Firms, Trade Policy, and Special Interest Institutions

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Abstract

Large firms are prime beneficiaries from globalization, but when are their voices amplified, resulting in freer trade? Special interest institutions — political rules and regulations which make it easier for interest groups to participate in politics — empower both industry associations and big firms. Consequently, special interest institutions will lead to lower trade barriers in industries where large firms are pro-trade, while raising trade barriers in industries where firms share uniformly anti-trade preferences. We test these ideas using data on tariffs, trade, and global value chain integration across hundreds of countries and thousands of products. We therefore contribute to the literature on domestic political institutions and trade policy, and explain how political institutions shape the influence of pro-globalization firms.

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Introduction

Firms differ markedly in their ability to export, import, and offshore production: generally, only the largest and most productive firms are able to do these activities. As a result, trade patterns that are widespread in contemporary globalization, particularly intra-industry trade (IIT) and offshoring within global value chains (GVC), lead to a trade politics that pits big, productive, globally-oriented firms against small, unproductive, domestically-oriented firms (Kim and Osgood, 2019). Big firms can benefit from opportunities to export and offshore, while small firms suffer from greater competition with no compensating benefits (Melitz, 2003; Helpman, Melitz and Yeaple, 2004; Baccini, Pinto and Weymouth, 2017). Industries are thus internally divided over trade (Osgood, 2017*a*,*b*). What are the implications of these firm-level models of preferences for trade policy outcomes, particularly for the level of barriers to trade imposed by states?

The literature has mainly answered this question by focusing on individual and collective political action. In industries with significant IIT or offshoring, larger firms are privileged in political organization. This is because they are few in number, can individually make decisive contributions to political influence, and possess significant political and economic capital (Drope and Hansen, 2006; Kerr, Lincoln and Mishra, 2014; Osgood, 2020). Even if they fail to collectively organize, large firms have the capacity to go it alone and lobby for free trade (Kim, 2017; Hanegraaff, Poletti and Van Ommeren, 2023; Plouffe, 2023). Small firms lack resources and are many in number, making both individual and collective action difficult. For this reason, industries with significant IIT or GVC integration should have lower trade barriers (Kim, 2017; Baccini, Dür and Elsig, 2018; Yildirim et al., 2018; Anderer, Dür and Lechner, 2020). Recent scholarship has also examined democratic institutions' and voting rules' impact on firms' influence over trade policy (Betz, 2017; Bearce and Roosevelt, 2023).

In this paper, we offer a complementary but distinct institutional account which gives rise to unique testable propositions. Our theory starts with the notion of "special interest institutions", political rules or institutions which empower interest groups, whether trade associations or individ-

ual firms.[1] Examples of these institutions include permissive rules on campaign contributions or lobbying, and other formal or informal incorporation of interest groups into policymaking processes through feedback, committees, or consultations. Special interest institutions tend to empower well-organized trade associations and larger firms (which have the resources to strike out on their own politically) but not smaller firms (which struggle to pay the high entry costs of political influence).

In uncompetitive industries without IIT or significant scope for GVC integration, stronger special interest institutions should therefore be associated with more trade protection. The industry – its trade association and big firms – are united in supporting restrictions on foreign imports. However, in uncompetitive industries with either IIT or offshoring, big firms are pro-trade. Strengthening special interest institutions therefore empowers actors who strongly support liberalization. Thus, stronger special interest institutions should be associated with lower barriers to trade. These conditional effects of special interest institutions constitute our main claims, though our theory also generates a second proposition: IIT and GVCs ought to lower trade barriers especially strongly where special interest institutions are at their greatest. It thus enriches the existing claims that IIT and GVC integration push down trade barriers, by showing where the effect should be especially strong (Kim, 2017; Baccini, Dür and Elsig, 2018; Yildirim et al., 2018).

To test these propositions, we clean and combine a huge volume of data on tariffs and trade covering 19 million product-country-years from UNCTAD's World Integrated Trade Solution (WITS) database. Our trade data comes from the BACI database, and we use that data to proxy both industries' comparative advantage and to measure the scale of intra-industry trade. We draw on data from the OECD to understand the scope of global value chain reliance across country-industries. Finally, our measure of special interest institutions uses data on corporate campaign contributions rules from the International IDEA Database. This is the best available measure of special interest institutions in terms of coverage and conceptual fit, though we check alternative proxies, too. The results from our empirical testing are consistent with our hypotheses, suggesting that special in-

[1] Our terminology is inspired by Betz (2017)'s coinage of "narrow interest institutions". These are voting systems, like plurality rule, which tend to amplify the voices of narrowly construed interests, like particular industries or firms, rather than the broad mass of consumers or voters.

terest institutions are important for understanding the impact of the firm-centered model on trade policy outcomes.

Our paper relates broadly to the literatures on firms' trade policy preferences; lobbying and trade policy; and political institutions and trade policy outcomes. We are particularly connected to three strands of literature. First, Betz (2017) argues that plurality voting rules empower interest groups. Consequently, heterogeneous preferences in industries lead to higher variance in trade policy outcomes in majoritarian systems. Our predictions and empirical testing are distinct but complementary.[2] Second, our paper relates to research on access points (Ehrlich, 2007, 2008, 2011), which focuses on how institutional complexity lowers the costs of lobbying. Thus greater numbers of electoral districts, coalition parties, and legislative chambers should be associated with greater protection. Our argument is related, but holds that access is importantly shaped by specific special interest institutions and that the effects of those institutions are conditional on whether the trade is intra-industry, GVC-related, or neither. Finally, Bearce and Roosevelt (2023) argues that democratic political institutions encourage business lobbying, and that firms with pro-trade preferences are more politically active, rationalizing the democracy-liberalization nexus within a model of interest groups. Our argument shares a similar interaction of institutions and firm preferences, though focuses on different institutions and a trade-based operationalization of firm preferences.

We see three broader implications of our argument. First, empowering special interests does not necessarily mean empowering protectionists. In line with the just-cited work, strengthening special interests' access can improve the prospects of free trade, a notion that contrasts with earlier trade policy literature which viewed interest group influence as *the* impediment to free trade. Second, our argument highlights that the effects of institutions on trade policy outcomes are contingent on the nature of trade politics, a factor which varies substantially across industries. Exploring heterogeneity in institutional effects across industries is a theme in recent work, and merits further

[2] See also Kono (2009), which argues that intra-industry trade increases protectionism by mitigating the collective action problem where electoral institutions favor narrow interest groups (Gilligan, 1997). Our treatment of intra-industry trade differs from these in that we do not focus on product variety leading to narrowly targeted tariffs.

investigation (Barari and Kim, 2020). Finally, our research sheds light on the ways that IIT and GVC integration have changed trade politics (Manger, 2012; Baccini, Dür and Elsig, 2018; Gulotty, 2014; Baccini and Dür, 2018). While previous work has emphasized how these forces have changed the preference map or collective organization to drive lower tariffs, our work shows that these forces have altered the effects of institutions that previously had a protectionist bias. The rise of firm heterogeneity, IIT, and offshoring have contributed to global trade liberalization particularly when political institutions have strengthened the voice of interest groups.

Theory

Special interest institutions

Significant literature has examined comparatively the effect of various domestic political institutions on trade policy outcomes. These include: democracy (Mansfield, Milner and Rosendorff, 2000; Mitra, Thomakos and Ulubaşoğlu, 2002; Milner and Kubota, 2005); varieties of autocracy (Hankla and Kuthy, 2013); majoritarian and proportional voting systems (Rogowski, 1987; Rickard, 2015); veto points (Mansfield, Milner and Pevehouse, 2007; Allee and Elsig, 2017); corporatism (Katzenstein, 1985); parliamentary organization (Ehrlich, 2007); and bureaucracy (Cheng, Haggard and Kang, 1998; Stanescu et al., 2020). In this paper, we focus on institutions that primarily act to empower interest groups – special interest institutions. These institutions have operated as crucial context in many single-country studies of trade politics but only occasionally have been examined in comparative fashion (Weymouth, 2012; Bearce and Roosevelt, 2023).

Defining special interest institutions: We define special interest institutions as domestic political institutions which are intentionally designed to increase the access to policymakers, or influence over policymakers, of special interest groups.[3]

Four types of institutions seem to us diagnostic of "special interest institutions". First are

[3] Ultimately we will use several specific empirical operationalization of these institutions (focused on rules around campaign contributions, and then lobbying and the franchise) for our empirical analysis.

legal regimes which permit special interest groups to provide campaign contributions or other non-campaign-related funds to parties or politicians. Laws which permit interest groups to support campaigns, politicians, or parties through non-monetary gifts or in-kind contributions function similarly. Rules which are permissive on campaign contributions (perhaps even by the absence of restrictions) are typical of special interest institutions, because they almost certainly increase the influence of interest groups over politicians and parties. On the other hand, strict restrictions or bans on interest groups' political giving curtail their influence, and so are indicative of weak or absent special interest institutions.

Second are formal rules which permit or encourage lobbying, i.e., private meetings with politicians where interest groups persuade, inform, assist, or threaten politicians to influence them to act in a certain fashion on a policy or legal matter. Polities which have no restrictions on lobbying or which lightly regulate lobbying have strong special interest institutions. Where lobbying is strictly forbidden, or curtailed with onerous limits or reporting requirements, the political influence of interest groups is weaker.

Third are formal procedures for special interest groups to provide either ad hoc/opt-in or formal/obligatory feedback on prospective legislation or regulation. In the United States, notice and comment rulemaking is an important instance of optional feedback, and many interest groups participate avidly in providing feedback on proposed bills and rules. In the EU, UK, Canada, and elsewhere, similar procedures are called public consultation, and are again an important site for feedback from special interests, among other stakeholders. The US, EU member states, and many other countries also have more formal mechanisms for policy feedback, like the US's Trade Advisory Committee system or the EU's trade agreement Domestic Advisory Groups. These systems often consist of permanent committees. Committee members provide feedback on new legislation or rules when requested.

Fourth, some countries formally incorporate interest groups into varieties of corporatist institutions wielding significant legislative or regulatory power. Firms, business associations, and other interest groups may contribute significantly to policymaking through bargaining or consensus-based decision-making procedures in these settings. Of course, there is significant variation in corporatist

institutions and the degree to which they empower firms versus trade associations, or businesses relative to labor and other stakeholders, is variable (Hanegraaff, Poletti and Aizenberg, 2023). Only corporatist institutions that strongly empower economic interest groups, particularly business, are a good fit for our argument around special interest institutions and trade policy.

Effects of special interest institutions on industries and firms: Polities with strong special interest institutions empower interest groups generally. But we think these institutions have importantly differential effects across types of interest groups that are key to understanding their effects within trade politics. We consider the case of business groups and then of labor and other groups.

First, we think that stronger special interest institutions will tend to empower industry associations. Industry (or trade) associations represent an industry overcoming the collective action problem to speak with a common voice. Industry associations collect financial dues and other resources from the members, and then use those resources to invest in political influence through campaign contributions, lobbying, participation in consultations, or work in committees. Stronger special interest institutions will therefore increase the power of industry associations because they specialize in these political activities.

Second, we also expect that stronger special interest institutions will strengthen the political power of larger firms that choose to act politically on their own, that is, independent from industry associations. Like trade associations, the literature has argued that the largest corporations are adept at investing in political influence. They often control or collect funds for campaign contributions;[4] undertake significant volumes of lobbying;[5] and participate avidly in other forms of policy influence and politicking like public consultations, committee testimony, and outside lobbying/coalition-formation. Large firms are able to undertake these activities because of their greater free capital and their ability to spread fixed costs of investing in political influence across their greater size. Larger firms also generally have more interests and more capacity, making investments in political action both beneficial and feasible.

[4] Hart (2001); Bombardini (2008); Kim (2008).

[5] Drope and Hansen (2006); Kerr, Lincoln and Mishra (2014); Kim (2017).

Third, and for similar reasons, we do not expect special interest institutions to empower smaller firms operating on their own. Smaller firms are much less likely to give campaign contributions, lobby, or submit detailed policy feedback because their proportionally smaller benefits can't justify the high fixed costs of political investment. Less productive firms (which are often smaller) may also lack the margins and available capital to make investments in political influence. Smaller firms' leadership teams are less functionally differentiated: specialists in government relations and regulatory management are usually not present. Small firms may also feel that their voices are less impactful even if they do speak up, preventing them from doing so in the first place. Thus, they typically rely heavily on their trade association for political representation, which poses challenges when the industry is internally divided on an issue.

Finally, it is also plausible that special interest institutions empower labor unions by making it easier for them to exert influence. Other types of groups with interests in trade policy, like foreign policy groups, human/labor rights groups, and environmental groups, might also be empowered by these institutions. While these groups are not our main focus theoretically, it is important to think about these groups' preferences as we examine the overall impacts of special interest institutions on trade policy.

Industry-centered trade politics and effects of special interest institutions

In the next few subsections, we explore the effects of special interest institutions on trade policy outcomes. We begin by focusing on a subset of cases where the effects are most clear: industries at a comparative disadvantage. In other words, we focus on industries in countries that have relatively higher input costs or worse technology or productivity than their most important trade partners.[6] Such an industry is likely to be net-importing when trade statistics are examined.[7]

[6] More precisely, comparative disadvantage industries have higher relative prices in autarky, which may be driven by technological, productivity, endowment, institutional, or demand-side factors, among others. Note that our definition of comparative disadvantage can be extended to industries with product variety and firm heterogeneity, by focusing on higher *average* relative prices in autarky.

[7] Industries with intra-industry trade can still be at a comparative advantage or disadvantage in line with their average relative prices. Using this definition, comparative (dis)advantage IIT industries are likely

Table 1: Effects of special interest institutions in a comparative disadvantage industry depend on whether intra-industry trade is absent or present.

		Intra-industry trade: Low	Intra-industry trade: High
Special interest institutions	Preferences of industry	All firms support higher domestic tariffs. Trade association(s) active in supporting higher tariffs.	Exporting firms accept lower tariffs (to forestall retaliation). Non-exporting firms support higher tariffs. Trade association(s) inactive, divided, or support exporting firms' stance.
	Low	Tariffs expected to be **moderate/low** because industry is weak relative to voters.	Tariffs expected to be **low** because industry is weak relative to voters (and industry is not united in supporting protection).
	High	Tariffs expected to be **high** because interest groups, who uniformly support protection, are strong relative to voters.	Tariffs expected to be **especially low** because exporting firms, who oppose protection, are strong relative to non-exporting firms and voters.

For the moment, we further assume that this internationally uncompetitive industry does not have significant intra-industry trade or global sourcing – firms in the industry face import competition but don't export or offshore final production. We further assume that firms' capital is stuck in their own industry, so all of the firms in our uncompetitive industry oppose trade liberalization because it increases competition and pushes down their prices, making their capital less profitable. Under these Ricardo-Viner assumptions, all firms in the industry are hostile toward free trade. If a trade association is present and well-organized, it should step up to fight trade liberalization and secure protection for the industry. If the trade association is missing or moribund, the largest firms might fill the political gap but will still aim to fight trade liberalization.

What are the effects of special interest institutions under these circumstances? If special interest institutions are weak, then the industry's trade association (or big firms) will struggle to find access and influence in government to secure trade protection. The same is true for the industry's

to be net-exporting(importing) because they still export (face imports) more than face imports (export), though they do both where IIT is present, by definition.

union. Instead, the voices of ordinary voters will be relatively empowered in the political process. The question of what voters want from trade policy is complicated and highly contested in the literature, because voters are both consumers and workers, and employ both material and non-material considerations.[8] We cannot decide this debate, but we do conjecture that most voters either exert a broadly pro-trade influence (as consumers); exert no influence on trade (and so provide no rationale for a tariff intervention); or are among the small group of trade-impacted workers for any given tariff who rely on their union to represent their interests. Thus we predict that when special interest institutions are weak, the demand for protective tariffs is also weak.

If special interest institutions are strong, however, then the industry's trade associations, big firms, and unions will become relatively more empowered. These groups are experts in the exertion of political influence, especially over detailed policy questions like tariffs and trade barriers. They should be more effective in securing trade protection. This is our first testable hypothesis:

Hypothesis 1a. In net-importing industries that lack IIT or GVCs, greater special interest institutions lead to higher tariffs.

We provide a schematic account of this argument on the left-hand side of Tables 1 and 2. Note that the top rows explain the expected preferences of firms. The middle and bottom rows make predictions about tariffs (or other trade barriers) when special interest institutions are low or high.[9]

[8] For any given tariff, the vast majority of ordinary voters are only impacted as consumers, and so they will benefit from a lower tariff. In this view, weak special interests mean empowered mass consumers, who demand free trade. Of course, most voters don't have enough information to police individual tariffs, but governments may nonetheless supply lower tariffs to keep prices low since voters are reactive to changes in real income. We note also that a small subset of voters, for any given tariff, are workers, and may benefit from the tariff (Naoi and Kume, 2015). Moreover, a broader array of voters may sympathize with protective tariffs (Bearce and Moya, 2020). So empowering voters has complicated effects that might push in multiple directions.

[9] The notion that strong special interest groups will lead to higher tariffs is foundational in the trade politics literature, and so not our contribution (Krueger, 1974; Grossman and Helpman, 1994). We claim that this argument is limited to comparative disadvantage industries lacking IIT or significant global sourcing.

Table 2: Effects of special interest institutions in a comparative disadvantage industry depend on whether offshoring is absent or present.

		Global value chain integration: Low	High
	Preferences of industry	All firms support higher domestic tariffs. Trade association(s) active in supporting higher tariffs.	Offshoring firms support lower tariffs. Non-offshoring firms support higher tariffs. Trade association(s) inactive, divided, or support offshoring firms' stance.
Special interest institutions	Low	Tariffs expected to be **moderate/low** because industry is weak relative to voters.	Tariffs expected to be **low** because industry is weak relative to voters (and industry is not united in supporting protection).
	High	Tariffs expected to be **high** because interest groups, who uniformly support protection, are strong relative to voters.	Tariffs expected to be **especially low** because offshoring firms, who oppose protection, are strong relative to non-offshoring firms.

Firm-centered trade politics and effects of special interest institutions

Now imagine again that we are considering an industry that is at a comparative disadvantage. However, unlike in our previous case we assume either that there is significant intra-industry trade in differentiated product varieties, or we assume that there is global sourcing of final production. We also assume that these types of trade operate alongside heterogeneity in firm productivity or size. Such an industry has fundamentally different preferences than the standard Ricardo-Viner model we just discussed. We describe the case of IIT and GVCs in turn, though the preferences of firms end up looking similar in both cases.

Intra-industry trade occurs when a country both imports and exports the same narrowly defined product. Intra-industry trade is usually a result of trade in differentiated products, like varieties of cars or types of wine. Intra-industry trade is a characteristic feature of contemporary globalization and occurs across many, though certainly not all, industries and countries (Madeira, 2016; Anderer, Dür and Lechner, 2020). Note that trade in differentiated varieties does not need to be perfectly balanced: a more competitive country might export more to a less competitive partner from whom

it nonetheless imports an economically significant amount of the same product.

Intra-industry trade combined with firm heterogeneity in the ability to export fundamentally changes firms' preferences over trade policy. If an industry has significant trade in differentiated product varieties, then the more productive (and generally larger) exporting firms benefit from reciprocal trade liberalization (Melitz, 2003). They are able to increase their exports when foreign trade barriers drop, and those increased exports more than compensate for losses from the extra home market competition when home tariffs drop. Less-productive, smaller, non-exporting firms are harmed by trade liberalization because of greater home market competition, and have no ability to recoup those losses through export sales. Thus the bigger firms might be willing to bargain away home market protection in order to gain greater access abroad; smaller firms would reject such a deal. Put more simply, big firms support reciprocal liberalization while small firms oppose it.[10]

Offshoring of final production occurs when firms, while maintaining headquarters or other presence in their home market, decide to move the last stages of production of their products to a foreign market (Grossman, Rossi-Hansberg et al., 2006; Baldwin and Okubo, 2014). They might do so to take advantage of foreign resource endowments, labor (and lower wages or human capital endowments), supply chains, or even economic and political institutions (Owen, 2017). Firms can offshore final production within the boundaries of the firm i.e. by founding or purchasing a foreign subsidiary (Antras and Helpman, 2004). This is called vertical FDI. Firms can also offshore-outsource foreign production to foreign contract manufacturers.

If an industry has significant potential for offshoring of final production combined with significant firm heterogeneity in ability to offshore, firms' preferences over trade are again changed fundamentally (Jensen, Quinn and Weymouth, 2015; Osgood, 2017*b*, 2020). Under these circumstances, only the largest and most productive firms can take advantage of savings from offshoring. These firms would then support even unilateral liberalization, because they wish to produce overseas and ship back to the home market duty-free. Less productive, non-offshoring firms obviously

[10]Our treatment of intra-industry trade differs from Gilligan (1997) and Kono (2009), for example, which argue that product differentiation leads to firm-specific tariffs obviating the collective action problem. In our approach, many firms may still produce product varieties facing the same tariff.

have the opposite preference: they would like to see high tariff walls erected to keep out foreign firms and their own offshoring compatriots. Put more simply, big firms support reciprocal and unilateral liberalization while small firms oppose both.

With either IIT or offshoring of final production, industries become split between larger/ productive firms that support trade, and smaller/less productive firms that oppose trade. A few things might happen with trade associations. First, it may be that there is a single trade association whose members don't agree on trade policy. Thus the association might sit on the sidelines in debates over trade policy. Second, there may be multiple trade associations in the industry, for example, one representing pro-trade firms and another representing anti-trade firms. Since the pro-trade firms are larger, more productive, and fewer in number, we expect their association to be better organized. Finally, it could be that only pro-trade firms have an association or that they dominate a single association in the industry.

Under the changed preference map created by IIT or offshoring, what are the effects of greater special interest institutions? If special interest institutions are weak, then big, pro-trade firms will struggle to gain influence. So the voice of voters should dominate in trade policymaking. As discussed above, voters have complicated preferences, but we suspect overall that voters have less demand for, and exert less effective pressure for, specific trade policies than interests groups. Thus, we expect tariffs to be relatively low. If special interest institutions are strong, then pro-trade firms and the associations they control are greatly empowered. So there is (even more) significant pressure for lower tariffs because politically effective special interests support free trade along with any consumers that do, too. Smaller firms are less likely to have their anti-trade preferences represented, because they struggle to take advantage of special interest institutions on their own (and their trade association is likely on the sidelines or representing big firms). Thus the growth of special interest institutions creates even more force for free trade, although free trade was perhaps winning out even in their absence.

This then leads to a second testable hypothesis:

Hypothesis 1b. In net-importing industries with significant IIT or GVCs, greater special interest

institutions lead to equal or lower tariffs.

This hypothesis is illustrated moving down the right-hand side columns of Tables 1 and 2. Note that we use the phrase "equal or lower tariffs" because tariffs might have been low in the absence of strong special interest institutions. So the effect of empowering pro-trade firms might be to push tariffs down lower, or to keep already zero tariffs at zero.

We add two extra points on this hypothesis, both relating to labor unions. In the presence of significant IIT, it is possible that labor unions (or their members) might have split preferences on trade, much like firms. Greater special interest institutions might empower either pro- or anti-trade workers' groups, then. In the presence of strong GVCs and offshoring, it seems more likely that labor unions will be relatively opposed to trade, and in intensified fashion too. In this case, greater special interest institutions might empower a strongly anti-trade voice. This may dull somewhat the effect of increasing special interest institutions in pushing down tariffs. We also note that increasing special interest institutions might empower non-business groups that are often skeptical of free trade, like anti-globalization, human rights, progressive, or environmental groups. Because the preference intensity and resources of firms are so much greater, we don't think these effects will dominate, but ultimately we treat this as an empirical question. If we are correct that big corporations are the 'prime movers', then greater special interest institutions will not be associated with higher tariffs in the presence of IIT or GVCs.

Conditional effects of IIT/GVCs

So far we have argued that the effect of special interest institutions depends on the nature of trade (and trade policy preferences). These predictions arise from moving up and down the columns in Tables 1 and 2. Our theory embeds within it another conditional effect which provides an additional test. Rather than considering the columns of Tables 1 and 2, we move across the rows to see the conditional effects of ITT and GVC integration.

If special interest institutions are absent or weak, then the effect of increasing IIT or GVCs in net-importing industries is muted. Greater IIT or GVCs may fracture the industry's previously

unified support for trade protection. However, pro-trade firms don't have strong special interest institutions that strengthen their voice. Tariffs might move lower – there is greater interest group support for free trade after all – but not hugely lower, because interest groups are relatively weak. In fact, tariffs might have been low to begin with for precisely this reason. However, if special interest institutions are strong, then the effects of increasing IIT or GVCs are much greater. Increasing IIT and GVC trade internally divides the industry between big firms and small firms, which previously agreed that trade protection was good. Moreover, their previous agreement was politically efficacious because institutions supported the efforts of their anti-trade trade association and big companies. But with IIT and GVCs, their associations might be inactive, divided, or even pro-trade; and their big firms are now strong advocates for liberalization. Thus, tariffs or other trade barriers are expected to be much reduced. This leads to another hypothesis:

Hypothesis 2. In net-importing industries with special interest institutions, increasing IIT or GVCs lowers barriers to trade. This liberalizing effect of IIT and GVCs should be greater with special interest institutions than without them, too.

This argument therefore contributes a new theoretical element – the moderating effect of special interest institutions – to recent work showing that IIT and GVCs lower trade barriers (Kim, 2017; Baccini, Dür and Elsig, 2018; Yildirim et al., 2018; Anderer, Dür and Lechner, 2020).

Comparative advantage industries and negotiated tariffs

We have focused on comparative disadvantage (likely net-importing) industries. What about comparative advantage (net-exporting) industries? We find the predictions in these cases to be theoretically ambiguous. Consider first a comparative advantage industry where IIT or GVCs are low, so firms uniformly support free trade. Domestic trade barriers serve no real purpose for either producers or consumers in this setting, and so are probably low whether special interest institutions are weak or strong. If IIT is high, then strengthening special interest institutions will tend to empower big firms, who again support trade. So we see little reason why tariffs should increase, though

there might be marginal changes.[11] Likewise if GVC integration is feasible (which seems unlikely, because offshoring final production makes more sense when at a comparative disadvantage), tariffs are expected to stay low when special interest institutions are activated. For these reasons, we focus on the presentation of our empirical results on the effects among comparative disadvantage industries. As a robustness check, we show that our main predictions on the interactive effects of trade and institutions still hold when examining all industries, however.

Finally, we note that an overwhelming majority of states are members of the World Trade Organization and so apply tariffs against one another that are the product of international negotiations (either through GATT/WTO negotiating rounds and agreements, or via a preferential agreement, customs union, or common market). We do not expect tariff bargaining to fundamentally change our predictions for two reasons. First, while bargaining creates a greater motive for tariff reduction by linking domestic tariff cuts to foreign concessions, there is still highly unequal pressure across industries to not concede in bargaining on the most-supported tariffs. Our argument about preferences and institutions helps to explain variation in that pressure. Second, our argument sheds light on an area where international bargaining changes "the tariff game" less: firms that have global supply chains. Unlike sole exporters, these firms are strongly motivated to support unilateral tariff liberalization. Converting tariff-setting into a multilaterally bargained outcome doesn't fundamentally change the politics we describe in this area.

Data and research design

Data and variables

Our theory makes predictions about the levels of trade barriers imposed by countries on imports. These tariffs may vary across industries with differing trade patterns, and over time as trade or

[11] We acknowledge also that intra-industry trade creates opponents of liberalization in net-exporting industries – small and medium-sized companies unable to export to global markets, but who still face import pressure from foreign varieties. Our view is that SIIs are less likely to politically help these small and medium-sized firms, and so these effects of IIT is likely to be muted. But it is still a theoretical possibility and so ultimately we must examine this as an empirical question.

institutions evolve. Thus, a natural unit of analysis for our study is the country-product-year. We use the subscripts c, i, and t to refer to an observation's country, product, and year, respectively.

Our data collection begins with tariff data from the World Integrated Trade Solution (WITS). We collect applied most-favored-nation (MFN) tariff rates from UNCTAD's TRAINS database, which are harmonized across countries at the 6-digit Harmonized System (HS) code.[12] Note that a "product" is a particular 6-digit HS code. Tariffs are may be administered at finer levels of aggregation like 8- or 10-digits – at which level trade data is not available – so we employ the average tariff across all 8 or 10-digit codes subsumed under a given 6-digit code. In practice, the variation within 6-digit codes is modest.[13] The WITS database provides tariff data from 1988 covering more than 160 countries. Since the nomenclature has evolved considerably over six iterations (in the years 1992, 1996, 2002, 2007, 2012, and 2017), we first standardize the tariff nomenclature to fully concordance the HS 6-digit product codes from 1990 to 2019. Some countries have missing data on tariffs for particular years, so we impute some missing values to increase the consistency and stability of data and analysis. To do so, we use tariffs recorded within a maximum of seven years *before* the missing year to interpolate missing values.[14] Missing tariffs that cannot be imputed in this fashion are left as missing data and not analyzed. We call our tariff variable τ_{cit}.

We match our data on tariffs to trade data from BACI, an international trade database at the HS 6-digit product level (Gaulier and Zignago, 2010). The BACI data covers the years 1996 to 2019.

[12]MFN tariffs are generally the tariffs applied by WTO member states to one another, though there are exceptions arising from common markets, preferential agreements, generalized system of preferences, and so on. Since most of the economies in our data are WTO members, MFN tariffs are the best single tariff on which to focus. Note that we examine applied tariffs, not maximum tariff bounds that are available to countries under WTO rules but not actually enforced. Often these are the same, however. Note further that we do not consider preferential tariffs which must be measured dyadically. Such an approach might be valuable in future research, though it would require expanding our tens of millions of data points into the billions, and so poses some daunting data management and analysis challenges (Barari and Kim, 2020). Finally, we exclude EU member states from our analysis for the years in which they are members.

[13]93% of 6-digit HS product country-year observations in our data have no variation in the tariffs falling under the 6-digit code. In part, this is because 79% of 6-digit codes have only one recorded 10-digit tariff line, and 97% have 5 or fewer.

[14]Our justification for doing this is that MFN tariffs tend to be quite slow moving.

We transform the original dyadic data to monads to get trade amounts for each country-product in each year, and we again harmonized the HS 6-digit codes across the evolving nomenclatures. We use the trade data to construct two main explanatory variables, measures of comparative advantage and intra-industry trade. To proxy for comparative advantage, we construct a dichotomous variable that is equal to 1 if a country's exports (X_{cit}) exceed its imports (M_{cit}) in a given 6-digit product and year, and is otherwise equal to 0. We write this variable CA_{cit}. Products that are untraded are not analyzed. Using a dichotomous measure is preferred in our application, because unlike a continuous measure, it is not shaped strongly by IIT.[15] Our measure of intra-industry trade is the Grubel-Lloyd index of intra-industry trade, also calculated at the 6-digit HS level. This is defined as $IIT_{cit} = 1 - {|X_{cit} - M_{cit}|}/{X_{cit} + M_{cit}}$. Note that $IIT_{cit} = 0$ if the country either only exports ($X_{cit} > 0$ and $M_{cit} = 0$) or only imports ($M_{cit} > 0$ and $X_{cit} = 0$). It is equal to 1 if exports equal imports ($X_{cit} = M_{cit}$).

Our measures of global production network integration come from the OECD Trade in Value Added (TIVA) database. We employ from the database the gross exports of country-industries and the domestic value-added for exports for the same units. We calculate the foreign valued-added share of exports as one minus the domestic value added for exports divided by gross exports. The OECD's industry nomenclature is matched to HS 2-digit codes via a concordance provided by the OECD, which in turn we use to merge export foreign value added share into our data.[16] We called this variable GVC_{cit}. Finally, note also that the measure is only available for the OECD countries, which restricts our analysis of the effect of GVC integration on the OECD member states.

Our final key explanatory variable is our measure of special interest institutions from the International Institute for Democracy and Electoral Assistance (IDEA) database on "Political Finance

[15]As an example, in most models of intra-industry trade, if country 1 has a comparative disadvantage in a product relative to country 2, increasing the level of product differentiation will increase its exports and decrease its imports of that product without ever changing the fact that it is a net-importer. The comparative advantage might be defined using inter-country comparisons of good 1's (average) price relative to the (average) price of another good, a numeraire, or a basket of other goods.

[16]Note that the OECD data is available at a much more fine-grained level than any other comparable data source. EORA includes only 7 manufacturing sectors in its value-added tables for example.

Regulations Around the World" (IDEA, 2020). The IDEA data was originally created in 2003, and revised and updated in 2011, covering 180 countries (Ohman, 2012). The data answers many questions on political financing institutions, though we employed only questions from the categories "Bans on donations" and "Limits on donations" for corporations, which are the most widely observed and the most relevant for our theory. Using these questions, we constructed a variable on special interest institutions which can equal 0, .5, or 1 depending on whether there is a ban on corporate donations and a limit on corporate donations. A 1 indicates that corporate campaign contributions are unrestricted; a .5 means contributions are capped; a 0 indicates that corporate campaign contributions are banned. We call this variable SII_{ct}.

We note that our operationalization of 'special interest institutions' has both strengths and weaknesses. On the weaknesses, it would be desirable to find more general measures of corporate influence that aren't focused solely on contributions. No such measures exist however and would be conceptually difficult to define and measure, probably requiring a latent summary of several measures. A potential alternative is to measure either lobbying[17] or corporatist/coordinated market economy institutions,[18] and analyze these as separate manifestations of 'special interest institutions'. We are able to implement the former suggestion, but only using a very rough proxy of lobbying institutions based on the lobbying behavior of firms as measured in World Bank surveys from the early 2000's. We are not able to implement the latter, because existing measures reduce our sample by 4/5 and to only a small subset of countries. Considering these alternatives highlights the strengths of our measure: it is measured across 180 countries; it is measured within the time frame of available tariff data; and it is a conceptually clear measure of actual political institutions – not a proxy. Most importantly, most scholarship agrees that the ability to make campaign contributions to political parties increases corporations' access to, and influence over, those parties. We thus believe we employ the single best available measure of special interest institutions. We follow

[17]Bearce and Roosevelt (2023); Weymouth (2012). Note that these papers focus on firm-level lobbying – not lobbying institutions – and so the World Bank surveys of firm-level political behavior are much better suited to their research questions.

[18](Hanegraaff, Poletti and Aizenberg, N.d.; Baccini et al., 2022).

up on the lobbying proxy and democratic institutions as alternative operationalizations of special interest institutions in our robustness checks below.

In addition to these main explanatory variables, we include a set of additional controls for product- and country-level factors that drive trade policy outcomes. For products, we include measures of the total trade in an industry-country-year ($X_{ict} + M_{ict}$), which is log-transformed, as well as a measure of the elasticity of substitution (from Fontagné, Guimbard and Orefice (2022)) which is a crucial driver of the welfare impacts and politics of trade barriers (Grossman and Helpman, 1994). We include industry fixed effects at the 3-digit HS code level. We include a variety of measures of political institutions and the economy at the country-level. From the data on democratic institutions, supplied by V-Dem (Varieties of Democracy), we used an index for electoral democracy (v2x_polyarchy) and an indicator for executive constraint (exconst) (Coppedge et al., 2021). We control for a measure of the number of veto points from the Database of Political Institutions (Scartascini, Cruz and Keefer, 2021) in order to capture the access points effect described in Ehrlich (2007, 2011). From the same database, we control for whether a country has PR democracy, majoritarian democracy, or neither. We control for whether a country is a member of the World Trade Organization, since membership strongly influences trade policy (and may be driven by political institutions). The World Bank provides a set of data regarding the population, GDP, and income groups of countries. We use logged population and logged GDP to operationalize country size and level of development. We also include separate intercepts for each country's World Bank income group variable, which is scaled on low income, lower middle income, upper middle income, and high income. Finally, we also include year fixed effects to capture global trends in tariffs.

Hypothesis testing

We test our hypotheses using the following basic linear regression model, which is written to describe the case of IIT:

$$\begin{aligned}\sinh^{-1}\tau_{cit} = \beta_0 + \beta_1 \cdot \mathrm{SII}_{ct} \;+\; \beta_2 \cdot \mathrm{IIT}_{cit} \;+\; \beta_3 \cdot \mathrm{SII}_{ct} \cdot \mathrm{IIT}_{cit} \;+\; \beta_4 \cdot \mathrm{CA}_{cit} \;+ \\ \beta_5 \cdot \mathrm{SII}_{ct} \cdot \mathrm{CA}_{cit} \;+\; \beta_6 \cdot \mathrm{IIT}_{cit} \cdot \mathrm{CA}_{cit} \;+\; \beta_7 \cdot \mathrm{SII}_{ct} \cdot \mathrm{IIT}_{cit} \cdot \mathrm{CA}_{cit} \;+\; \epsilon_{cit}\end{aligned} \tag{1}$$

Table 3: Validating the firm-centered model of tariff formation

	1		2		3	
Average effect of intra-industry trade (IIT):						
Validation test: IIT decreases trade barriers						
$\gamma_1 < 0$	−0.21	[-0.25,-0.17]	−0.31	[-0.34,-0.28]	−0.07	[-0.09,-0.05]
Average effect of export-based GVC measure (GVCx):						
Validation test: GVC integration decreases trade barriers						
$\gamma_1 < 0$	−0.94	[-0.99,-0.89]	−0.82	[-0.85,-0.78]	−0.38	[-0.43,-0.34]
Year FE		No		Yes		Yes
Industry FE		No		Yes		Yes
Additional controls		No		No		Yes

Notes: All models are OLS with cluster robust (4-digit HS code) standard errors. The columns labeled 1, 2, and 3 represent different model specifications; the first subcolumn is the estimate of γ_1 for that model and the second subcolumn is a 95% confidence interval for that estimate.

We use robust standard errors clustered at the 4-digit HS product level. Note also that we transform the tariff measure with the inverse hyperbolic sine function, since tariffs are strongly right-skewed. We separately test the impact of GVCs using an exactly analogous model which replaces IIT_{cit} with GVC_{cit} in every instance. We include three versions of each of these models: one without any controls; one with year and 3-digit HS industry fixed effects; and one with those fixed effects and all our country- and industry-level controls described above and contained in $\mathbf{X}$:

$$X_{cit} = \alpha_1 \cdot \ln(M_{ict} + X_{ict}) \; + \; \alpha_2 \cdot \text{Elasticity}_i \; + \; \alpha_3 \cdot \text{Democracy}_{ct} \; + \; \alpha_4 \cdot \text{Exec. cons.}_{ct} \; +$$
$$\alpha_5 \cdot \text{Checks}_{ct} \; + \; \alpha_5 \cdot \text{PR democ.}_{ct} \; + \; \alpha_5 \cdot \text{Plurality rule democ.}_{ct} \; + \; \alpha_6 \cdot \text{WTO member}_{ct} \; +$$
$$\alpha_7 \cdot \ln \text{Population}_{ct} \; + \; \alpha_8 \cdot \ln \text{GDP}_{ct} \; + \; \mu_{\text{WB Income Group}} \; + \; \mu_{\text{t}} \; + \; \mu_{\text{3-digit HS}}$$

The testing of our hypotheses requires carefully examining the β coefficients from Equation 1. Hypothesis 1a suggests that in the absence of IIT or GVCs, increasing special interest institutions will tend to increase tariffs in uncompetitive industries. Since the absence of IIT or GVCs is represented within our measures as values that are close to zero, Hypothesis 1a translates into a simple expectation: $\beta_1 > 0$. Note that this translation of the hypothesis requires that 0's be reasonable counterfactual values for our measures of IIT and GVCs. In both cases, they are: around 42% and 28% of each, respectively, are less than .1.

Hypothesis 1b states that in the presence of significant IIT or GVCs, increasing special inter-

est institutions will either leave tariffs unchanged or even lower tariffs as pro-trade firms become politically empowered. Our measure of IIT is a share variable, which naturally varies from 0 to 1, so 1 is a natural value to indicate a high level of IIT. Our measure of GVC integration, the foreign value-added share of exports, is also a share variable. And though it might vary from 0 to 1, almost all of the data lies under .5. For this reason, we divided the variable by its 75th percentile, so that a value of 1 post-transformation (which is about .27 pre-transformation) represents a "high" level of global value chain integration. Thus, our testing of Hypothesis 1b focuses on the sign of $\beta_1 + \beta_3 \cdot 1$, and we expect that $\beta_1 + \beta_3 \leq 0$.

Hypothesis 2 holds that increasing IIT or GVC integration should lower barriers to trade (at least in uncompetitive industries) when special interest institutions are strong. Within our regression framework, this translates to the claim that $\beta_2 + \beta_3 < 0$. Note here that 1 is a reasonable counterfactual value for the special interest institutions which takes on values of 0, .5 and 1. Within our theory, IIT or GVCs might also be observed to reduce tariffs even in countries without special interest institutions (i.e. $\beta_2 < 0$) but the tariff-lowering effects of IIT and GVCs should be especially strong with special interest institutions. This means that $\beta_3 < 0$, which is a core part of our theory. We do not consider the sign of β_2 on its own to be a part of our theory (plausibly it could be negative or zero) and so we do not formally test this, though we do validate the claim that IIT and GVCs are generally negatively related with tariffs as a first step in our empirical analysis.

Results

Validation of the firm-centered model of tariff formation

Because the empirical implications of our theory of special interest institutions are somewhat complex, we do an initial validation of our model of tariff formation without special interest institutions incorporated as moderating factors. This helps to show that we are on solid ground in our understanding of the economic drivers of tariff outcomes. To do so, we estimate variations of a simplified version of equation 1 that excludes the measure of special interest institutions. For the case of

intra-industry trade, the relevant subequation is:

$$\sinh^{-1} \tau_{cit} = \gamma_0 \ + \ \gamma_1 \cdot \text{IIT}_{cit} \ + \ \gamma_2 \cdot \text{CA}_{cit} \ + \ \gamma_3 \cdot \text{IIT}_{cit} \cdot \text{CA}_{cit} \tag{2}$$

For the case of global value chain trade, IIT_{cit} is replaced by GVC_{cit}. Our primary expectation is that $\gamma_1 < 0$: both intra-industry trade and global value chain trade will tend to push down tariffs in comparative disadvantage industries. This 'on average' effect of course hides variation depending on the level of special interest institutions which we explore in the next subsection.

The results of these validation models are presented in Table 3. We see in both the case of IIT and GVC integration that these types of trade have negative effects on tariffs among the net-importing/comparative disadvantage industries that are our focus. Increasing IIT from near 0 to near 1 reduces tariffs by around 19-27% without the country controls, and around 7% or so with the country controls. (These numbers are derived using predicted values from the models since we use the inverse hyperbolic sine transformation.) Increasing GVC integration, proxied by the foreign value share of country exports, decreases tariffs by between 57-62% without the country controls, and 33% with them. These results are in line with our expectations about the overall effects of IIT and GVCs on tariffs, and allow us to confidently move on to our testing of the moderating effects of special interests institutions.

Main findings

We report the findings of our main hypothesis testing in Table 4. We discuss the case of IIT (top half of Table 4) and then of GVC integration (bottom half of Table 4), in turn. Note that all of our discussion concerns net-importing industries. For concision, we omit this point from the discussion, but all estimated effects described below are for net-importing industries unless otherwise stated.

Results on intra-industry trade Starting with the top half of Figure 4, we find that greater special interest institutions lead to higher tariffs in the absence of intra-industry trade ($\beta_1 > 0$). All of the coefficients β_1 are positive and two of three are significant at the 5% level; the coefficient from the model including country controls (column 3) is notably smaller. Again using predicted values from

Table 4: Results of hypothesis testing

	1		2		3	
Hypothesis tests on intra-industry trade (IIT):						
H1: Special interests institutions increase (weakly decrease) trade barriers when IIT is low (high)						
$\beta_1 > 0$	0.14	[0.11,0.17]	0.13	[0.11,0.15]	0.04	[-0.00,0.08]
$\beta_1 + \beta_3 \leq 0$	0.01	[-0.04,0.05]	−0.04	[-0.08,0.00]	−0.17	[-0.24,-0.10]
H2: Greater IIT lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−0.20	[-0.24,-0.15]	−0.35	[-0.38,-0.31]	−0.10	[-0.14,-0.05]
$\beta_3 < 0$	−0.14	[-0.19,-0.08]	−0.17	[-0.21,-0.13]	−0.21	[-0.27,-0.15]
Hypothesis tests on export-based GVC measure (GVC):						
H1: Special interests institutions increase (decrease) trade barriers when GVC is low (high)						
$\beta_1 > 0$	0.53	[0.44,0.61]	0.65	[0.57,0.73]	0.19	[0.09,0.29]
$\beta_1 + \beta_3 \leq 0$	−0.17	[-0.21,-0.13]	−0.18	[-0.22,-0.14]	−0.01	[-0.05,0.02]
H2: Greater GVC lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−1.04	[-1.10,-0.98]	−0.90	[-0.95,-0.86]	−0.33	[-0.38,-0.28]
$\beta_3 < 0$	−0.70	[-0.80,-0.60]	−0.83	[-0.92,-0.74]	−0.20	[-0.30,-0.10]
Year FE	No		Yes		Yes	
Industry FE	No		Yes		Yes	
Additional controls	No		No		Yes	

Notes: All models are OLS with cluster robust (4-digit HS code) standard errors. The columns labeled 1, 2, and 3 represent different model specifications; the first subcolumn is the estimate for that model (e.g. of β_1 in the first row and $\beta_1 + \beta_3$ in the second row) and the second subcolumn is a 95% confidence interval for that estimate.

the model, an increase in special interest institutions from 0 to 1 is predicted to increase tariffs by either 14-15% in the first two models, or 4% in the final model. These results are consistent with Hypothesis 1a. In the presence of significant IIT, we find that the effect of special interest institutions is either not distinguishable from 0 or negative ($\beta_1 + \beta_3 \leq 0$). Most strikingly, when all controls are included, special interest institutions in IIT industries are expected to reduce tariffs by 16%. These results are all consistent with Hypothesis 1b.

Our testing of Hypothesis 2 when examining IIT also supports our predictions. We find first of all that increasing IIT lowers trade barriers in the presence of special interest institutions ($\beta_2 + \beta_3 < 0$). In fact, increasing IIT from 0 to 1 is predicted to decrease tariffs anywhere from 10-30% when special interest institutions are high (i.e. set to 1). Note furthermore that this is observed because special interest institutions increase the negative effect of IIT on trade barriers as seen by the fact that $\beta_3 < 0$ in all models.

Overall, the hypothesis tests examining intra-industry trade's interaction with special interest institutions are quite consistent with our theory. 12 of 12 coefficients are in line with our theoretical expectations in terms of signs, and 11 of 12 in terms of statistical significance. Still, it is important

to note that some of the effect sizes are modest, particularly the effect of special interest institutions in the absence of IIT in our specification with country-level controls (row 1, column 3).

We illustrate the substantive implications of these findings for the expected value of tariffs in the top half of Figure 1.[19] For example, in the top left figure, we show that increasing the ability of corporations to make campaign contributions (moving SIIs from 0 to 1) noticeably increases expected ad valorem MFN tariffs from 4.3% to 4.9% in the absence of intra-industry trade ($IIT = 0$), but has no effect on tariffs when IIT is high ($IIT = 1$). These results illustrate Hypothesis 1. On the right-hand side, we show that the effect of increasing intra-industry trade (moving IIT from 0 to 1) reduces tariffs much more sharply when in the presence of SIIs, in line with Hypothesis 2. This effect occurs because SII's generate very high tariffs in the absence of intra-industry trade.

Results on GVC trade We now discuss the case of GVC integration, seen in the lower half of Table 4. In the absence of GVC integration, we again find that greater special interest institutions lead to higher tariffs. All of the coefficients β_1 are positive and significant at the 5% level. The predicted effects of special interest institutions when GVCs are very low are large, on the order of 22-94%. These results are again consistent with Hypothesis 1a. In the presence of significant GVC integration the effect of special interest institutions is consistently negative and significant at the 5% level in all specifications. Without controls, special interest institutions in GVC industries are expected to reduce tariffs by 16-17%. These results are all consistent with Hypothesis 1b.

Hypothesis 2 is also supported when examining GVC integration. Increasing GVCs sharply lowers trade barriers in the presence of special interest institutions, with an estimated reduction in tariffs of 29-66% when GVCs go from its 0th percentile to the 75th percentile. As with IIT, this negative effect is in large measure a result of the interaction between GVCs and special interest institutions, with those institutions accounting for most of the negative effect of GVCs on tariffs as seen by the large negative coefficients on β_3.

Summing up the GVC results, we find that 12 of 12 of our estimates are consistent with our expectations. The effect sizes for the GVC-related models are large and so provide sharp contrasts

[19]The estimates in these figures are based on the models from columns 1 of Table 4.

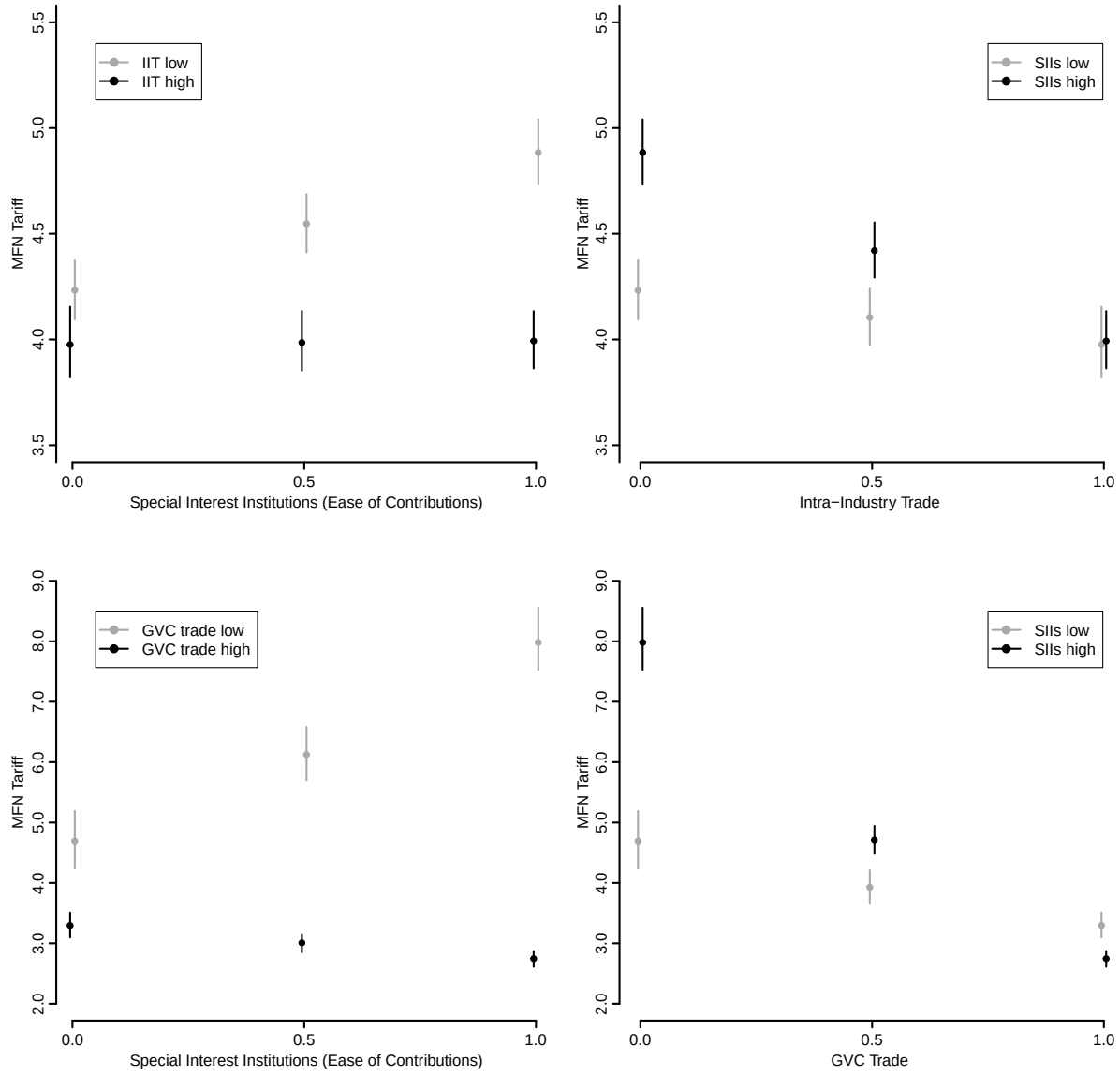

Figure 1: Conditional expected tariffs as a function of IIT or GVC trade and special interest institutions (SII).

across the different configurations of institutions and trade patterns.

We again illustrate our findings in terms of the outcome variable in Figure 1. In the bottom left graph, it is evident that increasing SIIs sharply increases tariffs when GVC trade is low (at 0), but actually modestly reduces tariffs when GVC trade is set to its 75th percentile in the data. This strongly aligns with the predictions of Hypothesis 1. On the bottom right of Figure 1, increasing

GVC trade has a modestly negative effect on tariffs when SIIs are low but a very significant negative effect on tariffs when SIIs are high. These results are in line with Hypothesis 2.

Summing up, we find significant and consistent support for our main theoretical claims.

Alternative tests

We now consider five alternative tests which help to round out our analysis of the interaction of firm-centered trade politics and special interest institutions.

First, we re-run our main tests omitting the comparative advantage moderator in the appendix. As discussed above, the sharpest effects of intra-industry trade and global value chain trade on trade preferences should be seen in comparative disadvantage industries. Nonetheless, it could be that focusing only on comparative disadvantage industries is misplaced or masking other surprising patterns in the data. To check this, we retested our main hypotheses omitting the CA moderator. In these pooled tests, we find that 11 out of 12 tests are in line with our main hypotheses for the IIT case, and 11 out of 12 tests are in line with our main hypotheses for the GVC case.

Second, we examine an alternative measure of special interest institutions which includes some additional data supplied in a revised "Political Finance Regulations Around the World" (IDEA, 2020) issued in 2021 (Ohman, 2012). Taking full advantage of this updated data is somewhat limited in our sample because our tariff data ends in 2019. But we construct an alternative measure of special interest institutions which uses the 2021 measure after 2017 but is otherwise identical to our original measure. For IIT, 12 out of 12 hypothesis tests are consistent with our theoretical expectations; for GVC trade, 11 out of 12 hypothesis tests are consistent with our expectations.

Third, we also examine models in the appendix where we include both the IIT and GVC variables at the same time. Note that this entails restricting our analysis to the subsample of states where GVC trade is measured and proliferating interaction terms which are naturally correlated with one another. We find that 16 of 20 tests implied by our theory are in the expected direction and significant. Recent scholarship has also posited a conditional effect of product differentiation and the type of trade, wherein product differentiation lowers final product producers' need for trade protection but also intermediate input importers demands' for trade liberalization (Baccini and Dür,

2018). Such an argument is not implicated in our empirical testing since we have focused only on intra-industry trade in the final products produced by an industry, not for the industry's inputs; we also control for industry features with our industry fixed effects and measure of import elasticities. However, such an investigation could represent a valuable future contribution, as special interest institutions may moderate the effect described in Baccini and Dür (2018) since the predictions are driven by the interests of the business.

Fourth, we have operationalized the concept of special interest institutions in this paper by using a measure of the ease with which businesses can contribute to political campaigns. An alternative way to test our theory is to focus on political institutions that disempower special interest groups. Classically, it has been argued that democratic institutions empower ordinary voters relative to elites (including companies, trade groups, and other special interest groups). Of course, this is not always the case because some forms of autocracy or authoritarianism, like totalitarian dictatorship or military juntas, may have no room for independent interest groups. Some have also argued that democracy increases the influence of interest groups by creating more access points, especially where the separation of powers is a prominent constitutional feature (Ehrlich, 2007, 2011). We also acknowledge that plenty of democracies feature strong special interest institutions, and the two concepts are certainly not perfectly negatively correlated. Nonetheless, we focus on the level of democratic institutions as capturing another dimension of the relative influence of interest groups and we stick with the more traditional interpretation of democratic institutions – that democracy tends to tamp down the influence of interest groups relative to the ordinary citizenry.

If this is the case, then we expect to see exactly the opposite conditional effects of democracy (and of IIT and GVC trade) that we saw using the special interest institutions measure. We conduct these tests in the appendix. In the case of IIT, 10 out of 12 hypothesis tests are consistent with this idea. For example, greater democratic institutions strongly decrease tariffs when IIT is low, but have smaller effects when IIT is high. In a similar way, IIT has a much less negative effect, even a null effect, on trade barriers within democratic polities. For the case of GVC trade, we again find that 9 out of 12 hypothesis tests are consistent with our expectations. Democratic institutions tend to decrease trade barriers less when GVC trade is high, while GVC trade lowers trade barriers less

in democratic polities.

Finally, lobbying has played a fundamental role in the recent literature on trade politics and so it would be valuable to extend our analysis of special interest institutions to cross-national variation in rules on lobbying. We are unable to do so because there is no cross-national data on lobbying institutions. As a second option, we examined cross-national data on firm-level lobbying from the World Bank Enterprise Survey, a survey of firms conducted by the World Bank. Such data may supply a proxy for lobbying institutions, for example, under the assumption that countries where a larger share of firms lobby are likely to have more permissive rules, or less onerous restrictions, on lobbying. Unfortunately, the World Bank data are from 2002-2005 and provide lobbying information on only 40 countries within our data for the IIT measures (and 18 countries for the GVC measure).

These limitations in the timing and amount of variation make it very challenging to use this data, apart from the already strong assumptions which must be held to use actual lobbying as a proxy for lobbying institutions. We have provided in the online appendix the results from using this lobbying based measure in the models on intra-industry trade. Our findings are mixed with only 4 out of 8 hypothesis tests confirmed. We highlight the need for cross-national data on lobbying institutions.

Conclusion

We sum up our contributions, and then discuss the implications of our research for the future of trade policy. Intra-industry trade in differentiated product varieties and the offshoring of production into global value chains are two defining characteristics of contemporary trade (Kim and Osgood, 2019). The literature has argued that these forces fundamentally change the trade preferences of firms and industries, in particular, by inducing intra-industry splits between large/productive firms and small/unproductive firms (Melitz, 2003; Roosevelt, 2021). In the presence of IIT and GVCs, only large firms, which tend to be better positioned to export, import, and move offshore, will favor trade liberalization. Smaller firms resent enhanced goods and factor market competition from trade and don't garner any benefits from exporting or offshoring. Critically, this firm-centered model of

preferences has scope conditions: in 'traditional' industries without IIT or GVCs, firms will tend to share a common preference which depends on the industry's competitiveness.

An outstanding question in the literature is what this model means for trade policy outcomes and specifically for the impact of domestic political institutions on trade policy outcomes (Mansfield, Milner and Rosendorff, 2000; Rickard, 2015). One answer to the "outcomes" question has focused on collective action, arguing that large/productive firms have structural advantages in collective (and individual) political action (Osgood, 2020). Thus, we might expect that industries with greater potential for IIT or GVCs would have lower trade barriers. A second answer has been to focus on political institutions with a bias towards interest groups or other narrowly-defined preference groups, like plurality rule, multi-party government, and veto players. Betz (2017) argues that these lead to greater variance in tariff outcomes (because either unified anti-trade industries or pro-trade firms might be empowered), while Ehrlich (2007), which precedes the focus on firms, emphasizes the role of these institutions in empowering united anti-trade industries. Bearce and Roosevelt (2023) combines elements of the two approaches, focusing on large firms' advantages in individual political action and the role of democratic institutions in facilitating their access to policymakers.

Our argument combines some elements of these approaches, but makes three additions. First, we focus on theoretically investigating and measuring trade patterns in order to explore the conditional effects of institutions, which depend on the prevailing trade patterns and preferences within industries. Second, we focus both theoretically and empirically on institutions which are narrowly targeted toward empowering (or weakening) interest groups. Our focus on comparative institutions around campaign contributions is unique to this literature. Third, we theoretically deduce and test an original claim on the conditional effects of IIT and GVCs on trade barriers: that the effects of these trade patterns are supercharged when institutions empower interest groups. This contributes to the literature on the effects of "types of trade" on trade barriers (Kim, 2017; Baccini, Dür and Elsig, 2018; Yildirim et al., 2018; Anderer, Dür and Lechner, 2020).

Consistent with our theoretical approach, we find two things. First, the effect of special interest institutions (here liberal rules on campaign contributions) is strongly conditional. Where the firm-centered model makes sense, SIIs lower trade barriers for uncompetitive industries; where the

traditional industry-centered RV approach holds, SIIs increase trade barriers for uncompetitive industries. Second, both IIT and GVCs lower trade barriers especially strongly when special interest groups are strengthened by limited controls on their political activity.

What do our theory and findings mean for the future of trade politics? We discussed in more narrow fashion the implications of our argument and findings in the introduction. Rather than recapitulate that, we focus here on a few questions that invite speculation. How should states choose partners for trade cooperation? What will trade agreements look like moving into the future? And what are the prospects for order in global trade?

On the first question, we think our theory has interesting implications for the selection of trade agreement partners. Preferential trade agreements are meant to liberalize nearly all trade among the signatories. These agreements therefore can be defeated by strongly anti-trade industries. Our theory suggests that states seeking trade agreements might seek out trade partners where most of the trade is conducted in industries with heavy intra-industry trade or where the scope for GVC integration is a live possibility. Of course, workers might not be so thrilled, especially with the offshoring piece, so it is also important to seek out trade partners where corporations are politically empowered. In contrast, trade partners with a lot of traditionally uncompetitive industries that are politically empowered represent the worst prospect for successfully concluding a trade agreement. While this is not documented in the literature, it might be interesting to examine how states strategically select trade partners for PTAs in anticipation of their partner's – and their own – trade politics.

Second, our argument on choosing trade agreement partners also naturally extends to thinking about trade agreement provisions. IIT and GVCs are "new" forms of trade, but in our view they can contribute positively to a traditional kind of trade politics: cutting tariffs and other classic border measures. That being said, the prevalence of IIT and GVCs may also lead to new kinds of provisions in trade agreements as has been emphasized in the literature (Eckhardt and Poletti, 2016; Zeng, Lu and Li, 2021; Kim et al., 2019; Gulotty, 2020). One interesting idea would be to investigate whether special interest institutions contribute to countries' adoption of deeper PTA provisions covering investment, IP, customs, and so on.

Finally, our paper has focused on the special interest politics of trade. That may well be acceptable for the ordinary politics of tariff-setting and other, even more, technical areas of trade regulation. But the recent politics of trade has also included populist and progressive politicians, movements, groups, and voters. So it is worth considering how the forces we describe – IIT, GVCs, SIIs – might impact mass politics. On one hand, it seems clear that GVCs, where jobs are offshored, are potent drivers of hostility to globalization. While SIIs might weaken the voice of mass actors, they might also be provocative for the same reason, and so fuel hostility to globalization from the left and right. Even IIT – traditionally seen as moderating trade's redistributive effects among workers – might contribute to populism if it is linked to firm-centered trade politics. As a result, the short-term effect of the forces on which we concentrate may be trade liberalization, while the long-run effect might be de-liberalizing. The political strength and policy success of globalization's proponents could sow the seeds of anti-globalization sentiment.

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Appendix A: Additional models

Examining all industries

Table A1: Results of hypothesis testing without CA moderator

Hypothesis tests on intra-industry trade (IIT):						
H1: Special interests institutions increase (weakly decrease) trade barriers when IIT is low (high)						
$\beta_1 > 0$	0.13	[0.13,0.14]	0.11	[0.11,0.12]	0.01	[0.00,0.01]
$\beta_1 + \beta_3 \leq 0$	0.06	[0.06,0.07]	0.00	[-0.00,0.01]	−0.15	[-0.16,-0.15]
H2: Greater IIT lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−0.16	[-0.16,-0.15]	−0.30	[-0.30,-0.29]	−0.09	[-0.09,-0.08]
$\beta_3 < 0$	−0.07	[-0.08,-0.06]	−0.11	[-0.12,-0.10]	−0.16	[-0.17,-0.15]
Hypothesis tests on export-based GVC measure (GVC):						
H1: Special interests institutions increase (decrease) trade barriers when GVC is low (high)						
$\beta_1 > 0$	0.17	[0.16,0.18]	0.24	[0.23,0.24]	0.09	[0.08,0.10]
$\beta_1 + \beta_3 \leq 0$	−0.17	[-0.17,-0.16]	−0.17	[-0.18,-0.17]	−0.04	[-0.04,-0.03]
H2: Greater GVC lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−0.86	[-0.87,-0.86]	−0.72	[-0.73,-0.72]	−0.20	[-0.21,-0.20]
$\beta_3 < 0$	−0.33	[-0.34,-0.32]	−0.41	[-0.42,-0.40]	−0.13	[-0.14,-0.11]
Industry FE		No		Yes		Yes
Country controls		No		No		Yes

Notes: All models are OLS.

Examining IIT and GVC trade in one model

Table A2: Results of hypothesis testing using both IIT and GVC trade variables simultaneously

Hypothesis tests on intra-industry trade (IIT):						
H1: Special interests institutions increase (weakly decrease) trade barriers when IIT is low (high)						
$\beta_1 > 0$	0.54	[0.45,0.63]	0.69	[0.60,0.78]	0.35	[0.15,0.55]
$\beta_1 + \beta_3 \leq 0$	0.51	[0.42,0.60]	0.52	[0.43,0.61]	−0.02	[-0.23,0.19]
H2: Greater IIT lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−0.00	[-0.05,0.04]	−0.16	[-0.20,-0.12]	−0.06	[-0.11,-0.01]
$\beta_3 < 0$	−0.03	[-0.09,0.03]	−0.17	[-0.23,-0.12]	−0.37	[-0.44,-0.30]
Hypothesis tests on export-based GVC measure (GVC):						
H1: Special interests institutions increase (decrease) trade barriers when GVC is low (high)						
$\beta_1 > 0$	0.54	[0.45,0.63]	0.69	[0.60,0.78]	0.35	[0.15,0.55]
$\beta_1 + \beta_3 \leq 0$	−0.16	[-0.21,-0.12]	−0.13	[-0.17,-0.08]	0.10	[0.03,0.18]
H2: Greater GVC lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−1.04	[-1.10,-0.98]	−0.89	[-0.94,-0.85]	−0.30	[-0.42,-0.19]
$\beta_3 < 0$	−0.70	[-0.80,-0.60]	−0.82	[-0.91,-0.72]	−0.24	[-0.44,-0.05]
Industry FE		No		Yes		Yes
Country controls		No		No		Yes

Notes: All models are OLS.

Examining an alternative measure of SIIs

Table A3: Alternative measure of special interest institutions

Hypothesis tests on intra-industry trade (IIT):						
H1: Special interests institutions increase (weakly decrease) trade barriers when IIT is low (high)						
$\beta_1 > 0$	0.20	[0.19,0.21]	0.16	[0.16,0.17]	0.10	[0.10,0.11]
$\beta_1 + \beta_3 \leq 0$	−0.01	[-0.03,0.00]	−0.06	[-0.08,-0.05]	−0.13	[-0.15,-0.12]
H2: Greater IIT lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−0.37	[-0.38,-0.36]	−0.41	[-0.42,-0.40]	−0.11	[-0.12,-0.10]
$\beta_3 < 0$	−0.21	[-0.23,-0.19]	−0.23	[-0.24,-0.21]	−0.24	[-0.26,-0.22]
Hypothesis tests on export-based GVC measure (GVC):						
H1: Special interests institutions increase (decrease) trade barriers when GVC is low (high)						
$\beta_1 > 0$	0.66	[0.64,0.68]	0.71	[0.70,0.73]	0.88	[0.86,0.90]
$\beta_1 + \beta_3 \leq 0$	−0.12	[-0.13,-0.11]	−0.11	[-0.12,-0.10]	0.05	[0.04,0.06]
H2: Greater GVC lowers trade barriers (particularly) with special interest institutions						
$\beta_2 + \beta_3 < 0$	−1.06	[-1.07,-1.05]	−0.90	[-0.91,-0.89]	−0.51	[-0.53,-0.50]
$\beta_3 < 0$	−0.78	[-0.80,-0.76]	−0.82	[-0.84,-0.81]	−0.83	[-0.85,-0.81]
Industry FE		No		Yes		Yes
Country controls		No		No		Yes

Notes: All models are OLS.

Examining democracy

Table A4: Results of hypothesis testing using democracy measure ('polyarchy' from VDEM)

Hypothesis tests on intra-industry trade (IIT):						
H1: Democratic institutions decrease (weakly increase) trade barriers when IIT is low (high)						
$\beta_1 < 0$	−0.97	[-0.97,-0.96]	−1.07	[-1.08,-1.06]	−0.66	[-0.66,-0.65]
$\beta_1 + \beta_3 \geq 0$	−0.83	[-0.85,-0.82]	−0.79	[-0.81,-0.78]	0.09	[0.08,0.11]
H2: Greater IIT lowers trade barriers less with with democratic institutions						
$\beta_3 > 0$	0.13	[0.11,0.15]	0.28	[0.26,0.30]	0.75	[0.73,0.77]
$\beta_2 < 0$	−0.07	[-0.09,-0.06]	−0.30	[-0.31,-0.29]	−0.51	[-0.52,-0.50]
Hypothesis tests on export-based GVC measure (GVC):						
H1: Democratic institutions decrease (increase) trade barriers when GVC is low (high)						
$\beta_1 < 0$	−1.06	[-1.08,-1.04]	−1.25	[-1.26,-1.23]	−0.87	[-0.88,-0.85]
$\beta_1 + \beta_3 \geq 0$	−0.78	[-0.79,-0.77]	−0.83	[-0.83,-0.82]	−0.49	[-0.50,-0.48]
H2: Greater GVC lower trade barriers less with democratic institutions						
$\beta_3 > 0$	0.28	[0.26,0.30]	0.42	[0.40,0.44]	0.37	[0.35,0.39]
$\beta_2 < 0$	−1.10	[-1.11,-1.08]	−1.03	[-1.04,-1.01]	−0.61	[-0.62,-0.59]
Industry FE		No		Yes		Yes
Country controls		No		No		Yes

Notes: All models are OLS.

Examining lobbying

Table A5: Results of hypothesis testing using lobbying proxy based off of WBES data

Hypothesis tests on intra-industry trade (IIT):				
H1: East of lobbying increases (weakly decrease) trade barriers when IIT is low (high)				
$\beta_1 > 0$	−0.03	[-0.08,0.01]	−0.01	[-0.06,0.03]
$\beta_1 + \beta_3 \leq 0$	−0.03	[-0.11,0.05]	−0.14	[-0.20,-0.07]
H2: Greater IIT lowers trade barriers less when lobbying is easier				
$\beta_2 + \beta_3 < 0$	0.18	[0.09,0.26]	−0.08	[-0.14,-0.02]
$\beta_3 < 0$	0.00	[-0.09,0.09]	−0.12	[-0.20,-0.05]
Industry FE	No		Yes	

Notes: All models are OLS.