Intellectual Property Provisions and Support for US Trade Agreements

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Abstract

Intellectual property rights are a key piece of the expanded trade agenda, and the United States has pushed hard to strengthen protections beyond WTO standards in its trade agreements. While agreement provisions governing intellectual property are commonly thought to be an important driver of corporate preferences over US trade policy, systematic empirical evidence for this proposition, especially in comparison to other determinants of trade policy, is generally lacking. To fill this void, this paper examines variation in reliance on intellectual property across US industries to explain attitudes and lobbying on US trade agreements. The effects of IP provisions on support for US trade agreements are politically substantial, though trade remains the primary determinant of preferences over trade agreements.

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Why does the United States government put so much effort into negotiating and signing trade agreements? For many left and center-left economic commentators, it is conventional wisdom that trade agreements don't have much impact on ordinary trade flows but are very impactful on the creation of new international regulatory and legal obligations as part of the expanded trade agenda. The first of these areas to be cited is usually the intellectual property provisions of preferential trade agreements. In one version of this view, US trade agreements have served mainly to advance the interests of a relatively elite group of firms – those who own significant intellectual property assets such as patents, copyrights, and trademarks. Any discussion of export growth, cheaper imports, or jobs as justifications for trade deals is so much window-dressing.

There are reasons to be cautious about such a sweeping claim. For one thing, the economic effects of the intellectual property rights (IPRs) included in US free trade agreements are too small, in relative terms, to merit the claim that trade agreements 'aren't about trade'.[1] US government estimates of the economic impact of intellectual property provisions of trade agreements are more than an order of magnitude smaller than the provisions which reduce trade barriers, for example. The strength of IPRs have also varied markedly across US trade agreements and have weakened somewhat since their controversial peak in the mid-2000s. Intellectual property chapters also constitute only a small portion of the text and negotiating time for a given trade agreement, and many industries generate relatively little in the way of intellectual property.[2] That being said, industry-specific evidence of the importance of intellectual property rights provisions in trade agreements abounds, and industry associations and firms lobbying on trade agreements regularly mention IP provisions as issues of importance.

So which is it? Are trade agreements driven by the demands of elite corporations mainly seeking protection for their assets through IP provisions and other forms of regulation? Or are IP provisions one of many areas of interest which also include opportunities to export, import intermediates, and invest abroad in the creation of a multinational supply chain? Rather than pursue this question through the examination of economic effects of trade agreements or through close textual analysis of agreement provisions, tasks which are admirably pursued in well-developed literatures cited below, this paper considers the *political effects* of intellectual property provisions of US trade agreements, and examines those effects to evaluate the claim that intellectual property rights are a central driver, if not the central driver, of US FTA policy.

Two questions are the focus of our attention: Are industries that own and create significant

[1] Baccini, Pinto and Weymouth (2016) find that US PTAs increase trade of the affiliates of US multinationals. Baier and Bergstrand (2009, 2007); Mansfield and Reinhardt (2008); Egger et al. (2011); Chauffour and eds. (2011); Caliendo and Parro (2015) find that PTAs increase trade generally.

[2] None of which is to say that the effects of such provisions are benign or unimportant, especially in the area of pharmaceuticals and biotechnology where IPRs have received the most scrutiny. See, for example, Shadlen (2007*b*); Pecoul et al. (1999); Shadlen (2007*a*). For discussion of the links between IPRs and development generally, see Maskus (2000); Maskus and Fink (2005).

volumes of intellectual assets more likely to support US free trade agreements, especially those agreements which contain the strongest protections of the rights of intellectual property owners? And, how significant are IP provisions as a driver of support for FTAs in comparison with other putative causes of support for trade agreements, especially ordinary trade flows and opportunities to globalize the supply chain? The answers to these questions remain largely unknown even if anecdotal evidence of the importance of IP provisions on corporate support exists, fueling the commentariat's claim that the negotiation of trade agreements is motivated by factors other than increasing international trade.

In order to provide a more systematic accounting of the impact of IP provisions on support for US trade agreements, we examine support among US firms and trade associations for all US trade agreements after the WTO's 1995 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). In so doing, we expand on an existing measure of the strength of IP provisions in US trade agreements from Fink and Reichenmiller (2006); employ an industry-level measure of IP intensity developed in Blank and Kappos (2012); and introduce new data on the public positiontaking of service industry firms and associations which complements similar data from agriculture, mining, and manufacturing industries introduced in Osgood (2017).

We find that the intellectual property provisions of trade agreements have indeed generated sustained and significant support for trade liberalization from US firms and industries. Industries which own or generate a significant quantity of intellectual property in the form of patents and copyrights are significantly more likely to support US FTAs. We also find that the predicted effects of new intellectual property rights (IPRs) contained in trade agreements are substantively significant, similar to those of common proxies for export competitiveness, though much smaller than the effects of the global sourcing of intermediate inputs and final products. We conclude that trade agreements remain very much about trade in all its forms, but intellectual property provisions are among the important drivers of political support for those agreements.

Intellectual Property Rights and Trade Agreements

According to Robert Reich, "recent 'trade agreements' aren't really about trade at all. They're about expanding the markets and protecting the assets of global corporations."[3] Paul Krugman echoed this sentiment in analyzing the Trans-Pacific Partnership (TPP): "...this is not a trade agreement. It's about intellectual property and dispute settlement..."[4] Elsewhere, Krugman highlighted protections of IP in even starker terms:

> ...as with many "trade" deals in recent years, the intellectual property aspects are more

[3] "How Trade Deals Boost the Top 1% and Bust the Rest". The Huffington Post.
[4] "This Is Not A Trade Agreement". The New York Times.

> important than the trade aspects. ...[T]his is largely about Hollywood and pharma rather than conventional exporters.[5]

Lawrence Summers shares a similar view: "What we call trade agreements are in fact agreements on the protection of investments and the achievement of regulatory harmonization and establishment of standards in areas such as intellectual property."[6]

The academic literature has also embraced the importance of the expanded trade agenda in the development of FTAs – especially IPRs – but in much more measured tones.[7] Kim (2015), Kim, Mansfield and Milner (2016), and Manger and Shadlen (2014) all emphasize the importance of the largest multinational firms, and their demands for 'deep integration' along the axes of the expanded trade agenda, as the focus of global trade politics has shifted away from the border measures that consumed the GATT years. Shadlen (2005*a*, 2008) places IPRs (along with investment provisions) at the center of both the demand for FTAs by the US, and as an issue of importance to the mostly developing countries signing those agreements as part of their strategies for international integration and development. Shadlen (2004) recounts the enormous efforts put into protecting owners of intellectual property holders through both FTAs and the Special 301 reports prepared annually by the US Trade Representative to monitor IPRs in foreign countries.

There are sound reasons to follow the academic literature's more cautious approach, which views IPRs as one of among several important drivers of US trade agreement policy. For one thing, the total economic effects of IP provisions of trade agreements *for US corporations* are thought to be comparatively modest. For example, the USITC estimates that if the TPP countries had IP rules and enforcement equivalent to the United States in 2010, then US firms would have earned about $5 billion more in IP receipts from sales in those countries, a change in US GDP of about .00034%.[8] In contrast, the USITC estimates that entry-into-force of the TPP's cuts in tariff and non-tariff barriers in 2017 would increase US GDP by over .05% in the short term, and by .23% over the long term. Of course, these are only estimates and they are somewhat hard to compare because the methodologies and time periods in the counterfactuals differ. But they suggest that IP provisions account for a modest portion of the total potential gains from the TPP, even if they are still economically significant, especially to the industries and firms where those gains will be concentrated.[9]

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[5] "TPP at the NABE". The New York Times. Matthew Yglesias echoes this claim nearly verbatim, arguing that skeptics of trade agreements have developed an "increasingly sophisticated" four-pronged critique of trade agreements. The first prong is that: "Modern trade deals are largely more about encouraging foreign countries to adopt regulatory changes that are friendly to Hollywood and American drug companies than about reducing trade barriers." See "Donald Trump's trade team has based their analysis on a remarkably silly mistake" at Vox.com.

[6] "Rescuing the Free-trade Deals". The Washington Post.

[7] See Horn, Mavroidis and Sapir (2010); Dür, Baccini and Elsig (2014); Young (2007).

[8] https://www.usitc.gov/publications/332/pub4607.pdf

[9] IP provisions in US trade agreements with smaller trade partners may also have a prospective component: to set a higher minimum standard for future trade negotiations with partners of greater size and

We also document below the substantive content of intellectual property chapters of trade agreements. These provisions are significant and can have major impacts in specific areas, like on the availability of pharmaceuticals or on rules governing civil litigation for violations of copyright. But they also vary markedly in their strength across agreements and have weakened somewhat compared to their controversial peaks in the mid-2000s. Surveying the extent to which these provisions exceed existing international standards enshrined in WTO agreements, it is also hard to come away with the belief that the often incremental extensions of IP rights embodied in these agreements could be the prime movers behind the US's search for FTAs.

But perhaps the most important reason to be cautious in evaluating the importance of IPRs as a driver of US FTA policy is that we lack systematic empirical evidence of the importance of IPRs as a driver of support for FTAs among special interest groups across the breadth of America's economy. If one wishes to argue that trade agreements are primarily 'about' IP protections and other extensions of corporate rights, then implicitly one is arguing that corporate demands for IP protections are a key driver of the creation of Free Trade Agreements. If that is the case, several implications follow about the location and extent of corporate support for those FTAs, and those implications are precisely what we seek to test.

Intellectual Property Provisions of US Trade Agreements

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) was negotiated as part of the Uruguay Round of GATT talks which lead to the creation of the World Trade Organization. The agreement was strongly favored by the United States, European Union, and other countries with significant industries creating or owning intellectual property (Richards, 2002). While treaties governing certain facets of intellectual property rights long preceded TRIPS, the TRIPS agreement was up-to-date; generally more comprehensive and stringent; and required for all current or prospective entrants to the WTO (Richards, 2004). Entry into force of the agreement therefore vastly expanded the coverage of IP protections in terms of number of countries as well as in the extent of commitments.

The TRIPS agreement covers the three main areas of intellectual property rights – patents, copyrights, and trademarks – establishing general principles governing intellectual property rights (such as national treatment and most-favored nation), as well as minimum standards for IPRs and their enforcement. While the provisions on legal protections and enforcement contained in TRIPS, if executed, represent a significant expansion of IPRs for many countries that have joined the agreement, TRIPS standards fall well short of IPRs in the United States. For example, TRIPS mandates that copyrights extend at least 50 years from publication (I.12); the US standard is 70 years past the death of the author. TRIPS permits signatories to exclude plants and animals, and diagnostic

significance.

and therapeutic medical procedures, from patentability (II.5.27.3); these are generally eligible for patent coverage in the United States. There are many more such examples.

It is not surprising, then, that in the first set of bilateral trade agreements after the creation of the WTO, the United States immediately set about strengthening protections of IPRs with its trade partners (Sell, 2010). For example, the final text of the US-Jordan Free Trade agreement – the first US FTA after the entry into force of the TRIPS agreement – is only 19 pages long, but a full five of these pages are devoted to intellectual property rights.[10] All subsequent FTAs have been structured as sets of chapters, and all of them have a separate intellectual property chapter running anywhere from 22 (Singapore) to 37 (Morocco) pages. The provisions of preferential trade agreements which go beyond or alter protections for intellectual property contained in the TRIPS agreements are referred to as TRIPS-plus or TRIPS+ provisions.[11]

The most interesting provisions of these agreements significantly extend the protections of intellectual property rights embodied in TRIPS and other existing international treaties. These provisions cover a broad array of patent, copyright, and trademark-related issues, including provisions on the duration of protection, and the types of properties that are available for that protection; provisions governing the regulatory and approval process; rules restricting the availability and terms of exceptions; and rules on 'parallel imports' where domestically protected properties are imported from third countries without a patent-holder's consent. Many of the agreements also include enforcement provisions, describing mandated allocations of resources (in general terms) to IPR protections, as well as available criminal and civil remedies.[12]

While there are potentially many ways to organize and enumerate such provisions, Fink and Reichenmiller (2006) provide a clear and concise breakdown of the TRIPS+ provisions in US trade agreements into 17 categories, which is cited extensively in the legal literature. We build off of their work to document the IP provisions of US trade agreements but make several additions. We split one of their categories apart into multiple provisions (on pharmaceutical approval delays caused by regulatory process, and unreasonable patent delays for all patent-protected goods) to better match provisions to the relevant industries. Reflecting the evolution of these agreements since 2006, we add categories on the burden of proof for patent infringement; three provisions on trademark protections relating to the burden of proof, term of protection, and extension to sounds and scents; a section on whether geographic indicators are eligible for protection; and a provision relating to punitive damages for patent infringements.[13] Our resulting coding of TRIPS+

[10] NAFTA also included a chapter on IPRs. However, this agreement is not considered in this paper because its negotiation and passage precede TRIPS.

[11] The expression TRIPS-plus or TRIPS+ seems to have entered the academic lexicon nearly simultaneously with the entry into force of TRIPS itself (Sanders, 1996; Lesser, 1997).

[12] Do such provisions work? Shadlen, Schrank and Kurtz (2005) finds that IPRs in TRIPS and in US bilateral pressures serve to deter software piracy.

[13] We also exclude from consideration two additional provisions from the Fink and Reichenmiller (2006)

provisions in US agreements therefore has 22 provisions. We also add to Fink and Reichenmiller (2006) by coding all of these dimensions for the Oman, Peru, Panama, Colombia and South Korea trade agreements, which came after publication of the original paper.

A description in words of the key provisions are provided in Table 1. These are broken down into six categories. While the copyright-related provisions cover all copyrightable goods, some of the patent-related provisions are relevant for all industries or firms that rely on patent protections while others are explicitly or implicitly written with pharmaceuticals or agricultural chemicals in mind.[14] Similarly, indicators of geographical origins – such as the exclusive right of French producers of sparkling wine made in the Champagne region to the name "Champagne" – are of interest to only a subset of the industries that extensively use trademarks and so are set out as a separate category. Enforcement measures are explored in the final section, although note that some of the enforcement measures are specific to certain types of intellectual property.

US trade agreements differ in the extent to which they cover the provisions described in Table 1.[15] This is illustrated in the table by considering the number of the 12 agreements covered in our paper that attain the maximum protection recorded in the set of all agreements, and the number of agreements that contain no TRIPS+ protection on that provision whatsoever. Many of the most stringent provisions are included in only a small subset of the treaties. By the same token, many of the treaties contain no reference whatsoever to the added provisions that are integral to other treaties. Some of this is due to a process of cumulation (the provisions in the earliest agreement, Jordan, are much less well developed than the later agreements). But part of this is just the ebb and flow of negotiations and norms over time and among different trade partners.

This variation is graphically illustrated in Figure 1, which aggregates the protections of IPRs into a set of numerical measures that fall on the unit interval. The top three rows of the figure consider protections of patents; the bottom four rows consider copyright and trademark protections. A 0 on each of the scales means that no TRIPS+ provisions are included in the treaty for the category in question. A 1 on each of the scales means that the trade agreement has the maximum protections of IP that are theoretically possible given all of the IP provisions observed in actual US trade agreements. It is possible, as in the case of general protections of patents, that no single agreement attains the maximum possible protection across all of the observed provisions that fall within its category.

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breakdown that are not clearly oriented towards the protection of IPRs: the existence of side letters on public health, and liability rules for ISPs (the latter of which may weaken copyright protections but is mainly a legal protection for the internet industry).

[14] Rules on compulsory licenses are assumed to be relevant to pharmaceuticals although that is not explicitly stated in the treaty texts. Compulsory licenses, where a country is permitted to legally override patent protections, have exclusively been applied to pharmaceutical products.

[15] See also Abbott (2006), Krikorian and Szymkowiak (2007), and Fink and Reichenmiller (2006) for further discussion of this point.

Provision	Maximum extent	Agreements with: No prov.	Max. prov.
Pharmaceutical or agricultural chemical patent-related provisions:			
Pharmaceutical approval delays	Required extension of patent for delays caused by marketing approvals	8	4
Limits on compulsory licensing	For competition policy, or national emergency by government-authorized parties	9	3
Marketing of generics	No marketing of generics prior to patent expiration; patent owner must be notified of request for marketing approval	0	8
Test data	5 (pharm.) and 10 year (ag. chemicals) limits on use of prior approval of a product, whether at home or abroad, by 3rd parties; 3 year extension for new clinical information.	0	3
General patent-related provisions:			
Unreasonable patent delays	Patent lift must be extended for 'unreasonable delays', set as a minimum at 5 years after filing of patent application	1	4
Second-use patents	Patents must be available for new uses of known products	6	6
Parallel imports	Patent owner's right to prevent importation cannot be abridged by the sale or distribution abroad	9	2
Burden of proof for infringements	Patents presumed valid in civil or administrative hearings	11	1
Copyright-related provisions:			
Length of copyright protection	Copyrights last 70 years after death of author; or 95 years from publication/120 years from creation	1	1
Technologies for circumventing copyright	Civil and criminal penalties for use or import of technology for circumvention of copyright	0	11
Burden of proof for copyright	Named copyright owners are presumed to be true owners in legal hearings in the absence of contrary evidence	0	11

Parallel imports	Copyright owners have exclusive right to authorize or prohibit imports of their works, even if legally produced	10	2
General trademark-related provisions:			
Burden of proof for trademarks	Copyrights are assumed valid unless proven otherwise	11	1
Length of trademark term	Trademarks shall have a minimum term of 10 years	2	10
Sounds and scents	Registered trademarks need not be visually perceptible, and may be composed of a sound or scent	0	7
Sounds and scents	Registered trademarks need not be visually perceptible, and may be composed of a sound or scent	0	7
Geographical indications:			
Geographical indications	Geographical indications must be available for trademark protection	4	3
Enforcement measures:			
Allocation of resources	The allocation of resources for enforcement cannot excuse a state from compliance with agreement provisions	3	9
Border measures	Authorities may intercept merchandise suspected of being counterfeit, without a formal complaint by a rights holder.	3	9
Punitive damages for trademark and copyright violations	Pre-established damages, sufficient to deter infringements, shall be available to the rightsholder to claim	10	2
Punitive damages on patents	In civil hearings, judicial authorities must be permitted to assess punitive damages up to 3 times the assessed injury	10	2
Willful infringement without financial motive	Clarifies that criminal infringement may lack a financial motive, and that penalties for international infringements shall be equivalent to domestic infringements	2	9

Table 1: Selected TRIPS-plus provisions of US Free Trade Agreements.

Figure 1 demonstrates that there is variation in the strength of TRIPS+ provisions both across and within agreements. Some of this variation is over time. For example, protection of patents reached an apparent peak in the mid-2000s (especially in the agreements with the Middle Eastern trade partners Morocco, Bahrain and Oman) but the backlash against these provisions, especially on pharmaceuticals, manifests itself in the weakened provisions thereafter. In contrast, copyright and trademark provision have more or less steadily increased over time. There is also variation within the agreements depending on the issue area. AUSFTA had very strong pharmaceutical provisions but no TRIPS+ enforcement provisions related to patents; the Panama and Colombia TPAs had weaker patent provisions, but strong copyright and enforcement provisions.

Winners and losers from IPRs in trade agreements

Who gains and who loses from the inclusion of IPRs in US trade agreements? As a first cut, the winners are likely to be firms – whether in the US, the agreement partner, or in some third country – which own or are likely to create intellectual assets. Non-firm owners of intellectual assets like authors and inventors are also potential beneficiaries. The ownership of such assets is only valuable to the extent that ownership rights are respected and enforced. Owners of intellectual property therefore stand to benefit from provisions of trade agreements which expand the term of exclusive ownership; facilitate claiming ownership; delineate additional scope for, or violations of, those rights; or mandate proper enforcement of those rights. This general statement masks two important particularities for the case of US free trade agreements: the US is generally much more competitive at producing IP-intensive products than its trade agreement partners, and the US already has among the strongest protections for IP in the world.

On the first point, some of the United States' FTA partners generate little intellectual property, whether because their comparative advantage lies outside the industries that tend to produce such assets or because they spend a relatively small amount of GDP, in absolute or proportional terms, on R&D, higher education, and other investments likely to generate intellectual property.[16] This is especially so for developing countries. More generally, the United States is competitive in industries that intensively generate intellectual property, like pharmaceuticals, biotech, and agricultural chemicals, as well as software, movies, music, and other forms of publishing (Horan et al., 2005). This is seen in Figure 2 which plots US exports against imports for all goods-producing industries across all agreement partners. The US is more export-competitive in patent-intensive industries (represented by black dots in the top half of figure 2) than in industries which do not rely intensively on patents (represented by red dots). A similar pattern holds for trademark-intensive industries (in the bottom half of Figure 2).

[16] The main exception to this is South Korea, which generates significant quantities of patents, trademarks, and copyrightable designs (World Bank Group, 2012).

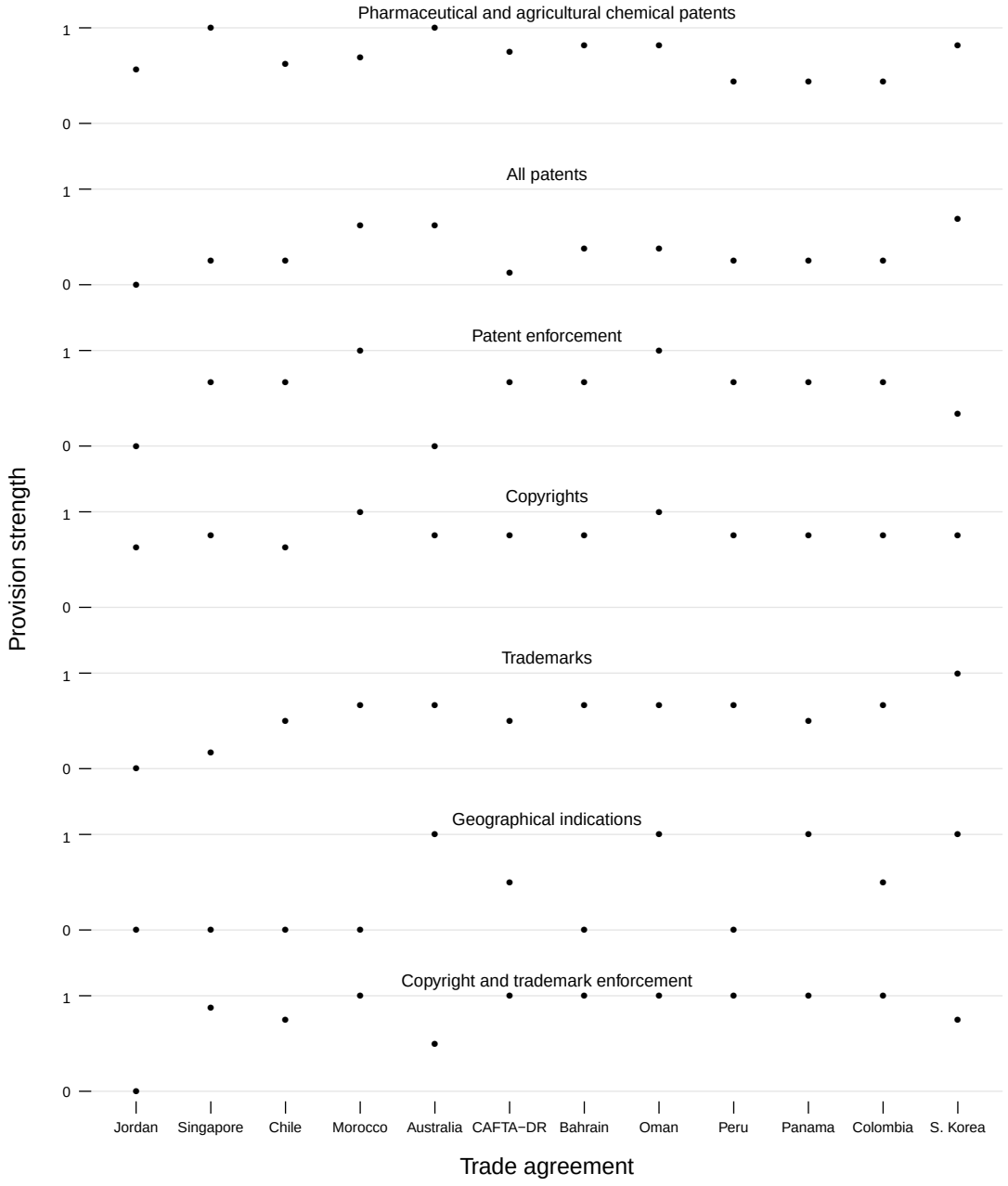

Figure 1: Variation in strength of IPRs across US trade agreements.

The United States generally rates very high in metrics for the quality of intellectual property protections. For example, Ginarte and Park (1997) and Park (2008) rank the US first in the extent of patent protections using a method that examines domestic legal provisions, international commitments, and indicators of enforcement.[17] There are no similarly up-to-date measures for the extent of copyright or trademark protection [although see Ostergard Jr (2000), Seyoum (1996), and Rapp and Rozek (1990).] Because intellectual property rights generally receive strong protection matched with effective enforcement in the United States, the major beneficiaries of such provisions in US FTAs are likely to be firms which have IP assets that are unprotected in the US's trade agreement partners. Put another way, the main impact of the IP provisions in US trade agreements is to bring the standards of the US's trade partners up to the very high standards of the US.

Combining these facts, we can refine our statement of who is likely to benefit from expanded IP provisions in US trade agreements: The likeliest beneficiaries are US firms which own intellectual assets, and which have the potential to either export to, or have significant foreign investments in, the trade agreement partner. Firms which have no ability to export their IP-intensive products or serve a foreign market through local production are likely to have a weaker interest in IP provisions, although they may still benefit from provisions that enhance legal remedies for violations.

Who loses from expanded protections for IP in US trade agreements? First, consumers of intellectual property-intensive goods are harmed by the higher prices created by the exploitation of monopoly rents by owners of intellectual properties. Of course, IP laws also incentivize the production of IP-intensive goods, so there is a countervailing force which plays out over a longer time horizon. Because many of the FTA partners of the US are relatively small, the reduced incentives for the creation of IP are unlikely to be highly salient for US IP producers as a deterrent to investment in intellectual property. In contrast, the negative consequences of higher prices for foreign consumers can be quite severe. The costs of stronger IP protections to foreign consumers in most US trade partners therefore likely outweigh any long-term gains to consumer welfare.[19]

Second, IP protections can harm firms that would like to commercially exploit protected properties. These firms could be located in the United States, in the trade partner, or in a third country.[20]

[17] The United States ranks 15 of 140 countries for protections of IP rights in the World Economic Forum's Global Competitiveness Index, a ranking based on the survey responses of a cross-section of business leaders. See `http://www3.weforum.org/docs/gcr/2015-2016/Global_Competitiveness_Report_2015-2016.pdf`. Using a similar methodology, Liu and La Croix (2015) ranks the US first in the strength of pharmaceutical patent protections.

[18] Our proxies for patent- and trademark-intensity from Blank and Kappos (2012) are introduced below. All trade data are averages from 2010-14. We include observations where the US imports less than $1000 annually (which are mainly zeroes) as a rug on the y-axis. The fitted line represents a regression of US exports on US imports, including a quadratic term. The averages for the zero-import cases are also estimated separately and included as thick lines along the y-axis.

[19] For NGO opposition to strong IPRs motivated by concern for consumers in both developed and developing countries, see Dür and De Bièvre (2007); Dür and Mateo (2014) and Pianta (2014).

[20] Prohibitions on parallel importation are likely to be especially salient to this third group.

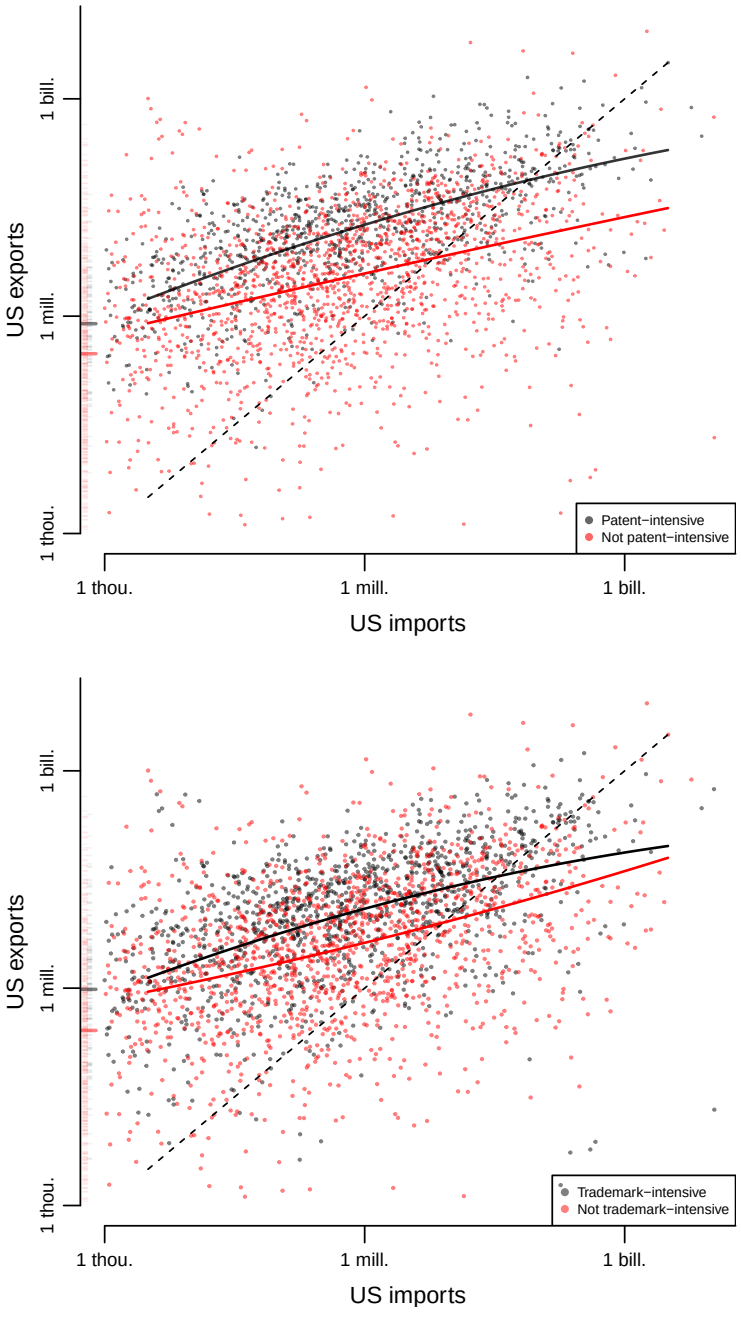

Figure 2: US exports and imports across goods-producing industries for each trade agreement partner(s).[18]

Different types of intellectual property are likely to activate different sets of these groups. Counterfeiters may be the prime beneficiaries of weak rules on trademark enforcement, while relatively weak patent protections may benefit a much wider array of legitimate businesses that produce generic versions of patented products or who cannot afford the licensing and legal costs of patented technologies. Because US enforcement of IPRs is strong, counterfeiters harmed by such provisions are likely to be foreign, while legitimate businesses may be foreign or domestic.

Third, foreign governments, whether representing the interests of their producers or consumers, are likely to lose from the expansion of IPRs and resultant loss of "policy space" to craft an intellectual property regime suited to their constituents' interests Shadlen (2005*b*, 2008). Stronger IP provisions lack clear political and economic benefits for most of the US trade agreement partners, especially the developing countries (Deere, 2008).[21] For these countries the "package negotiation" structure of trade agreements therefore looms large as an explanation for concessions on IP (Davis, 2004, 2003). Regulatory autonomy over intellectual property is traded for market access into the US as well as the opportunity to attract foreign investment generated by the preferential agreement with the United States (Shadlen, 2008).

The fight over pharmaceutical patents nicely illustrates the sides involved in these debates. US pharmaceutical firms, and their main trade association, have aggressively pushed IP protections in US trade agreements (among other places). These protections have harmed foreign consumers by denying them much-needed drugs at an affordable price, sparking an enormous backlash over patent protections in trade agreements that continues to this day. These protections also affect producers of generic pharmaceuticals, including the membership of the Generic Pharmaceutical Association (GPhA, an association of mostly US-owned pharmaceutical companies) and foreign producers of generics. The GPhA argued that the KORUS agreement created overly strong protections of pharmaceutical patents that were likely to harm its members and Korean consumers, and has expressed deep misgivings about IP protections in the Trans-Pacific Partnership.

However, the case of pharmaceuticals may be somewhat exceptional. The case of the US movie industry may be more clearly illustrative of the politics of IP protections inside the United States, because almost all of the special interest pressure in the US is pushing towards stronger protections. The Motion Picture Association of America, and the major Hollywood studios, have fought hard for stronger protections of their copyrighted works to fight piracy. Unlike the case of pharmaceuticals, there is no countervailing domestic constituency pushing against the inclusion of stronger protections for copyrights in US trade agreements. Instead, the opponents of such provisions are likely to be located abroad, whether they be producers of media that wish to flout rules on intellectual property or foreign governments that wish to avoid enforcing such rules because of economic, political, and opportunity costs.

[21] See Shadlen (2007*a*) for a more nuanced evaluation of the pros and cons of IPRs for developing country.

IP provisions and support for FTAs: theoretical expectations

The preceding discussion suggests that IP provisions contained within trade agreements ought to generate producer support for those agreements. Such provisions redistribute income away from consumers, counterfeiters, and producers of generics, and into the hands of owners of intellectual property. This is particularly so for firms and industries in the US which create and own significant IP assets, because the US is generally more competitive in the production of IP-intensive goods than its trade partners and already has very strong protection of IPRs. Holding other factors constant, we therefore expect that owners of intellectual property in the United States should be more likely to support US free trade agreements than non-owners of intellectual property assets. This suggests three predictions about firm and industry support for US trade agreements.

The first of these is descriptive, and avoids relative comparisons of intensity across industries.

Prediction 1.
US firms and trade associations with a professed interest in IPRs should undertake significant efforts to publicly support and lobby on US FTAs. They should also explicitly mention IPRs as a justification for supporting or lobbying on these agreements.

Operationalizing this prediction requires defining which firms and associations have a professed interest in IPRs. We opt for a straightforward method: all firms and associations which have joined a US trade advisory committee on intellectual property are considered to have a significant interest in IPRs.[22] Trade advisory committees are comprised of firms, associations, and other interested parties for specific industries (aerospace, and chemicals, for example) and issue areas (such as small and minority businesses and technical barriers to trade). Prospective members of the committee generally self-nominate, and the US trade representative and Secretary of Commerce accept or reject the nomination based on an evaluation of the nominee's knowledge and contribution to a diversity of viewpoints. While the set of firms and associations with an interest in IPRs is likely largely than the set of these that have appeared on the IP trade advisory committee, we use this group as a baseline for Prediction 1.

The other consideration in operationalizing Prediction 1 is what we will count as 'significant'. We don't define any hard cutoffs, but offer the following rule of thumb: if a firm or association only publicly supports or lobbies on 0-2 trade agreements, and never mentions IPRs, that is not evidence of a significant interest. If the firms or association publicly supports or lobbies on a majority of US FTAs, and mentions IPRs in justifying that support, then we would consider that to be evidence of a significant interest in, and support of, the IP provisions of US trade agreements.

[22] We also include in our analysis the United States Chambers of Commerce and the Emergency Committee for American Trade (ECAT), two peak associations that have extensively participated in discussion of IPRs in trade agreements.

The two remaining predictions are focused on relative comparisons between industries for which intellectual property rights are important and industries for which they are less relevant. The first of these arises from the fact that all US trade agreements have IP chapters that expand upon TRIPS in at least some ways. Moreover, the mere act of concluding an FTA – even one with relatively weak TRIPS+ provisions – may spur improvement in enforcement of intellectual property law, especially if the USTR has highlighted the issue in negotiations.

Prediction 2.
US firms and trade associations in industries that intensively own or produce intellectual properties, including patents, trademarks, and copyrights, should be more likely to support trade agreements, all else equal.

Note that this prediction separates out distinct types of IPRs – patents, copyrights, and trademarks – for special consideration. This is done in part to anticipate the empirical measure described below, but also is a crucial precondition for the next prediction which proposes to exploit the variation in TRIPS+ provisions actually contained in the trade agreements.

Prediction 3.
US firms and trade associations in industries that intensively own or produce intellectual properties should be likely to support trade agreements that strengthen the scope and enforcement of intellectual property rights relevant to their industry beyond TRIPS standards.

Political Activity of IP-Interested Firms and Associations

This section considers evidence on the political activities of US firms and associations that have identified themselves as interested in intellectual property issues through their participation in the US trade advisory committees covering intellectual property. This committee was called the Industry Functional Advisory Committee on Intellectual Property Rights for Trade Policy Matters (IFAC-3) for the Singapore, Chile, Australia and DR-CAFTA agreements, and the Industry Trade Advisory Committee on Intellectual Property Rights (ITAC-15) subsequently. The committee did not exist at the time of the Jordan FTA. Note that the composition of the committee has changed over the years so not all identified firms and associations participated in all committees.

Table 2 considers the political activities of the associations that have appeared in trade advisory councils. The first question we examine is whether the association joined the main *ad hoc* coalition organized to support the trade agreement. Every US FTA, but Jordan, has featured the creation of one major *ad hoc* coalition to spearhead efforts at public positiontaking. For example, the Korea-US Free Trade Agreement Business Coalition, composed of firms and trade associations, formed to support the KORUS agreement. Joining such a coalition is a relatively low cost way of expressing support for a trade agreement.

We also examine whether an association expressed public support for a trade agreement apart from the *ad hoc* coalition, and whether it mentioned IP provisions of the agreement in the course of doing so. The main sources for these activities are website press releases from company websites, but we also considered congressional testimony as an alternative source.[23] Such activities are indicative of a higher level of interest, and also indicate that our claimed mechanism is operative: these associations care about the IP provisions of FTAs. Finally, we also examine whether the association formally lobbied on the agreement. This is the costliest form of political engagement, and evinces a very significant interest in the trade agreement.

There are two important preliminary observations on the associations before presenting the results. First, nearly all of the associations that appeared on the trade advisory committees are supporters, in general, of strong IPRs. The lone exception is the Consumer Electronics Association, which has cautioned against overly strong rules on copyright violations and technological avoidance of copyright, perhaps fearing legal trouble for producer members or customers. Consequently, there is a distinct lack of opponents of strong IP protections, whether from within or outside of industry. Second, and importantly, there is noticeable lack of associations primarily concerned with marks. Among the associations, the International Anti-Counterfeiting Coalition (IACC) and three industry-specific associations appear to be the main associations which have trademark infringements among their top priorities. The IACC explicitly counts all forms of IP among its interests, however.

Overall, we see that many of the trade coalitions have undertaken significant efforts to support and lobby on FTAs. 9 out of 21 joined the major ad hoc coalition for at least 50% of agreements. A further 11 out of 21 expressed their support for a majority of agreements outside of the main *ad hoc* coalition. Tellingly, almost all of the associations mention the importance of IPRs in the FTAs at some point, and 12 of the associations mention IPRs in discussing at least 50% of the agreements. In addition to the high rates of activity among the IP-focused associations, this gives us some confidence that a causal link between IP provisions and support for FTAs is indeed operative. Lastly, note that while more rare, lobbying efforts are also undertaken by a significant number of these associations. 11 of the associations lobbied on at least 25% of the agreements.

Table 3 presents three of the same outcomes as Table 2 but for firms that have appeared on the intellectual property trade advisory committee. (We exclude whether the firm mentioned IPRs in independently supporting the trade agreement, because most firms do not issue press releases on FTAs.) We generally find that there is a significant amount of public positiontaking and lobbying by firms that have identified IP issues as important through their participation in the IP trade advisory committees. This participation is somewhat inconsistent across firms, however. For example only 5 and 2, respectively, of the 18 firms joined the major ad hoc coalition or favored independently

[23] Online archives for the association websites were checked for contemporaneous statements about the FTAs.

Table 2: Political activities of selected IP-focused associations

Trade or peak association	Joined ad hoc coalition	Favored indeptly.	Mentioned IP provisions	Lobbied indeptly.
Patent-focused associations:				
Information Technology Industry Council (ITI)	.55	.92	.67	.33
High Tech Trade Coalition†	.00	.58	.58	.00
Pharmaceuticals Research and Mnftrs. Assoc. (PhRMA)	.73	.42	.42	.25
Biotechnology Industry Organization (BIO)	.00	.17	.17	.08
CropLife	.00	.33	.33	.00
Copyright-focused associations:				
International Intellectual Property Alliance	.64	1.00	1.00	.25
Motion Picture Association of America (MPAA)	.73	.33	.50	.50
Recording Industry Association of America (RIAA)	.18	.58	.58	.08
Association of American Publishers	.00	.08	.08	.00
Consumer Electronics Association	.36	.42	.33	.33
Business Software Alliance	.27	.50	.50	.25
Entertainment Software Association	.00	.83	.83	.00
Trademark-focused associations:				
Distilled Spirits Council of the United States	.91	.67	.58	.42
APA - The Engineered Wood Association	.00	.00	.00	.00
Rubber and Plastics Footwear Manufacturers Assoc.	.00	.00	.00	.00
Associations with multiple interests among patents, copyrights, and trademarks:				
National Foreign Trade Council	.91	.92	.83	.33
Intellectual Property Owners Association (IPOA)	.00	.00	.25	.00
Emergency Committee for American Trade†	.91	.83	.67	.58
US Chambers of Commerce†	1.00	1.00	.67	.50
National Association of Manufacturers	.91	.92	.50	.50
International Anti-Counterfeiting Coalition	.00	.00	.17	.00
Mean	.39	.50	.46	.21
Median	.27	.50	.50	.25

Numbers refer to proportion of 12 US free trade agreements for which a given activity occurred. 11 is the denominator for joined ad hoc coalition because no coalition existed for the Jordan FTA. All associations appeared in the IP trade advisory committee but those marked with †.

50%+ of the agreements examined in this paper. That being said, 8 of the 18 firms lobbied on at least 25% of the agreements. Moreover, much of the non-participation is centered in four law or consulting firms (at the bottom of the table), three of whom appeared in three or fewer ITACs. We conclude that firms interested in intellectual property have been active in supporting US trade agreements, too, although at lower rates than the associations examined in Table 2.

Table 3: Political activities of all firms from ITAC reports

Firm	Joined ad hoc coalition	Favored indeptly.	Lobbied indeptly.
Patent-focused firms:			
Pfizer	.36	.25	.50
Merck & Company, Inc.	.82	.17	.33
Thomas G. Faria Corporation	.00	.00	.00
Eli Lilly and Company	.09	.08	.00
Georgia-Pacific Corporation	.09	.00	.00
IBM Corporation	.91	.58	.25
General Motors Corporation	.45	.25	.92
Cisco Systems, Inc.	.64	.17	.08
Copyright-focused firms:			
Time Warner, Inc.	1.00	.92	.42
Microsoft Corporation	.45	.42	.33
John Wiley and Sons, Inc.	.00	.00	.00
Trademark-focused firms:			
Levi Strauss and Company	.18	.25	.00
Anheuser-Busch Companies, Inc.	.09	.08	.00
Procter & Gamble	.91	.25	.33
Firms with multiple interests among patents, copyrights, and trademarks:			
Lark-Horton Global Consulting, Ltd.	.00	.00	.00
The Gorlin Group	.00	.00	.08
Cowan, Liebowitz & Latman, P.C.	.00	.00	.00
Tuttle International Group, Ltd.	.00	.00	.00
Mean	.33	.19	.18
Median	.14	.13	.04

Numbers refer to proportion of 12 US free trade agreements for which a given activity occurred (11 in the case of joint the *ad hoc* associations).

IP Provisions as a Determinant of Support for FTAs

The results in the previous section indicate that trade associations and firms with an interest in IPRs are active in supporting US trade agreements in an absolute sense. They join coalitions to support these agreements; lobby on the agreements; and favor the agreements independently, explicitly mentioning IPRs as a motivation for their decisions to do so. This section considers a complementary question: Do protections of IPRs in free trade agreements lead industries that will benefit form such provisions to support those trade agreements *relatively more* than industries that gain no benefit from the provisions? To do so, we model support for trade agreements among all US industries for both firms and trade associations.

Data and models

Our analysis of industrial support for trade uses six-digit North American Industrial Classification System (NAICS) industries to define the boundaries of an industry. We consider support across the industrial spectrum, including agriculture, mining, and manufacturing industries as well as data from the service sectors, introduced here for the first time. We therefore examine 981 total industries (403 from the goods producing industries and 578 from the services industries) across the 12 US trade agreements from 2001 to the present day.

We focus on two outcomes as indicators of industrial support for trade. For each six-digit industry, we count the number of firms that publicly supported the agreement; and, we code a dichotomous variable that indicates whether a trade association representing the industry supported the trade agreement. Summary statistics are provided in Table 4. The main sources for these information are the *ad hoc* coalitions formed to support each trade agreement, supplemented by congressional testimony, submissions to the USTR, other coalitions, letters to Congress, and a variety of other sources. We code a firm or association as supporting an agreement where it clearly expresses unambiguous support for the trade agreement in question. Because the main *ad hoc* coalitions for the Colombia and Panama TPAs, and for the Morocco, Oman, and Bahrain trade agreements, were combined in their efforts, we treat those two sets of agreements as single cases to avoid double- or triple-counting expressions of support. We therefore have 9 agreement clusters, and our data at its largest has 8829 observations.[24]

To test our second prediction, we use measures of IP intensity developed by the US Department of Commerce in Blank and Kappos (2012). This report uses a variety of data sources to identify 4-digit NAICS industries as *Patent-intensive*, *Copyright-intensive*, and *Trademark-intensive*. The measures are all dichotomous. An industry is patent-intensive if the ratio of patents to employees exceeds the average ratio across all US industries. The trademark-intensity measure is analagous, while the copyright-intensity measure builds off of WIPO's designations of industries as significant copyright producers. Blank and Kappos (2012) show that these measures correlate with multiple alternative proxies for IP intensity, suggesting that they are valid on their face.

Around 12.8% of our six-digit industries are patent-intensive. All of these fall within the agriculture, mining, and manufacturing industries so we examine only those industries when we consider the impacts of patent-intensity. Similarly, 5.4% of all industries are copyright-intensive but they all fall within the service sectors, so we consider only services industries when we examine copyright-intensity. Only trademark intensity (27.3% of industries) spans both the goods and services industries, and so we consider the links between trademark intensity and support for liberalization using our entire dataset of public positions.

[24] Note that sales data are not provided for some services industries by the Census Bureau. This reduces the available sample size to 8685 for our models.

Table 4: Summary statistics for main outcome and explanatory variables.

	All industries			Goods			Services		
Variable	Mean	Min	Max	Mean	Min	Max	Mean	Min	Max
Outcome variables:									
# Supporting firms	0.75	0	28	1.22	0	21	0.43	0	28
Supporting assoc.	0.23	0	1	0.29	0	1	0.19	0	1
Measures of IP intensity:									
Patent-intensive	0.13	0	1	0.31	0	1	0.00	0	0
Copyright-intensive	0.05	0	1	0.00	0	0	0.09	0	1
Trademark-intensive	0.27	0	1	0.39	0	1	0.19	0	1
IP intensity supplemented with agreement provisions:									
Patent provisions	0.05	0	0.64	0.12	0	0.64	0.00	0	0.00
Copyright provisions	0.04	0	0.88	0.00	0	0.00	0.07	0	0.88
Trademark provisions	0.18	0	0.88	0.25	0	0.88	0.13	0	0.86
Sample size		8829			3628			5202	

Our main alternative explanatory variable, with which we test our third prediction, is a measure of the strength of TRIPS+ provisions for each agreement. We match provisions to the industries where the provisions are effective. For example, a provision covering pharmaceuticals will have no impact on non-pharmaceutical industries. For each industry, we then examine the total set of provisions that could be relevant. Each separate provision is scaled at a strength from 0 (no change from TRIPS) to 1 (the maximum change from TRIPS seen in US trade agreements). Each industry-agreement then receives a score which is the sum of the actual provision scores divided by the number of potentially relevant provisions. All of the industry-agreement provision strength scores therefore fall on the unit interval, where a 0 represents no TRIPS+ provisions whatsoever. A 1 indicates that an industry (for some agreement) received the maximum possible TRIPS+ provisions that have been observed across all trade agreements. We refer to these variables as *Patent provisions*, *Copyright Provisions* and *Trademark provisions*.

The measures of intensity and the measures of agreement provisions are all correlated at .90 or above. This is due to the limited variation in agreement provisions across US free trade agreements across our 9 cases. For this reason, we examine the intensity and provisions measures in separate models in the main text, and treat them as two alternative measures rather than considering the moderating effect of strong agreement provisions in an interaction model. Incorporation of the strength of agreement provisions may provide extra precision if, for example, treaties with very weak provisions garnered little support from IP-intensive industries.[25]

A typical linear predictor for our models of the impact of IP-intensity or agreement provisions

[25] We also do not consider all measures of IP-intensity in the same model, although we provide a single model with all measures in the Online Appendix which we discuss in the robustness checks.

therefore looks like the following, which is written as if *Patent-intensive* is under consideration:

$$\theta \quad = \quad \beta_0 + \beta_1 \cdot \text{Patent-intensive} + \boldsymbol{\gamma}' \cdot \mathbf{x}.$$

$\mathbf{x}$ represents a vector of covariates. To model the number of firms supporting an agreement, we use negative binomial regression; to model whether a trade association supported an agreement, we employ logistic regression.

We treat IP-intensity as a fixed, exogenous property of an industry, at least for the time scale and context in which we examine the concept. For example, pharmaceuticals are intrinsically patent-intensive because the industry is premised on consistently generating new innovations. The software, publishing, music, and other creative industries are similarly reliant on copyright of original works, and that is an unchanging feature of those industries. In contrast, the strength of agreement provisions governing intellectual property is certainly endogenous. For example, US trade partners which benefit from weaker IP provisions may be most likely to resist strong agreement provisions. US firms might strongly support an agreement with such a country – even if the protections for IP are weaker – to at least secure partial improvements in the partner's IP regime. This form of confounding ought to bias the coefficient of the provisions variable downward, and so pushes against us confirming our third hypothesis.

In every model, we control for industry sales from the Economic Census of the United States.[26] In later models we include a variety of additional variables which have been previously shown to correlate with public support for trade agreements. These include: measures of industry exports and imports (*Exports* and *Imports*); a trichotomous measure of product differentiation which moderates the effects of the preceding (*Mod. diff* and *Diff.* with homogeneous goods as a reference category); related-party imports, a proxy for vertical FDI by US firms exporting back to the US (*Related-party Imports*); and, estimates of the quantity of imported inputs and sales embodied in downstream exports (*Imported inputs* and *Downstream exports*). For these models:

$$\begin{aligned} \boldsymbol{\gamma}' \cdot \mathbf{x} \quad = \quad & \gamma_1 \ln \text{Rel. party imports} + \gamma_2 \ln \text{Inputs} + \gamma_3 \ln \text{Downstream exports} + \\ & \boldsymbol{\gamma_{4-11}} \cdot \text{Differentiation} * \ (\ln \text{Exports} + \ln \text{Imports}) + \gamma_{12} \ln \text{Sales}. \end{aligned}$$

While we think it unlikely that competitiveness or foreign investment confounds the link between IP intensity and support for trade, it is very plausible that competitiveness is a downstream consequence of IP intensity. For example, if the US has a comparative advantage in the production of IP-intensive goods, then controlling for export sales is likely to weaken the conditional correla-

[26] For agriculture, mining and manufacturing firms we are able to average sales over 2010 to 2014, to smooth over idiosyncratic variation. This is not possible for services industries, so the sales in the year 2012 are employed only. All of the trade variables are also averages over 2010 to 2014.

Table 5: IP-intensity and firm support for trade agreements.

	Patent		Copyright		Trademark	
	1	2	3	4	5	6
Patent-intensive	0.684***					
	(0.057)					
Patent provisions		1.889***				
		(0.131)				
Copyright-intensive			1.095***			
			(0.142)			
Copyright provisions				1.454***		
				(0.183)		
Trademark-intensive					0.589***	
					(0.053)	
Trademark provisions						1.008***
						(0.070)
Sales	0.330***	0.319***	0.601***	0.601***	0.227***	0.225***
	(0.024)	(0.023)	(0.029)	(0.029)	(0.007)	(0.007)
Intercept	−7.634***	−7.416***	−11.286***	−11.289***	−5.081***	−5.082***
	(0.545)	(0.537)	(0.494)	(0.493)	(0.149)	(0.148)
pseudo R^2	0.10	0.12	0.12	0.12	0.13	0.14
N	3627	3627	5058	5058	8685	8685

Notes: $^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05$.

tion between IP intensity and support for trade. We therefore expect that the estimated effects of IP intensity on support will be attenuated by the inclusion of downstream consequences of patent-intensity. Our theory nonetheless predicts that the estimated effects will remain statistically and substantively significant, because IP-intensity ought to have a direct effect on support for trade agreements with strong protections of IP rights. Unfortunately, additional controls are entirely lacking for services industries – government data on services trade has not kept pace with the importance of services to the US economy (Weymouth, 2016).

Firm and association support for trade agreements

The first set of results examine the number of firms which express support for a trade agreement as a function of the extent of both IP intensity and agreement provisions. These results, contained in Table 5, strongly support predictions 2 and 3. Industries which intensively generate intellectual property have significantly greater support for trade agreements among firms; and, IP-intensive industries which secure stronger IP protections from trade agreements are more likely to support those agreements, too. These findings can be seen in the consistently positive coefficients on the IP-intensity and agreement provisions variables.

How large are the estimates? Translating the regression results into expected differences, Model 1 of Table 5 suggests that patent-intensity would increase a typical industry's number of support-

ing firms by .84. Given that the average number of supporting firms across industries is 1.22, this is a very large increase in substantive terms. Increasing the alternative measure, which included agreement provisions, shows comparably large effects: a move from the 25th to the 75th percentile of *Patent provisions* increases the number of supporting firms from .82 to 1.62.

The basic regression models for copyright- and trademark-intensity show similarly large effects. For example, moving an industry to copyright-intensive is associated with an increase in supporting firms of .45, a very large increase given that around .42 firms per industry support US trade agreements in the services sector. The comparable estimate for the trademark-intensity measure is an increase of .31 firms. While these are extremely large figures, note that we have not yet controlled for other key explanations – the US might have a comparative advantage in patent-intensive industries, for example. Patent-intensity might be generating the US's comparative advantage, rather than a strong desire for FTAs with strong patent protections.

Table 6 examines the links between IP intensity and support for US trade agreements among industry associations. The results are strikingly similar to the results on firms' support for US trade agreements. For example, patent-intensity raises the probability of an industry's association support a trade agreement by around .09. Using the measure which incorporates variation in the strength of agreement provisions, the estimated change is .12. Note that about 28% of industries have a supporting association, so these are large increases in substantive terms. The predicted effect of copyright- and trademark-intensity are similar, around .07 and .08, respectively.

Surveying these results, two findings stand out. First, the results are consistent with our Predictions 2 and 3. Moreover, there does not appear to be a sharp difference in which version of the outcome variable is used. This provides support for our model of the politics of IPRs in US trade agreements and, more generally, for the claim that IP rights are a key driver of industrial support for US trade agreements. Second, there does not appear to be any great distinction between firms and associations in the results – both types of groups are driven to support FTAs by IP intensity and TRIPS+ provisions. One interpretation of this finding is that IP rights are valuable to industries as a whole, not just the largest firms within those industries. But an alternative interpretation is that IP rights are very important to the largest firms that are likely to both own more intellectual property and to export and invest at significant rates in foreign countries. However, unlike other areas such as trade and vertical FDI, there are no real costs to smaller firms in those same industries for firms that do not undertake these activities. They are effectively neutral about FTAs with strong IP chapters, and so trade associations are free to represent the interests of the largest firms that strongly support IP rights.

Table 6: IP-intensity and trade association support for trade agreements.

	Patent		Copyright		Trademark	
	1	2	3	4	5	6
Patent-intensive	0.456***					
	(0.078)					
Patent provisions		1.664***				
		(0.183)				
Copyright-intensive			0.434***			
			(0.118)			
Copyright provisions				0.591***		
				(0.152)		
Trademark-intensive					0.438***	
					(0.056)	
Trademark provisions						0.789***
						(0.076)
Sales	0.300***	0.299***	0.193***	0.193***	0.105***	0.103***
	(0.033)	(0.033)	(0.022)	(0.022)	(0.008)	(0.008)
Intercept	−7.859***	−7.917***	−4.713***	−4.718***	−3.384***	−3.370***
	(0.746)	(0.753)	(0.370)	(0.370)	(0.153)	(0.153)
pseudo R^2	0.05	0.07	0.10	0.10	0.05	0.06
N	3627	3627	5058	5058	8685	8685

Notes: $^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05$.

Robustness of the main findings

In this section we consider the robustness of the results presented above by including a large set of additional control variables that are associated with support for trade liberalization. They may also be correlated with IP intensity, although we believe they are more likely to be downstream consequences of IP intensity than confounding causes. As noted above, this exercise restricts us to industries in the agriculture, mining, and manufacturing sectors for whom data on international trade are provided by the US government. This does not affect our sample on patent intensity, but does remove services firms from our consideration of trademark intensity. It also means that we cannot examine the robustness of our results on copyright intensity.

These results are presented in Table 7. Overall, we find that the associations documented above are replicated, although the size of the effects are smaller. The impacts of patent intensity are somewhat attenuated, while the impacts of trademark-intensity are noticeably smaller (note that the sample has changed, however, because the services industries have been dropped). We conclude that our main substantive findings above are mostly robust, in direction if not size, to the inclusion of a rich set of alternative determinants of industrial support for trade.

As an additional check of the main findings, we consider an alternative outcome that is likely to be related to public support: lobbying on trade agreements. We recreate all of the models from Table 7 using the number of lobbying firms and a dummy variable for whether an association

Table 7: IP-intensity and support for trade agreements with additional covariates.

	Patent		Trademark	
	1	2	3	4
Firm support:				
Patent-intensive	0.361***			
	(0.060)			
Patent provisions		0.948***		
		(0.139)		
Trademark-intensive			0.079	
			(0.055)	
Trademark provisions				0.197**
				(0.074)
Sales	0.009	0.007	0.008	0.009
	(0.015)	(0.015)	(0.015)	(0.015)
pseudo R^2	0.23	0.23	0.22	0.22
N	3627	3627	3627	3627
Complete covariates	Yes	Yes	Yes	Yes
Association support:				
Patent-intensive	0.431***			
	(0.093)			
Patent provisions		1.227***		
		(0.218)		
Trademark-intensive			0.147*	
			(0.084)	
Trademark provisions				0.294**
				(0.113)
Sales	0.090***	0.088***	0.089***	0.090***
	(0.022)	(0.022)	(0.022)	(0.022)
pseudo R^2	0.16	0.17	0.16	0.16
N	3627	3627	3627	3627
Complete covariates	Yes	Yes	Yes	Yes

Notes: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

lobbied. These results are presented in Table A2 of the appendix. We expect to see similar outcomes – if IP-intensity and specific agreement provisions lead firms and associations to support trade agreements, it stands to reason that they will be more likely to lobby on such agreements, too. This might simply be to express their support to a member of Congress, or to suggest some improvement to an agreement's IP provisions. We find extremely similar patterns when these lobbying outcomes are examined. Patent intensity is strongly linked to more lobbying by firms, as well as associations although the coefficient for Patent-intensive is not significant in the latter case. We also find similar patterns with trademark intensity and trademark provisions.

We also consider in the online appendix the simultaneous modeling of all of the forms of IP-intensity for the entire set of goods and services industries. Each of the measures is positively and

significantly linked to firm and association support for US PTAs, precisely as we found above. We also examine an alternative measure of agreement provisions from Escobar-Andrae (2011) which is only available for provisions governing patents and trademark. We find very similar results. Finally, we examine in the online appendix the interaction of patent-intensity with three proxies for the quality of IP protections in the US's partner countries. We find that our main findings are generally robust to controlling for partner country institutions, and that there is no consistent moderating effect of such institutions on industrial support for trade. As we with agreement features, we are restricted to only 9 agreement cases, so investigating the role of partner country institutions may require turning to other sources of data with greater cross-country variation.

The relative impact of IP intensity

Our final empirical exercise evaluates the total impact of IP provisions of US trade agreements in relation to other likely causes of firm and association support for trade agreements. To do so, we consider four counterfactual simulations across the complete set of all US trade agreements and industries.[27] In the first of these, we estimate the level of support among firms and associations if we were to reduce related-party imports and imported inputs by 90%. In the second, we imagine increasing each industry's imports by a factor of 10 while shrinking exports by 90%. These simulations can be interpreted as descriptions of how pro-trade activity in the US would have looked with drastically fewer opportunities to benefit from the globalization of supply or sales.

Our third counterfactual imagines turning all patent-intensive industries into industries with no patent-intensity. The predicted effects of this change on support for trade agreements are large. For example, the number of firms predicted to support trade in a typical industry falls from .95 to .85.[28] Similarly, the probability that a trade association supports a trade deal is reduced by .03. Investigating the impact of trademark intensity in our fourth simulation, we see more modest effects, which are not statistically distinguishable from a null effect in the case of firms.

These differences are somewhat smaller than the effects of a sharp reduction in relative exports, and less than one third of the size of the effects of a de-globalization of the supply chain. In part, this is simply a function of the fact that all industries can benefit from importing inputs or exports, at least in principle, while only a subset of industries can benefit from IP provisions in trade agreements – for example, those industries which intensively generate patents (31% of goods producing industries) and trademarks (38%). But this is also because other drivers of industrial support for trade are highly salient, especially the factors relating to globalization of the supply chain.

[27] All of these counterfactuals simulations rely on models 1 and 3 of Table 7 so that we may compare IPRs as a determinant of support for trade agreements with other leading explanations.

[28] Note that these estimates are the median expected number of firms supporting trade across all industries, and so differ from the averages described above because the number of supporting firms variable is right-skewed.

Table 8: Counterfactual simulations of number of firms or association supporting trade liberalization.

Simulation 1: Sharp reduction in foreign sourcing and production

	Observed	Predicted	Difference	95% CI
# Firms support	0.95	0.61	0.34	[0.30, 0.38]
% Assoc. support	0.28	0.19	0.08	[0.07, 0.10]

Simulation 2: Sharp reduction in the export-import ratio

	Observed	Predicted	Difference	95% CI
# Firms support	0.95	0.82	0.13	[0.03, 0.22]
% Assoc. support	0.28	0.22	0.05	[0.03, 0.08]

Simulation 3: No patent-intensive industries

	Observed	Predicted	Difference	95% CI
# Firms support	0.95	0.85	0.10	[0.07, 0.13]
% Assoc. support	0.28	0.25	0.03	[0.02, 0.04]

Simulation 4: No trademark-intensive industries

	Observed	Predicted	Difference	95% CI
# Firms support	0.96	0.94	0.03	[-0.01, 0.06]
% Assoc. support	0.28	0.27	0.01	[0.00, 0.02]

Notes: All estimates are first differences; changes in continuous variables are from $25th$ to 75th percentile. $^{***}p < 0.01$,$^{**}p < 0.05$,$^{*}p < 0.10$.

Overall, the predicted effects of IP on support for US trade agreements are politically substantive and noticeable, but smaller than other trade-related aspects of trade agreements. IP provisions are an important driver of firm and association preferences over trade agreements, but not the primary or most important explanation for corporate support for trade. We therefore conclude that any claim that trade agreement, and trade politics, "aren't about trade" is well short of the mark. However, IP provisions – just one aspect of the expanded trade agenda's focus on corporate rights – are among the important explanations of support for trade agreements, with very large impacts among the minority of industries that intensively produce intellectual property.

Conclusion

Given this conclusion – intellectual property provisions are an important if certainly not the primary driver of corporate support for US FTAs – we highlight three implications for further research. First, the expanded trade agenda covers much more than just intellectual property rights. The distributive implications of many of these chapters to trade agreements are likely complex, both between and within industries, and so merit greater attention from scholars of trade politics. Gulotty (2014, 2016), for example, examines the impacts of technical barriers to trade (TBTs) on the politics of trade policymaking in the US. Manger (2009) looks at the impact of investment pro-

visions in the creation of trade agreements between developed and developing countries. Many areas of trade agreements – and their particular politics – remain to be investigated in this vein.

Second, this paper should spark further interest in the self-conscious politics of constructing the pro-trade coalition, particularly in an era of renewed contestation over globalization. For example, the US Trade Representative during the first term of the Bush Administration, Robert Zoellick, described the political challenges of finding support for trade in a 2004 interview:

> ...[T]wo Congresswomen from Silicon Valley did not vote for trade promotion authority. Now, somebody has to explain to me the economic logic of that. Well, the political logic was that the high-tech community wasn't organized in its own interest. So, we have tried to work not only with the agriculture community and the manufacturing community but with the retailers, with the high-tech community, with the entertainment industry. Jack Valenti and I put together a coalition to try and get entertainment to be supportive. We're trying to broaden the base of support for this effort.

The Entertainment Industry Coalition for Free Trade went on to strongly support many US FTAs, citing intellectual property concerns in doing so.

Finally, we find political evidence which backs a normative concern that has been raised by many. Recent research has highlighted some of the negative impacts of globalization on US manufacturing, especially in particular industries and on small and medium size firms (Pierce and Schott, 2012; Autor, Dorn and Hanson, 2013). Because intellectual property rights are likely to be a concern of the US's most competitive industries, and the largest firms that own IP within those industries, this paper adds weight to the calls for a trade agenda which helps develop US industry comprehensively, not just for a corporate elite.

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SUPPORTING INFORMATION

The following additional materials are available in the online appendices:
Appendix A: Additional Models.

FOR ONLINE PUBLICATION ONLY

Appendix A: Additional Models

Table A1: IP-intensity and lobbying on trade agreements among firms.

	Patent		Trademark	
	1	2	3	4
Patent-intensive	0.404***			
	(0.081)			
Patent provisions		1.338***		
		(0.187)		
Trademark-intensive			0.251***	
			(0.074)	
Trademark provisions				0.692***
				(0.098)
Mod. differentiated	0.202	0.236	0.171	0.178
	(0.476)	(0.473)	(0.480)	(0.479)
Differentiated	1.379**	1.443***	1.351**	1.378**
	(0.454)	(0.451)	(0.458)	(0.457)
Exports	0.067*	0.068*	0.066*	0.065*
	(0.029)	(0.029)	(0.029)	(0.029)
Exports·Mod. diff.	−0.022	−0.026	−0.014	−0.015
	(0.035)	(0.034)	(0.035)	(0.035)
Exports·Diff.	−0.070*	−0.078**	−0.057*	−0.065*
	(0.032)	(0.032)	(0.032)	(0.032)
Imports	0.036*	0.036*	0.030	0.025
	(0.019)	(0.019)	(0.019)	(0.019)
Imports·Mod. diff.	−0.014	−0.016	−0.010	−0.008
	(0.023)	(0.023)	(0.023)	(0.023)
Imports·Diff.	−0.022	−0.024	−0.020	−0.013
	(0.021)	(0.021)	(0.021)	(0.021)
Related-party imports	0.021*	0.021**	0.022**	0.023**
	(0.009)	(0.009)	(0.009)	(0.009)
Inputs	0.216***	0.204***	0.215***	0.208***
	(0.019)	(0.020)	(0.019)	(0.020)
Downstream exports	0.014*	0.010	0.024**	0.026***
	(0.008)	(0.008)	(0.008)	(0.008)
Sales	0.181***	0.190***	0.160***	0.147***
	(0.036)	(0.036)	(0.036)	(0.036)
Intercept	−9.490***	−9.506***	−9.174***	−8.828***
	(0.832)	(0.829)	(0.836)	(0.833)
pseudo R^2	0.18	0.19	0.17	0.18
N	3627	3627	3627	3627

Notes: $^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05$.

IP provisions and lobbying

This section provides models which examine IP-intensity and agreement provisions as explanations for the extent of lobbying. The first set of models are directly analagous to those in the top half of Table 7, except that the outcome variable is a count of the number of firms lobbying on a given agreement. The second set of models are analagous to those in the bottom half of Table 7, but the outcome variable is a dichotomous measure of whether an association lobbied.

Table A2: IP-intensity and lobbying on trade agreements among associations.

	Patent		Trademark	
	1	2	3	4
Patent-intensive	0.118			
	(0.113)			
Patent provisions		0.687**		
		(0.260)		
Trademark-intensive			0.036	
			(0.102)	
Trademark provisions				0.490***
				(0.135)
Mod. differentiated	−0.686	−0.651	−0.697	−0.677
	(0.495)	(0.494)	(0.496)	(0.497)
Differentiated	0.179	0.205	0.177	0.168
	(0.464)	(0.463)	(0.464)	(0.465)
Exports	0.046	0.047	0.047	0.049
	(0.030)	(0.030)	(0.030)	(0.030)
Exports·Mod. diff.	0.002	−0.003	0.004	−0.001
	(0.038)	(0.038)	(0.038)	(0.038)
Exports·Diff.	−0.109**	−0.116***	−0.105**	−0.115***
	(0.036)	(0.036)	(0.035)	(0.035)
Imports	−0.014	−0.013	−0.015	−0.019
	(0.022)	(0.022)	(0.022)	(0.022)
Imports·Mod. diff.	0.042	0.042	0.042	0.045
	(0.027)	(0.027)	(0.027)	(0.027)
Imports·Diff.	0.086***	0.086***	0.086***	0.093***
	(0.027)	(0.027)	(0.027)	(0.027)
Related-party imports	0.013	0.011	0.013	0.012
	(0.012)	(0.012)	(0.012)	(0.012)
Inputs	0.154***	0.146***	0.154***	0.143***
	(0.026)	(0.026)	(0.026)	(0.026)
Downstream exports	0.009	0.007	0.011	0.014
	(0.011)	(0.011)	(0.011)	(0.011)
Sales	0.036	0.046	0.032	0.029
	(0.048)	(0.048)	(0.048)	(0.048)
Intercept	−5.075***	−5.193***	−5.013***	−4.900***
	(1.007)	(1.011)	(1.008)	(1.015)
pseudo R^2	0.09	0.09	0.09	0.09
N	3627	3627	3627	3627

Notes: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

Additional models for robustness

Table A3 provides where we consider all three intensity or provisions variables simultaneously among both goods and services industries. Table A4 uses the alternative measure of agreement provisions from (Escobar-Andrae, 2011).

Table A3: IP-intensity and trade partner features.

	All		All	
	Firm	Assoc.	Firm	Assoc.
	1	2	3	4
Patent-intensive	0.207**	0.171*		
	(0.073)	(0.080)		
Copyright-intensive	1.012***	0.372***		
	(0.108)	(0.119)		
Trademark-intensive	0.522***	0.372***		
	(0.056)	(0.061)		
Patent provisions			0.730***	0.856***
			(0.172)	(0.190)
Copyright provisions			1.347***	0.476***
			(0.137)	(0.154)
Trademark provisions			0.894***	0.626***
			(0.076)	(0.083)
Sales	0.237***	0.105***	0.230***	0.096***
	(0.008)	(0.009)	(0.008)	(0.009)
Intercept	−5.382***	−3.421***	−5.298***	−3.289***
	(0.165)	(0.168)	(0.163)	(0.167)
pseudo R^2	0.15	0.06	0.16	0.07
N	8685	8685	8685	8685

Notes: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

Table A4: Escobar Andrae measure of agreement provisions.

	Patent		Trademark	
	Firm	Assoc.	Firm	Assoc.
	1	2	3	4
EA Patent provisions	0.939***	0.110***		
	(0.083)	(0.024)		
EA Trademark provisions			0.975***	0.144***
			(0.079)	(0.015)
Sales	0.331***	0.058***	0.225***	0.018***
	(0.024)	(0.006)	(0.007)	(0.001)
Intercept	−7.621***	−1.039***	−5.056***	−0.131***
	(0.546)	(0.139)	(0.148)	(0.025)
pseudo R^2	0.10	0.04	0.14	0.06
N	3627	3627	8685	8685

Notes: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

Trade partner features

This section considers two additional hypotheses, both of which build off of the idea that trade partner features ought to matter for the intensity of preferences for producers over IP provisions in trade agreements. First, it might be the case that US producers in IP-intensive industries would especially back trade agree-

ments with countries that have the weakest protections of intellectual property rights. Assuming that treaty provisions are implemented and enforced, those are the countries that will have to alter their policies most significantly to the benefit of US producers. On the other hand, it could be that an IP-intensive industry might be wary of trade liberalization with countries that have weak protections for IP, if they feel that treaty provisions won't be perfectly enforced, or if they simply do not want to see violators of IP rewarded with trade agreements.

In order to examine this idea, we consider three models consider the question of whether the impact of IP-intensity is stronger when the trade partner in question has weaker protections of intellectual property rights. Two drawbacks in this analysis must be acknowledged. First, there are no systemtatic measures of the legal protections for copyrighted works and trademarks across the countries in our sample. To proxy for the former, we follow the International Property Rights Index (a project of the conservative Property Rights Alliance/American for Tax Reform) in employing the rate of software piracy as reported in Alliance (2016). Of course, this is only a proxy based on a particular type of copyright violations. To proxy for rules governing trademarks, we use a variable which measures whether a start had acceded to the Madrid Protocol before the FTA (2), simultaneously with the FTA (1), or otherwise (0). Finally, we measure patent protections using the well-established measure from Park (2008); Ginarte and Park (1997), where we use the year 2000 measure as our baseline. The second drawback to consider is that we have only a small sample of agreements in our data – 9 agreements in total. This strictly limits the variation for country dependent variables and so we are tentative about this analysis.

Overall, the models provided in Table A5 suggest that there is no clear strengthening of the impact of patent-, copyright-, or trademark-intensity for trade partners that have weak protections of patent rights.[29] For example, the impact of patent-intensity is stronger among firms but weaker among associations for countries with the strongest protections of patents – although neither coefficient is significant. In general, countries with more violations of copyrights tend to get less support for a trade agreement from copyright-intensive industries. Finally, countries with more protections for trademarks tend to get less support for liberalization from trademark-intensive US industries. Overall, there are correlations which fit both of the arguments above and the results are generally inconsistent and unconvincing given the small number of countries and the use of proxies. We do suggest, however, that further investigation of this idea might be a valuable site for future research.

We also consider an alternative feature of the US's trade partners in Table A6, that some countries might be better producers of IP-intensive goods than others. This might imply that US firms would be especially desirous of expanding strong protections of IP to those countries, to ensure that foreign competitors are not exploiting US intellectual property. We interact in our complete model the patent- and trademark-intensity of an industry with the log exports of the US partner country (or countries) to the rest of the world excluding the US. In general, we do not see any intensification of preferences associated with countries that successfully export IP-intensive goods.

[29] Note that all of the measures are re-scaled so that 0 is the lowest and 1 is the highest among the partners in the data. The models on patents and trademarks examine only goods-producing industries, and use a complete set of covariates from Table 7.

Table A5: IP-intensity and trade partner features.

	Patent		Copyright		Trademark	
	Firm	Assoc.	Firm	Assoc.	Firm	Assoc.
	1	2	3	4	5	6
Patent-intensive	0.231*	0.566***				
	(0.111)	(0.174)				
Patent protections	0.040	1.508***				
	(0.253)	(0.381)				
Int.·protections	0.573	−0.499				
	(0.406)	(0.629)				
Copyright-intensive			1.678***	1.119***		
			(0.294)	(0.247)		
Copyright violations			0.770***	1.150***		
			(0.220)	(0.191)		
Int.·violations			−1.391*	−1.612**		
			(0.629)	(0.531)		
Trademark-intensive					0.111	0.272**
					(0.077)	(0.117)
Trademark protections					0.028	0.245*
					(0.080)	(0.117)
Int.·protections					−0.073	−0.267
					(0.118)	(0.176)
Sales	0.150***	0.095**	0.603***	0.194***	0.144***	0.065
	(0.026)	(0.040)	(0.029)	(0.022)	(0.027)	(0.039)
Intercept	−7.454***	−6.242***	−11.644***	−5.234***	−7.450***	−5.529***
	(0.606)	(0.866)	(0.505)	(0.383)	(0.607)	(0.854)
pseudo R^2	0.23	0.17	0.13	0.04	0.22	0.16
N	3627	3627	5058	5058	3627	3627
Complete. covs	Yes	Yes	No	No	Yes	Yes

Notes: $^{***}p < 0.001$, $^{**}p < 0.01$, $^{*}p < 0.05$.

Table A6: IP-intensity and partner exports to the world.

	Patent		Trademark	
	Firm	Assoc.	Firm	Assoc.
	1	2	3	4
Partner exports to world	−0.018	0.006	−0.010	−0.008
	(0.018)	(0.026)	(0.019)	(0.027)
Patent-intensive	0.357***	0.482***		
	(0.086)	(0.134)		
Int.· partner exp.	0.002	−0.028		
	(0.034)	(0.052)		
Trademark-intensive			0.119	0.100
			(0.079)	(0.119)
Int.· partner exp.			−0.024	0.025
			(0.031)	(0.046)
Sales	0.152***	0.074*	0.148***	0.056
	(0.026)	(0.039)	(0.027)	(0.039)
Intercept	−7.415***	−5.637***	−7.465***	−5.294***
	(0.600)	(0.850)	(0.606)	(0.848)
pseudo R^2	0.23	0.16	0.22	0.16
N	3627	3627	3627	3627
Complete covs.	Yes	Yes	Yes	Yes

Notes: $^{***}p < 0.001, ^{**}p < 0.01, ^{*}p < 0.05$.