−0.626**	−0.523**
	(0.028)	(0.034)	(0.055)	(0.051)	(0.070)	(0.070)
Intercept	0.159**	0.194**	0.290**	0.881**	1.215**	−0.324**
	(0.018)	(0.036)	(0.096)	(0.031)	(0.075)	(0.123)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	4,253	3,489	2,027	4,253	3,489	3,313
K-P LM statistic	373.42**	235.75**	138.13**	373.42**	235.75**	201.82**
Wald F-statistic	37.56**	15.53**	11.11**	102.22**	82.86**	43.28**

Notes: ** p-value<0.01; * p-value<0.05. Two-stage least squares (2SLS) with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS for lobbying data and 6-digit NAICS for position-taking data). *US Net-exporting* is the dummy capturing US comparative advantage; *U.K. Net-exporting* is the instrument (the first stage is reported in Table C.16). For lobbying data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. For position-taking data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association publicly supported and at least 1 one firm or association publicly opposed an agreement and (ii) *Positions separate*, which is the share of all public positions taken by firms. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

associations, since they may lack political connections or familiarity with the lobbying process. We directly address this objection by noting that we have no U.K. firm participating in lobbying activities related to PTAs in our sample.

As in Autor, Dorn, and Hanson (2013), demand shocks may be correlated for US and U.K. products in ways that may affect both trade flows and trade policies. If so, our results would be driven by consumers' preferences rather than producers' interests. In our case, this is less

of a concern, since our measure of comparative advantage captures both imports and exports.[57] Furthermore, it may be that technological shocks affect some US and U.K. industries. For example, they may have a negative impact on labor-intensive industries that affects both trade flows and lobbying behavior. However, this concern is mitigated by the fact that we use baseline values of imports and exports in the pre-PTA period (the 1990s).[58]

To further probe the validity of the exclusion restriction, we implement a test for plausibly exogenous instruments.[59] We leave the details of this test to Appendix B. Here we note that even with a substantial departure from the perfect instrument assumption, i.e. relaxing the exclusion restriction assumption, we find that our main results hold.

Table 6 reports the results of the IV regressions. In every model the sign of *US Net-exporting* is negative. Strikingly, *US Net-exporting* remains significant even when we include PTA fixed effects, except for Model 3 using the lobbying data.[60] This result is particularly remarkable, since PTA fixed effects reduce much of the variation of the instrument, which does not vary across trade partners. Importantly, standard diagnostic tests confirm the validity of our instrument. Specifically, the Kleibergen-Paap LM statistic shows that our instrument is *not* under-identified, whereas the Cragg-Donald Wald F statistic shows that our instrument is *not* weak.[61] The IV regressions confirm our previous findings. The magnitude of the estimates effects of net exporting in the IV estimates is larger in some models than in the OLS estimates.

5 Industry Trade Advisory Committees

To corroborate the results of our empirical analysis, we qualitatively examine another important form of industrial participation in trade policymaking – ITACs. ITACs are public–private working groups designed to give different industries the opportunity to express support for, and voice concerns over, specific elements of US trade policy, including PTAs. In this section, we analyze all publicly available ITAC reports on every trade agreement signed by the US.[62] For each agreement, there are up to 22 ITACs representing all sectors of the economy, including 16 committees in goods

[57] Autor, Dorn, and Hanson 2013 confirm the robustness of their instruments using a measure of comparative advantage in a gravity model.

[58] China's entry into the WTO in 2001 is not a threat to our identification strategy using data from this time.

[59] As suggested by Conley, Hansen, and Rossi 2012.

[60] Our results are similar if we use an ordinal measure of comparative advantage (see Table C.18).

[61] The (unreported) Anderson-Rubin Wald test shows that orthogonality conditions are valid, i.e. the coefficients of the endogenous regressor in the structural equation are not equal to zero. Indeed, when we estimate the reduced form of the equation with the instrument as the regressor, its coefficient is always negative and significant (results available upon request).

[62] Reports are available at `https://ustr.gov/trade-agreements/free-trade-agreements`.

and services, and six Agriculture Trade Advisory Committees (ATACs). (Throughout, we use the acronym ITACs to refer to both ATACs and ITACs.) ITAC reports must include an advisory opinion as to whether the agreement provides for equity and reciprocity within the committee's covered sector. Committee reports may include both majority and minority views.

We assess the reports along two dimensions. First, we search for whether each ITAC supported or opposed a specific trade agreement, and made a qualitative assessment of the degree of support: strong support, weak support (e.g., the committee concludes that the economic benefits are trivial due to the limited importance of the trade partner), or no support. As evidence of "no support," the reports often include statements such as: "FTAs do nothing to advance the principal negotiating objectives of the sugar and sweetener industry."[63]

Second, we looked for evidence that each industry was united in its support for (or opposition to) the specific trade agreements. ITACs report majority and minority views as well as any discordant voices in the executive summary or "Advisory Committee Opinion on Agreement" sections. We assessed the levels of support as either unified (i.e., there was a consensus either in favor of or against the agreement) or divided (i.e., there were majority and minority views and/or discordant opinions on the agreement). Table 7 summarizes the results of this analysis.[64]

Our first finding is that the service sector was overwhelmingly supportive of every US trade agreement. Virtually every report drafted by an industry in the service sector contains positive language: "Overall, the Committee believes that the US-Australia FTA meets the Committee's objective of achieving new and expanded trading opportunities."[65] Where service-related ITACs raise complaints about parts of an agreement, it is always to lament that it does not enhance liberalization as much as the industry had hoped. For instance, in relation to the Australia-US trade agreement, the report complains about the lack of liberalization of Australian investment protection.[66] Similarly, the wholesale and retail trade industries have complained when PTAs do not enhance liberalization in the textile and sugar industries, which explains their weaker support. We found no instance in which the service sector asked for protectionist measures in these reports.

The results for the agricultural and manufacturing sectors are much different. Some industries are mostly against preferential liberalization regardless of the US trade partner, especially in certain agricultural industries. Indifference and opposition are also seen in manufacturing industries including Aerospace, Ferrous Metal, Footwear, Textile and Apparel, and Steel. For some

[63] `https://ustr.gov/archive/assets/Trade_Agreements/Bilateral/Australia_FTA/Reports/asset_upload_file553_3390.pdf`.

[64] Not every industry prepared a report for all trade agreements, which explains the missing information. The breakdown of the industries by sector is reported in the appendix (Tables C.20, C.21, and C.22.

[65] `https://ustr.gov/archive/assets/Trade_Agreements/Bilateral/Australia_FTA/Reports/asset_upload_file118_3412.pdf`.

[66] Ibid.

Table 7: Industry Trade Advisory Committees: Results

Sector	Divided	No support	Weakly support	Strongly support
Agriculture	47%	16%	31%	53%
Manufacturing	34%	13%	38%	50%
Services	6%	0%	9%	91%

Notes: Division over or support for trade agreements is inferred by the authors from the ITAC reports.

of these industries, notably for Aerospace, we coded the support for preferential liberalization as generally weak since the ITAC argued that the importance of the trade partner market was limited. In other cases, such as Steel or Textile and Apparel, there are clear concerns about competition from markets with cheaper labor.

The analysis of the ITAC reports reveals that the service sector is overwhelmingly unified in its position on every trade agreement. We found no evidence of dissenting opinions within the service-related ITACs. Interestingly, reports from the service sector often mention the importance of the agreement for small to medium enterprises. For instance, with respect to trade facilitation provisions, the Services and Financial Industries ITAC's report on the Trans-Pacific Partnership argues that "These measures should help reduce time, cost, and complexity of trade for companies of all sizes, and particularly small businesses".[67] The reports related to the agreements with Bahrain, Chile, Colombia, South Korea, and Panama contain similar statements. In sum, a qualitative analysis of these reports provides ample evidence that the service sector is unified in pushing enthusiastically for these trade agreements, regardless of the US trade partner.

The same does not hold for industries in the agriculture and manufacturing sectors. Indeed, some industries are consistently divided. For instance, the ITAC on the Sweeteners industry always reports both majority and minority views. The ITAC on the Footwear and Textile and Apparel industries often reports "divergent opinions held by the different sectors of this industry."[68] Even these industries, which have a mostly unified position on trade agreements, sometimes face fragmentation for at least one of the trade agreements. For instance, the Tobacco industry is unified, but often displays lukewarm support for preferential liberalization, while the Steel industry is always unified in opposing the formation of trade agreements. Thus the ITAC reports confirm that the services sector has consistently been the most pro-trade sector in the US, articulating in ITAC reports its strong support for all US trade agreements.

[67] `https://ustr.gov/sites/default/files/ITAC-10-Services-and-Finance-Industries.pdf`.

[68] For instance, see `https://ustr.gov/archive/assets/Trade_Agreements/Bilateral/Chile_FTA/Reports/asset_upload_file480_4953.pdf`.

5.1 Services' trade policy objectives: text analysis of ITAC reports

To document the preferences of service actors and to compare them with firms in goods industries, we conducted a text analysis of the ITAC reports in the services, goods, and agricultural sectors.[69] We expect US service firms to strongly favor the market liberalization of US trade partners due to the high levels of service sector restrictions in foreign countries relative to the US, and the new market opportunities for relatively competitive US service providers. We began by searching for statements affirming that the particular PTA contains favorable provisions to increase market access.[70] We label this search *market access*. We also searched for statements that reveal disappointment in the lack of provisions to further liberalize host markets and remove restrictions.[71] We label this search *disappointed*.

Figure 5 reports the results of the text analysis. In line with our expectations, the ITAC reports by services industries include the largest number of statements praising PTAs for improving market access. Service ITACs are also more likely to express regret over the absence of more ambitious market-enhancing provisions.

We also expect the services sector to favor trade-related provisions such as regulations to protect investment, national treatment clauses, and provisions allowing the free movement of people, rather than tariffs. Figure 6 demonstrates findings largely in line with these expectations. The results of queries for "tariff(s)" and "investment" are particularly striking. While the service sector does not mention tariffs at all, the frequency of the word "investment" is overwhelmingly higher for services than for agriculture and manufacturing. Moreover, "movement of personnel," "national treatment," and "government procurement" are mentioned substantially more in reports issued by services than in those issued by the agriculture and manufacturing industries.

While purely descriptive, our text analysis suggests that services differ from agriculture and manufacturing in their assessment of PTAs. In general, we confirm that trade-related provisions included in PTAs are of significant interest to services. We find that: (i) services are particularly interested in market access for investment, which is consistent with the proximity burden in international services delivery and (ii) services are interested in the inclusion of trade-related provisions in PTA treaties rather than in tariff reduction. The evolution of trade policy toward deeper, more comprehensive agreements appears to reflect the interests of the service sector.

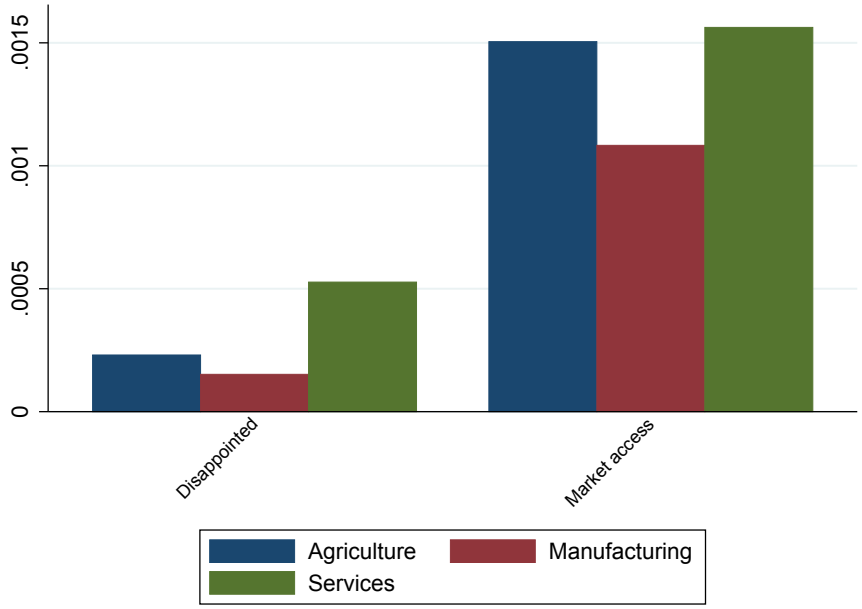
---

[69] We implemented text analysis using the statistical software R.

[70] For example, "the Agreement creates the framework for improved markets" or "the Agreement creates significant new opportunities for market access." To make the text analysis comparable across all three sectors, we divided the word frequency by the total number of words in each sector, e.g. in all the reports issued by services industries.

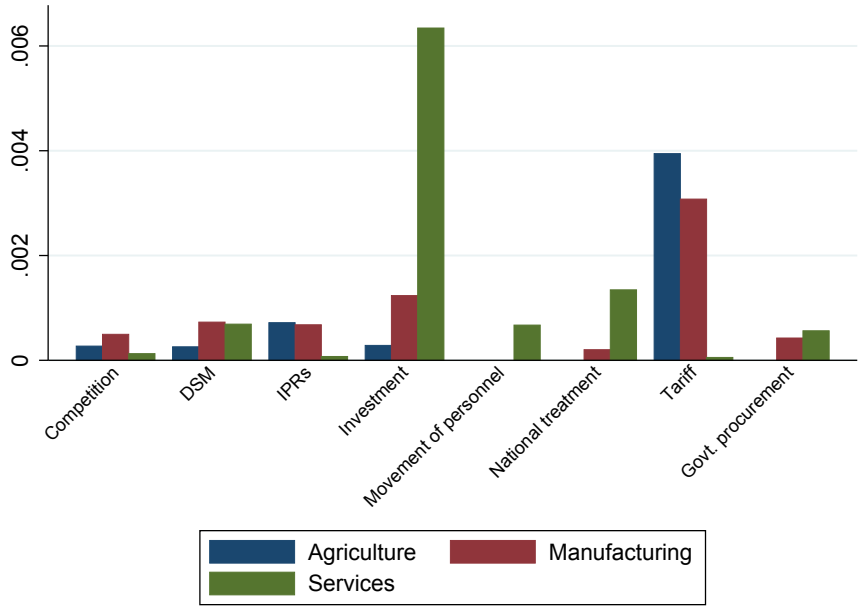
[71] For instance, we capture statements like "the Committee is disappointed by the absence of provisions that will facilitate business travel" or "The Committee remains disappointed by provisions that could allow governmental restrictions."

Figure 5: Text Analysis: Frequency of Words Capturing Market Access or Lack Thereof



Note: The figure displays the ratio of word frequency relative to the total number of words for each sector's ITAC reports.

Figure 6: Text Analysis: Frequency of Words Capturing Tariffs and Trade-related Provisions



Note: The figure displays the ratio of word frequency relative to the total number of words for each sector's ITAC reports.

6 Conclusion

Given the preponderance of attention accorded to trade's economic causalities, it may be somewhat puzzling that US trade liberalization has proceeded with relative aplomb over the past 25 years. The US has signed 13 PTAs with 19 countries since 1994 – agreements that have introduced competition from abroad by cutting tariffs on manufactured goods and encouraging firms to locate production abroad. Moreover, a striking feature of US trade agreements is their *depth*: along with tariff reductions, US PTAs include provisions that protect investment and intellectual property rights while liberalizing trade and investment in services. Our paper provides insights into this wave of deep liberalization by focusing on the trade policy objectives and industrial cohesion of services, the lion's share of the US economy and a growing share of US exports.

We examine industrial divisions over trade liberalization using newly assembled data from a variety of sources. We supplement LDA data on lobbying expenditures related to US trade agreements with original details on the direction of lobbying, for nearly all firms and associations engaging in lobbying activities. We also employ a complementary dataset on firm and association position-taking on US free trade agreements. Additionally, qualitative and text analysis of ITAC reports reveal industries' trade liberalization objectives as well as instances of industrial fragmentation.

We use these data to generate a rich set of new observations regarding political cleavages that illuminate the complexities of modern trade politics. To begin with, we document for the first time that services account for a large chunk of lobbying expenditure related to trade agreements. The service sector's strong interest in trade agreements is particularly important given the relatively low number of firms and associations that formally lobby for or against trade agreements in the first place. Moreover, we show that the service sector is overwhelmingly in favor of preferential liberalization, and that support for trade agreements is significantly more widespread across the services industries compared with all other sectors.

Our analysis therefore makes three specific contributions to the literature. First, we show that industrial fragmentation over preferential trade liberalization is minimal in services compared to the other sectors of the economy. The service sector tends to lobby in favor of trade agreements through associations rather than through individual firms likely because preferences over trade liberalization are relatively homogeneous across different types of firms. Second, we examine our main mechanism – the lofty US comparative advantage in most services – and find evidence that it helps explain the lack of fragmentation over trade policy. We find that industries with high export potential are more likely to lobby homogenously in favor of PTAs compared to less competitive industries.

Third, the results of our paper help to explain the main political cleavages and policy directions in the current era of globalization by highlighting the economic forces undergirding support for (and backlash to) trade liberalization. By examining the trade policy objectives and lobbying activities of heretofore neglected service firms, our paper demonstrates how the political

participation of trade's likely winners differs in systematic ways from less competitive industries. In so doing, we offer new insights into the current polarization of many developed economies. Moreover, our paper suggests that protectionist rhetoric directed at globalization's forgotten may not portend a protectionist policy turn, at least in the short term: Trade's winners are politically cohesive and engaged.

References

Allee, Todd, Manfred Elsig, and Andrew Lugg. 2017. Is the European Union Trade Deal with Canada New or Recycled? A Text-as-Data Approach. *Global Policy* 8 (2):246–52.

Antras, Pol, and Elhanan Helpman. 2004. Global Sourcing. *Journal of Political Economy* 112 (3):552–580.

Autor, David, David Dorn, Gordon Hanson, and Kaveh Majlesi. 2016. Importing Political Polarization? The Electoral Consequences of Rising Trade Exposure. *National Bureau of Economic Research Working Paper* .

Autor, David, David Dorn, and Gordon H Hanson. 2013. The China Syndrome: Local Labor Market Effects of Import Competition in the United States. *American Economic Review* 103 (6):2121–2168.

Baccini, Leonardo, Pablo Pinto, and Stephen Weymouth. 2017. The Distributional Consequences of Preferential Trade Liberalization: Firm-Level Evidence. *International Organization* Forthcoming.

Balassa, Bela. 1965. Trade Liberalisation and "Revealed" Comparative Advantage. *The Manchester School* 33 (2):99–123.

Bernard, Andrew B, Jonathan Eaton, J Bradford Jensen, and Samuel Kortum. 2003. Plants and Productivity in International Trade. *The American Economic Review* 93 (4):1268–1290.

Bernard, Andrew B, J Bradford Jensen, Stephen J Redding, and Peter K Schott. 2012. The Empirics of Firm Heterogeneity and International Trade. *Annu. Rev. Econ.* 4 (1):283–313.

Bombardini, Matilde, and Francesco Trebbi. 2012. Competition and Political Organization: Together or Alone in Lobbying for Trade Policy? *Journal of International Economics* 87 (1):18–26.

Borchert, Ingo, Batshur Gootiiz, and Aaditya Mattoo. 2014. Policy Barriers to International Trade in Services: Evidence from a New Database. *The World Bank Economic Review* 28 (1):162–188.

Broz, J Lawrence, and Seth H Werfel. 2014. Exchange Rates and Industry Demands for Trade Protection. *International Organization* 68 (2):393–416.

Cameron, Maxwell, and Brian W. Tomlin. 2000. *The Making on NAFTA: How the Deal Was Done*. New York: Cornell University Press.

Chase, Kerry A. 2003. Economic interests and regional trading arrangements: The case of NAFTA. *International Organization* 57 (1):137–174.

———. 2008. Moving Hollywood Abroad: Divided Labor Markets and the New Politics of Trade in Services. *International Organization* 653–687.

Conley, Timothy G., Christian B. Hansen, and Peter E. Rossi. 2012. Plausibly Exogenous. *The Review of Economics and Statistics* 94 (1):260–272.

De Figueiredo, John M, and Brian Kelleher Richter. 2014. Advancing the Empirical Research on Lobbying. *Annual Review of Political Science* 17:163–185.

Dür, Andreas, Leonardo Baccini, and Manfred Elsig. 2014. The Design of International Trade Agreements: Introducing a New Dataset. *Review of International Organization* 9 (3):353–375.

Feenstra, Robert C., and Akira Sasahara. 2017. The China Shock, Exports and U.S. Employment: A Global Input-Output Analysis. *Working Paper 24022*, National Bureau of Economic Research.

Feigenbaum, James J, and Andrew B Hall. 2015. How Legislators Respond to Localized Economic Shocks: Evidence from Chinese Import Competition. *The Journal of Politics* 77 (4):1012–1030.

Francois, Joseph, and Bernard Hoekman. 2010. Services Trade and Policy. *Journal of Economic Literature* 48 (3):642–692.

Gervais, Antoine, and J Bradford Jensen. 2013. The Tradability of Services: Geographic Concentration and Trade Costs. *Tech. rep.*, National Bureau of Economic Research.

Goldstein, Rebecca, and Hye Young You. 2017. Cities as Lobbyists. *American Journal of Political Science* .

Gootiiz, Batshur, and Aaditya Mattoo. 2015. Regionalism in Services: A Study of ASEAN. *The World Economy* .

Heckman, James. 1979. Sample Selection Bias as a Specification Error. *Econometrica* 47 (1):153–61.

Helpman, Elhanan, Marc J Melitz, and Stephen R Yeaple. 2004. Export versus FDI with Heterogeneous Firms. *The American Economic Review* 94 (1):300–316.

Inglehart, Ronald, and Pippa Norris. 2017. Trump and the Populist Authoritarian Parties: The Silent Revolution in Reverse. *Perspectives on Politics* 15 (2):443–454.

Jensen, J Bradford. 2011. *Global Trade in Services: Fear, Facts, and Offshoring*. Peterson Institute for International Economics Washington, DC.

Jensen, J Bradford, and Lori G Kletzer. 2010. Measuring Tradable Services and the Task Content of Offshorable Services Jobs. In *Labor in the new economy*, 309–335. University of Chicago Press.

Jensen, J. Bradford, Dennis P. Quinn, and Stephen Weymouth. 2015. The Influence Firm Global Supply Chains and Currency Undervaluations on U.S. Trade Disputes. *International Organization* 69 (4):913–947.

———. 2017. Winners and Losers in International Trade: The Effects on US Presidential Voting. *International Organization* 71 (3):423–458.

Kim, In Song. 2017. Political Cleavages within Industry: Firm-level Lobbying for Trade Liberalization. *American Political Science Review* .

Kim, Soo Yeon, and Mark S Manger. 2016. Hubs of Governance: Path Dependence and Higher-Order Effects of Preferential Trade Agreement Formation. *Political Science Research and Methods* 1–22.

Madeira, Mary Anne. 2016. New Trade, New Politics: Intra-industry Trade and Domestic Political Coalitions. *Review of International Political Economy* 23 (4):677–711.

Manger, Mark S. 2009. *Investing in Protection: The Politics of Preferential Trading Agreements between North and South*. New York: Cambridge University Press.

Manger, Mark S. 2012. Vertical Trade Specialization and the Formation of North-South PTAs. *World Politics* 64 (4):622–658.

Mansfield, Edward D, and Diana C Mutz. 2013. US versus Them: Mass Attitudes Toward Offshore Outsourcing. *World Politics* 65 (04):571–608.

Margalit, Yotam. 2011. Costly Jobs: Trade-related Layoffs, Government Compensation, and Voting in US Elections. *American Political Science Review* 105 (01):166–188.

Melitz, Marc. 2003. The impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity. *Econometrica* 71 (6):1695–1725.

Milner, Helen V. 1987. Trading Places: Industries for Free Trade. *World Politics* 40 (3):350–376.

———. 1988. *Resisting Protectionism: Global Industries and the Politics of International Trade*. Princeton University Press.

Nordås, Hildegunn Kyvik, and Dorothée Rouzet. 2015. The impact of services trade restrictiveness on trade flows .

Owen, Erica. 2016. Exposure to Offshoring and the Politics of Trade Liberalization: Debates and Votes on Free Trade Agreements in the U.S. House of Representatives, 2001-2006. *International Studies Quarterly* .

Owen, Erica, and Noel Johnston. 2017. Occupation and the Political Economy of Trade: Job Routineness, Offshorability and Protectionist Sentiment.

Plouffe, Michael. 2017. Firm Heterogeneity and Trade-Policy Stances Evidence from a Survey of Japanese Producers. *Business and Politics* 19 (1):1–40.

Quinn, Dennis P, and A Maria Toyoda. 2008. Does Capital Account Liberalization Lead to Growth? *Review of Financial Studies* 21 (3):1403–1449.

Rho, Sungmin, and Michael Tomz. 2017. Why Don't Trade Preferences Reflect Economic Self-Interest? *International Organization* 71 (1):85–108.

Roy, Martin. 2016. Charting the Evolving Landscape of Services Trade Policies: Recent Patterns of Protection and Liberalization. In *Research Handbook on Trade in Services*. Edward Elgar Publishing.

Roy, Martin, Juan Marchetti, and Hoe Lim. 2007. Services liberalization in the new generation of preferential trade agreements (PTAs): how much further than the GATS? *World Trade Review* 6 (2):155–192.

Walter, Stefanie. 2010. Globalization and the Welfare State: Testing the Microfoundations of the Compensation Hypothesis. *International Studies Quarterly* 54 (2):403–426.

———. 2017. Globalization and the Demand-Side of Politics: How Globalization Shapes Labor Market Risk Perceptions and Policy Preferences. *Political Science Research and Methods* 5 (1):55–80.

Wilkerson, John, David Smith, and Nicholas Stramp. 2015. Tracing the Flow of Policy Ideas in Legislatures: A Text Reuse Approach. *American Journal of Political Science* 59 (4):943–56.

You, Hye Young. 2017. Ex Post Lobbying. *The Journal of Politics* 79 (4).

Appendix A Data Collection

Below we detail the steps that we implemented to collect and extract data from these reports.

1. For each trade agreement signed by the US with a trade partner, we identify the corresponding implementation bill number in both the House of Representatives (H.R.) and the Senate. Note that both the H.R. and Senate report the *same* lobbying data.

2. We searched the entire sample of lobbying reports to find those that mention the bill title, bill number, and/or the name of the US PTA partner, e.g., Australia, Colombia, etc. Using this query we were able to find 1,360 reports. Note that our search *does not* include amendments to previously filed reports.

3. We searched all reports that contain either "free trade agreement" or "FTA" in Section 16. Of the original 1,360 reports, 924 met this condition. For the sake of comparison, the Center for Responsive Politics database (2014), available at `https://www.opensecrets.org/resources/create/`, includes 709 LDA lobbying reports on US trade agreements.[72]

4. We employed two research assistants (RAs) to manually code the content of the LDA reports. The key information includes the name of the firm, the firm's contact details, year in which the report was filled, amount of lobbying expenditure (in USD), trade agreements for which the firm lobbies, and other (non-trade) issue areas for which the firm lobbies. All of this information is clearly specified in the main fields of the lobbying reports, which minimizes the probability of a coding mistake. We also performed inter-coder reliability tests on a random subsample of reports and found that our RAs consistently coded the information included in each report in the same way.

Another goal of this project is to identify the direction of lobbying for each firm and association filing LDA reports. In other words, unlike previous research, we seek to determine whether firms and associations lobby *in favor of* or *against* bills to implement trade agreements.

Since this information is not always explicitly available in the LDA reports, we used four methods to collect this information. First, our RAs searched for any evidence of the direction of lobbying in the reports. For instance, some firms and associations included the following sentence in the reports: "[A]dvocate for trade liberalization and continuation of trade promotion authority. We interpret such statements as evidence of lobbying in favor of a particular trade agreement. Using only the information contained in the LDA reports, we were able to infer the direction of lobbying for fewer than 20% of the reports.

Second, to infer the direction of lobbying for the remaining firms and associations, our RAs used Lexis/Nexis and Factiva to find documents in which firms and associations took a public position in favor of or against a specific trade agreement and/or the related bill to implement such an agreement. For instance, the American Insurance Association released the following statement regarding the US-Korea agreement: "[T]the insurance industry is lauding the new trade pact reached Friday between the US and South Korean governments." We take that as evidence of support for the Korea-US trade agreement.

Third, our RAs complemented this analysis with Google searches, which proved to be particularly effective in retrieving information on associations' positions on trade agreements. Fourth,

[72]The R scripts that we used to perform steps 2 and 3 are available upon request.

for publicly traded companies we relied on a function available in the Bloomberg Database. This function looks up matches between the input keywords (e.g., firm X trade agreement Y) in all the documents (e.g., annual reports, press releases, and even Skype calls between investors and senior managers) that firm X has sent to the Securities and Exchange Commission or any of its equivalents in other countries. We were able to identify and record the direction of lobbying for more than 80% of the lobbying reports currently coded, i.e., 530 reports.

We found no cases in which searches of these different sources produced conflicting conclusions about the direction of lobbying. However, we employed another RA to double check the coding of the direction of lobbying and to go through each of the previous steps again. All the documents we used in this process are saved in an institutional repository, which we will make publicly available upon completion of the data collection.

Appendix B Plausibly Exogenous Instrument

To test the plausibility of the exclusion restriction, we follow Conley, Hansen, and Rossi (2012). The intuition of this test is quite simple. Take the following simple reduced-form model:

$$\mathrm{Y}_{ij} = \alpha + \beta \cdot \mathrm{X} + \gamma \cdot \mathbf{Z} + \epsilon,$$

where Y is the outcome, X is the instrumented variable, and Z is the instrument. β is the coefficient of the instrumented variable, i.e. ultimately the one of interest, γ is the coefficient of the instrument, and ϵ is the error term.

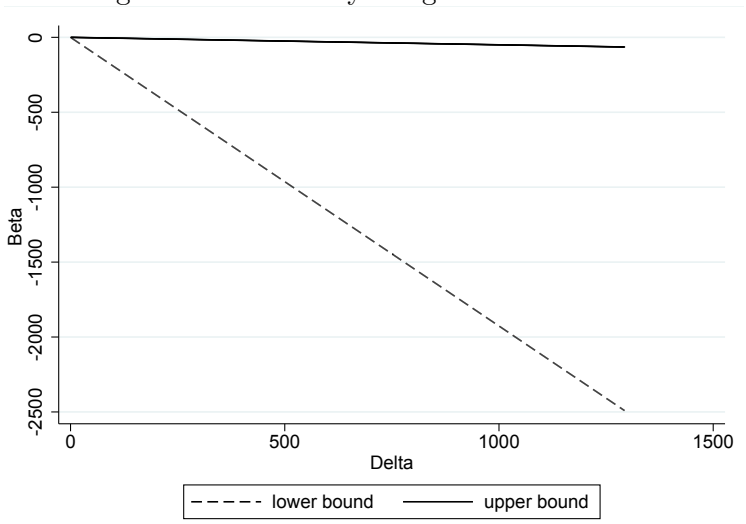
For the exclusion restriction to be valid, γ should be equal to zero in the reduced form. The test of the plausible exogenous instrument allows γ to be different from zero and see how that would affect the coefficient of the instrumented variable. In other words, the test allows deviation from a perfect exogenous instrument to check whether that would change the sign and significance of the coefficient of the instrumented variable. In short, this is a sensitivity test. Instead of claiming that the exclusion restriction is always valid (which is somewhat implausible with observational data), the test explored how large the violation of the exclusion restriction should be for the results not to hold anymore.[73]

Concretely, the test is performed by adding a quantity δ to the coefficient γ to see how this deviation affects the coefficient β. The results of Figure B.1 are reassuring. They show that even large deviations from the perfect instrument assumption do not change the sign or significance of β, which remains negative. Indeed, even the upper-bound estimates of the 90% confidence interval are negative and do not cross zero, i.e. they are significant. Note that the values of β are particular large since they are proportional to changes in δ, i.e. to the quantity added to the coefficient of γ.

In sum, the effect of *US Net-exporting* remains negative and significant, even if we deviate substantively from the exclusion restriction assumption. This finding corroborates the validity of our IV estimates.

[73] For technical details, see Conley et al (2012).

Figure B.1: Plausibly Exogenous Instrument



Note: This figure presents 90% confidence intervals for the effect of *US Net-exporting* on *Lobby separate* across various prior settings using priors that the direct effect of *U.K. Net-exporting* on *Lobby separate* is non-negative.

Appendix C Additional Tables

Table C.1: Provisions to Liberalize Services in US Trade Agreements

Name	Year	Service Chapter	GATS	Negative List	MFN	NT	Right of Non-establishment	Movement of People	Continuous Review
Australia	2004	yes	yes	yes	yes	yes	yes	no	yes
Bahrain	2004	yes	yes	yes	yes	yes	yes	no	yes
CAFTA-DR	2004	yes	yes	yes	yes	yes	yes	no	yes
Chile	2003	yes	yes	yes	yes	yes	yes	no	yes
Colombia	2006	yes	yes	yes	yes	yes	yes	no	yes
Jordan	2000	yes	yes	no	no	yes	yes	yes	no
Korea	2007	yes	yes	yes	yes	yes	yes	no	yes
NAFTA	1992	yes		yes	yes	yes	yes	yes	yes
Oman	2006	yes	yes	yes	yes	yes	yes	yes	yes
Panama	2007	yes	yes	yes	yes	yes	yes	yes	yes
Peru	2006	yes	yes	yes	yes	yes	yes	yes	yes
Singapore	2003	yes	yes	yes	yes	yes	yes	yes	no
Vietnam	2000	yes	yes	no	yes	yes	yes	yes	no

Note: Data come from Desta (Dür, Baccini, and Elsig, 2014).

Table C.2: Language Similarity of Annexes Including Reservations in Services

	Australia	Bahrain	CAFTA	Chile	Columbia	South Korea	Morocco	NAFTA	Oman	Panama	Peru	Singapore
Australia		0.51	0.76	0.78	0.82	0.59	0.86	0.82	0.84	0.82	0.82	0.75
Bahrain			0.46	0.47	0.49	0.33	0.51	0.49	0.50	0.49	0.49	0.43
CAFTA				0.89	0.84	0.52	0.82	0.84	0.82	0.85	0.86	0.77
Chile					0.82	0.52	0.81	0.82	0.80	0.81	0.81	0.81
Columbia						0.57	0.88	1.00	0.93	0.96	0.98	0.70
South Korea							0.57	0.57	0.59	0.58	0.58	0.52
Morocco								0.88	0.93	0.89	0.90	0.72
NAFTA									0.93	0.96	0.98	0.70
Oman										0.92	0.94	0.71
Panama											0.97	0.71
Peru												0.71
Singapore												

Note: Jaccard measures calculated by the authors, using the R package 'textreuse'. As a benchmark, we note that the agreement between Canada and the EU has a similarity measure of (a max of) 0.30 with other Canadian and EU PTAs (Allee, Elsig, and Lugg, 2017).

Table C.3: Firm-centric Lobby

	(1)	(2)	(3)	(4)	(5)	(6)
	Firm-centric	Firm-centric	Firm-centric	Firm-centric	Firm-centric	Firm-centric
VARIABLES	Lobby	Lobby	Lobby	Lobby	Lobby	Lobby
Service	-0.5058*	-0.4775*	-0.4359*			
	(0.022)	(0.021)	(0.049)			
US Net-exporting				-0.2316*	-0.2616*	-0.0586*
				(0.027)	(0.025)	(0.022)
Constant	0.7722*	0.8632*	0.5613*	0.6401*	0.7809*	-0.8069*
	(0.017)	(0.017)	(0.181)	(0.022)	(0.024)	(0.117)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,293	1,293	1,141	1,193	1,193	1,095
R-squared	0.284	0.384	0.514	0.053	0.201	0.480

Robust standard errors in parentheses * p<0.01

Note: * p-value<0.01. 2SLS; robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS for lobbying data). *Services* is the dummy capturing service industries. The dependent variables is the share of all lobbying firm(s) in industry *i*. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.4: Firm-level Characteristics: Difference in Means between Services and Merchandise

	Mean		
Covariates	Services	Merchandise	Significantly Different
Number of Employees	182,570	76,011	✓
Revenue (million $)	44.55	40.51	
TFP	0.10	-0.05	
TFPR	-0.22	0.10	✓
ln(Labour Productivity)	0.25	0.25	

Notes: T-tests on the equality of means related to covariates capturing firm-level characteristics. Total factor productivity (TFP) and TFPR (revenue productivity) are Solow residuals obtained by regressing the log of profit (TFP) and revenue (TFPR) over the log of: number of employees, revenue, and total assets. Labor productivity is calculated using the ratio between revenue and number of employees. Data refer to the sample of firms that lobby for bills implementing PTAs in the year 2006. Source: Orbis (2015).

Table C.5: Descriptive Statistics of the Main Variables (lobbying data)

Variable	Obs	Mean	Std. Dev.	Min	Max
Divided	1,293	0.06	0.25	0	1
Lobby Position	1,293	0.49	0.48	0	1
Firm-centric Lobby	1,293	0.48	0.47	0	1
Services	1,293	0.57	0.50	0	1
Net-exporting	1,271	0.59	0.49	0	1
Offshorability	1,176	0.09	0.08	0	0.27
AreaTotal	1,293	44	46	0	339
PTA Total	1,293	27	37	0	198
ln Size	1,243	19.41	3.32	11.44	27.34
4-firm Conc.	1,148	39.40	22.62	1.60	99.9

Note: *Divided*, *Collective lobby spending*, *Collective lobbying*, *PTA total*, and *Area total* were collected by the authors. The remaining variables come from the 2012 economic census.

Table C.6: Other Controls (lobbying data)

VARIABLES	(1) Divided	(2) Lobby Separate	(3) Divided	(4) Lobby Separate
Service	-0.1508**	-0.5892**		
	(0.042)	(0.065)		
US Net-exporting			-0.0628*	-0.2749**
			(0.025)	(0.031)
Constant	0.0413	0.7873**	-0.3397**	-0.6544**
	(0.125)	(0.235)	(0.091)	(0.160)
LDA controls	Yes	Yes	Yes	Yes
Industry controls	Yes	Yes	Yes	Yes
Agreement FE	Yes	Yes	Yes	Yes
Orbis controls	Yes	Yes	Yes	Yes
Observations	562	562	562	562
R-squared	0.117	0.587	0.112	0.579

Robust standard errors in parentheses ** p<0.01, * p<0.05

Note: OLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *Services* is the dummy capturing service industries, and *US Net-exporting* is the dummy capturing US comparative advantage. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in industry i while at least one other firm or association lobbied in favor of the trade agreement in that industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*. 'Industry controls' include sales and concentration. 'Orbis controls' include the capital–labor ratio and TFP. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.7: Main Results with standard errors clustered at the level of the industry (lobbying data)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Divided	Divided	Divided	Lobby Separate	Lobby Separate	Lobby Separate
Service	-0.1295**	-0.1332**	-0.0920*	-0.5127**	-0.4861**	-0.4725**
	(0.027)	(0.029)	(0.045)	(0.059)	(0.050)	(0.109)
Constant	0.1390**	0.1146**	-0.0715	0.7915**	0.8765**	0.7146
	(0.027)	(0.023)	(0.153)	(0.045)	(0.034)	(0.370)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,293	1,293	1,144	1,293	1,293	1,144
R-squared	0.068	0.084	0.095	0.280	0.366	0.491

Robust standard errors in parentheses ** p<0.01, * p<0.05

Note: OLS with robust standard errors clustered at the level of the industry in parenthesis. Unit of observation is industry-PTA (4-digit NAICS). *Services* is the dummy capturing service industries. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.8: Main Results with Bootstrapping (lobbying data)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Divided	Divided	Divided	Lobby Separate	Lobby Separate	Lobby Separate
Service	-0.1295*	-0.1332*	-0.0854*	-0.5127*	-0.4861*	-0.4294*
	(0.016)	(0.016)	(0.029)	(0.025)	(0.022)	(0.050)
Constant	0.1390*	0.1146*	-0.1099	0.7915*	0.8765*	0.5212*
	(0.016)	(0.013)	(0.101)	(0.018)	(0.017)	(0.182)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,293	1,293	1,141	1,293	1,293	1,141
R-squared	0.068	0.084	0.094	0.280	0.366	0.492

Standard errors in parentheses * p<0.01

Note: OLS with bootstrapped standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *Services* is the dummy capturing service industries, and *US Net-exporting* is the dummy capturing US comparative advantage. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.9: Fractional outcome regressions (lobbying data)

	(1)	(2)	(3)	(4)	(5)	(6)
	Lobby	Lobby	Lobby	Lobby	Lobby	Lobby
VARIABLES	Separate	Separate	Separate	Separate	Separate	Separate
Service	-2.2846***	-2.4276***	-2.6861***			
	(0.126)	(0.137)	(0.367)			
US Net-exporting				-1.0086***	-1.3890***	-0.4122**
				(0.122)	(0.145)	(0.183)
Constant	1.3341***	2.0119***	1.3866	0.6867***	1.5189***	-6.9660***
	(0.099)	(0.134)	(1.472)	(0.101)	(0.150)	(0.995)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,293	1,293	1,140	1,193	1,193	1,095
Pseudo R-squared	0.196	0.280	0.400	0.0385	0.155	0.371

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: Fractional regression with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *Services* is the dummy capturing service industries, and *US Net-exporting* is the dummy capturing US comparative advantage. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.10: Main Results with 2-digit Service Industries (lobbying data)

	(1)	(2)	(4)	(5)
VARIABLES	Divided	Divided	Lobby Separate	Lobby Separate
Retail	-0.1586***	-0.0708***	-0.7369***	-0.6702***
	(0.018)	(0.027)	(0.020)	(0.043)
Construction	-0.1144***		0.0317	
	(0.015)		(0.155)	
Utilities	-0.1060***	-0.0735**	-0.6742***	-0.5695***
	(0.013)	(0.030)	(0.104)	(0.111)
Transportation	-0.1024***	-0.0506*	-0.2548***	-0.1439**
	(0.012)	(0.027)	(0.056)	(0.069)
InformationCulture	-0.1011***	-0.0393	-0.2727***	-0.1996***
	(0.020)	(0.030)	(0.052)	(0.063)
Finance	-0.1517***	-0.0790***	-0.4778***	-0.4708***
	(0.017)	(0.025)	(0.040)	(0.057)
RealEstate	-0.1152***	-0.0816***	-0.1775	-0.0740
	(0.013)	(0.029)	(0.163)	(0.172)
Professional	-0.0858***	-0.0320	-0.2630***	-0.1644*
	(0.030)	(0.038)	(0.081)	(0.093)
Management	-0.0393		0.2130***	
	(0.083)		(0.017)	
Administrative	-0.1060***	-0.0679**	-0.4755***	-0.3202**
	(0.013)	(0.034)	(0.120)	(0.125)
Education	-0.1071***	-0.0283	-0.4722*	0.3695***
	(0.013)	(0.037)	(0.270)	(0.063)
Arts	-0.0666	-0.0079	-0.0502	0.0851
	(0.043)	(0.051)	(0.089)	(0.095)
AccomodationFood	-0.1084***		0.0535	
	(0.013)		(0.134)	
Constant	0.0995***	-0.2110**	0.7977***	0.3434**
	(0.013)	(0.096)	(0.016)	(0.148)
LDA controls	Yes	Yes	Yes	Yes
Industry controls	No	Yes	No	Yes
Agreement FE	No	Yes	No	Yes
Observations	1,293	1,141	1,293	1,141
R-squared	0.089	0.095	0.489	0.612

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: OLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.11: Heckman selection model

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Divided	Divided	Divided	Lobby Separate	Lobby Separate	Lobby Separate
Service	-0.0678**	-0.0688**	-0.0564	-0.5172***	-0.5598***	-0.5022***
	(0.029)	(0.029)	(0.047)	(0.060)	(0.055)	(0.080)
Constant	0.0951	0.0652	-0.0475	0.3139*	0.3752**	-0.0046
	(0.082)	(0.082)	(0.177)	(0.161)	(0.146)	(0.278)
			Selection equation			
Service	-0.3487***	-0.3487***	-0.3912***	-0.3487***	-0.3487***	-0.3912***
	(0.054)	(0.054)	(0.055)	(0.054)	(0.054)	(0.055)
Tradable	0.5790***	0.5790***	0.5374***	0.5790***	0.5790***	0.5374***
	(0.090)	(0.090)	(0.090)	(0.090)	(0.090)	(0.090)
Mills	-0.017	-0.006	-0.005	0.481***	0.467***	0.527***
	(0.075)	(0.075)	(0.81)	(0.148)	(0.133)	(0.143)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Selected	762	762	743	762	762	743
Observations	2,958	2,958	2,939	2,958	2,958	2,939

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: Heckman models with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *Services* is the dummy capturing service industries. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census.

Table C.12: The Role of Comparative Advantage (ordinal measure)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Divided	Divided	Divided	Lobby Separate	Lobby Separate	Lobby Separate
US Net-exporting (ordinal)	-0.0362*	-0.0371*	-0.0265*	-0.0442*	-0.0668*	0.0136
	(0.007)	(0.008)	(0.008)	(0.012)	(0.011)	(0.010)
Constant	0.1200*	0.1144*	-0.1552*	0.5788*	0.7430*	-1.0795*
	(0.018)	(0.018)	(0.047)	(0.025)	(0.027)	(0.076)
LDA controls	No	Yes	Yes	No	Yes	No
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,193	1,193	1,095	1,193	1,193	1,095
R-squared	0.031	0.036	0.072	0.010	0.143	0.435

Robust standard errors in parentheses * p<0.01

Note: OLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). Net-exporting (ordinal) scores 0 if the trade balance ratio ($\frac{exports}{imports}$) is lower than 0.8; 1 if it is between 0.8 and 1; 2 if it is between 1 and 1.5; 3 if it is higher than 1.5. The values of the lower and upper quartiles are 0.8 and 1.5, respectively. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.13: Comparative Advantage with Bootstrapping (lobbying data)

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Divided	Divided	Divided	Separate Lobby	Separate Lobby	Separate Lobby
US Net-exporting	-0.2450*	-0.2746*	-0.0710*	-0.0940*	-0.0981*	-0.0747*
	(0.028)	(0.025)	(0.022)	(0.017)	(0.017)	(0.019)
Constant	0.6652*	0.8009*	-0.7970*	0.1189*	0.1101*	-0.2236*
	(0.023)	(0.025)	(0.110)	(0.016)	(0.016)	(0.053)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,193	1,193	1,095	1,193	1,193	1,095
R-squared	0.057	0.191	0.463	0.037	0.044	0.103

Standard errors in parentheses * p<0.01

Note: OLS with bootstrapped standard errors clustered at the industry level in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *US Net-exporting* is the dummy capturing US comparative advantage. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.14: Comparative Advantage with Standard Errors Clustered at the Industry Level (lobbying data)

	(1)	(2)	(3)	(4)	(5)	(6)
				Lobby	Lobby	Lobby
VARIABLES	Divided	Divided	Divided	Separate	Separate	Separate
US Net-exporting	-0.2450***	-0.2746***	-0.0710*	-0.0940***	-0.0981***	-0.0747**
	(0.072)	(0.055)	(0.039)	(0.030)	(0.031)	(0.030)
Constant	0.6652***	0.8009***	-0.7970***	0.1189***	0.1101***	-0.2236**
	(0.057)	(0.045)	(0.169)	(0.031)	(0.027)	(0.087)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,193	1,193	1,095	1,193	1,193	1,095
R-squared	0.057	0.191	0.463	0.037	0.044	0.103

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: OLS with robust standard errors clustered at industry the level in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *US Net-exporting* is the dummy capturing US comparative advantage. The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.15: The Role of Comparative Advantage and Offshorability

	(1)	(2)	(3)	(4)
VARIABLES	Divided	Divided	Lobby Separate	Lobby Separate
US Net-exporting	-0.1001***	-0.0959***	-0.2172***	-0.1853***
	(0.021)	(0.021)	(0.030)	(0.028)
Offshorability	-0.0433	-0.0716	2.0843***	2.2986***
	(0.089)	(0.090)	(0.205)	(0.171)
Constant	0.1328***	0.0623***	0.4656***	0.6463***
	(0.023)	(0.021)	(0.032)	(0.106)
LDA controls	No	Yes	No	Yes
Industry controls	No	No	No	No
Agreement FE	No	Yes	No	Yes
Observations	1,075	1,075	1,075	1,075
R-squared	0.036	0.079	0.196	0.370

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: OLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *US Net-exporting* is the dummy capturing US comparative advantage, whereas *Offshorability* captures the share of vertical sales to the US The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.16: Instrumental Variable Approach for Comparative Advantage (first stage)

First-stage results for data on lobbying:

	US Net-exporting					
	(1)	(2)	(3)	(4)	(5)	(6)
U.K. Net-exporting	0.560*	0.555*	0.506*	0.560*	0.555*	0.506*
	(0.028)	(0.028)	(0.034)	(0.028)	(0.028)	(0.034)
Intercept	0.269*	0.285*	0.946*	0.269*	0.285*	0.946*
	(0.025)	(0.029)	(0.093)	(0.025)	(0.029)	(0.093)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,179	1,179	1,081	1,179	1,179	1,081

First-stage results for data on position-taking:

	US Net-exporting					
	(1)	(2)	(3)	(4)	(5)	(6)
U.K. Net-exporting	0.282**	0.246**	0.251**	0.282**	0.246**	0.237**
	(0.015)	(0.017)	(0.022)	(0.015)	(0.017)	(0.018)
Intercept	0.432**	0.777**	−0.028	0.432**	0.777**	0.035
	(0.012)	(0.029)	(0.172)	(0.012)	(0.029)	(0.135)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	4,253	3,489	2,027	4,253	3,489	3,313

Notes: * p-value<0.01. 2SLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS for lobbying data and 6-digit NAICS for position-taking data). *U.K. Net-exporting* is the instrument. The dependent variable is *US Net-exporting*, i.e. the dummy capturing US comparative advantage. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.17: Correlations between *U.K. Net-exporting* and Confounders

Variables	UK Net-exporting
Issue Area Total	0.16
PTA Total	0.01
ln(Sale)	-0.26
Conc4	-0.15
TFP	-0.04
ln(K/L)	0.11

Note: Sources: LDA dataset, 2012 economic census, Orbis, Comtrade, and World Bank's Trade in Services Database.

Table C.18: Instrumental Variable Approach for Comparative Advantage (ordinal measure)

Second-stage results for data on lobbying:

	Divided			Lobby separate		
	(1)	(2)	(3)	(4)	(5)	(6)
US Net-exporting	−0.043**	−0.046**	−0.001	−0.289**	−0.292**	−0.089**
	(0.031)	(0.016)	(0.021)	(0.032)	(0.028)	(0.024)
Intercept	0.132**	0.133**	−0.271*	1.019**	1.175**	−0.642**
	(0.030)	(0.023)	(0.105)	(0.061)	(0.059)	(0.126)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,179	1,179	1,081	1,179	1,179	1,081
K-P LM statistic	163.64**	165.83**	111.90**	163.64**	165.83**	111.90**
Wald F-statistic	325.02**	336.21**	220.14**	325.02**	336.21**	220.14**

First-stage results for data on lobbying:

	Divided			Positions separate		
	(1)	(2)	(3)	(4)	(5)	(6)
US Net-exporting	0.433**	0.438**	0.221**	0.433**	0.438**	0.221**
	(0.028)	(0.028)	(0.055)	(0.028)	(0.028)	(0.055)
Intercept	0.829**	0.969**	0.290**	0.829**	0.969**	0.290**
	(0.077)	(0.082)	(0.096)	(0.077)	(0.082)	(0.096)
LDA controls	No	Yes	Yes	No	Yes	Yes
Industry controls	No	No	Yes	No	No	Yes
Agreement FE	No	No	Yes	No	No	Yes
Observations	1,179	1,179	1,081	1,179	1,179	1,081

Notes: ** p-value<0.01; * p-value<0.05. 2SLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS for lobbying data and 6-digit NAICS for position-taking data). *US Net-exporting* is the dummy capturing US comparative advantage; *U.K. Net-exporting* is the instrument (the first stage is reported in Table C.16). For lobbying data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. For position-taking data the dependent variables are (i) *Divided*, which equals 1 if at least one firm or association publicly supported and at least 1 one firm or association publicly opposed an agreement and (ii) *Positions separate*, which is the share of all public positions taken by firms. 'LDA controls' include *Issue area total* and *PTA total*, whereas 'Industry controls' include sales and concentration. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.19: Instrumental Variable Approach for Comparative Advantage and Offshorability

	(1)	(2)	(3)	(4)
VARIABLES	Divided	Divided	Lobby Separate	Lobby Separate
US Net-exporting	-0.1058**	-0.1105**	-0.5659***	-0.5092***
	(0.046)	(0.046)	(0.082)	(0.074)
Offshorability	-0.0553	-0.0304	1.3620***	1.7368***
	(0.122)	(0.124)	(0.278)	(0.246)
Constant	0.1378***	0.1257***	0.7708***	0.7910***
	(0.043)	(0.041)	(0.077)	(0.073)
LDA controls	No	Yes	No	Yes
Industry controls	No	No	No	No
Agreement FE	No	Yes	No	Yes
Observations	1,073	1,073	1,073	1,073
K-P LM statistic	127.57***	128.00***	127.57***	128.00***
Wald F-statistic	184.95***	184.92***	184.95***	184.92***

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Note: 2SLS with robust standard errors in parentheses. Unit of observation is industry-PTA (4-digit NAICS). *US Net-exporting* is the dummy capturing US comparative advantage, whereas *Offshorability* captures the share of vertical sales to the US The dependent variables are (i) *Divided*, which equals 1 if at least one firm or association lobbied against a trade agreement in a given industry i while at least one other firm or association lobbied in favor of the trade agreement in that same industry and (ii) *Lobby separate*, which is the share of all lobbying expenditures undertaken by the firm(s) in industry i. 'LDA controls' include *Issue area total* and *PTA total*. Sources: LDA dataset, position-taking data, 2012 economic census, Comtrade, and World Bank's Trade in Services Database.

Table C.20: Agricultural Trade Advisory Committees

	Animals		Fruits		Tobacco		Sweetener		Grains		Processed Food	
US FTA	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support
Australia	yes	weak	no	weak	yes	weak	yes	no	no	strong	yes	no
Bahrain	no	weak	no	weak	yes	weak	yes	weak	no	weak	no	strong
Chile	no	strong	no	weak	yes	weak	yes	no	no	strong		
Colombia	no	strong	no	strong	yes	weak	yes	no	no	strong	no	strong
CAFTA-DR	yes	strong			yes	weak	yes	no	no	strong	no	strong
Korea	yes	weak	no	strong	yes	weak	yes	no	yes	weak	no	strong
Morocco	no	strong	no	no	yes	weak	yes	no	no	strong	no	strong
Oman	no	weak	no	strong	yes	weak	yes	no	no	strong	no	strong
Panama	no	strong	no	strong	yes	strong	yes	no	no	strong	no	strong
Peru	no	weak	no	weak	yes	strong	yes	no	no	strong	no	strong
Singapore	no	strong			yes	weak	yes	no	no	strong		
TTP	yes	strong	yes	strong	yes	no	yes	strong	yes	strong	no	strong

Note: Division over or support for trade agreements is inferred by the authors from the ATAC reports.

Table C.21: Industry Trade Advisory Committees, Manufacturing

	Aerospace		Chemicals		Ferrous Metal		Footwear		Building		Wood		Non Ferrous Metal		Textile		Steel	
US FTA	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support	Divided	Support
Australia	no	weak	no	strong	no	weak	yes	no	no	strong	no	strong	no	weak	yes	yes		
Bahrain	no	weak	no	strong							no	strong	no	strong	yes	weak	no	weak
Chile	no	weak	no	strong	no	weak	yes	no	no	strong	no	strong	no	strong	yes	weak		
Colombia	no	weak	no	strong							no	strong	no	strong	yes	no	no	no
CAFTA-DR	no	weak	no	strong	no	strong	yes	weak	no	strong	no	strong	no	weak	yes	weak		
Korea	no	strong	yes	strong							no	strong	no	strong	yes	no	no	no
Morocco	no	strong	yes	strong	no	weak	yes	weak	no	strong	yes	strong	no	weak	yes	no		
Oman	no	weak	yes	strong							no	strong	no	strong	yes	weak	no	no
Panama	no	weak	yes	strong							no	strong	no	strong	yes	weak	no	weak
Peru	no	weak	no	strong							no	strong	no	strong	yes	weak	no	weak
Singapore	no	strong	yes	strong	no	weak	yes	weak	yes	strong	yes	weak	no	weak	yes	weak		
TTP	yes	strong	yes	strong					no	strong	no	strong			yes	no	no	no

Note: Division over or support for trade agreements is inferred by the authors from the ITAC reports.

Table C.22: Industry Trade Advisory Committees, Services

	Energy		Services & Finance		Retail		Technology Services	
US FTA	Divided	Support	Divided	Support	Divided	Support	Divided	Support
Australia	no	strong	no	strong	no	weak		
Bahrain	no	strong	no	strong			no	strong
Chile	no	strong	no	strong				
Colombia	no	strong	no	strong				
CAFTA-DR	no	strong	no	strong	yes	weak		
Korea	no	strong	no	strong			no	strong
Morocco	no	strong	no	strong	no	weak		
Oman	no	strong	no	strong			no	strong
Panama	no	strong	no	strong			no	strong
Peru	no	strong	no	strong			no	strong
Singapore	no	strong	no	strong	yes	strong		
TTP	no	strong	no	strong			no	strong

Note: Division over or support for trade agreements is inferred by the authors from the ITAC reports.