Trading Interests: Domestic Institutions, International Negotiations, and the Politics of Trade

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Abstract

To explain trade policies, a large literature draws on domestic institutions. Institutions that are more responsive to narrow interest groups are expected to succumb to protectionist demands, resulting in higher average tariffs. This literature has largely ignored the role of reciprocal trade agreements and of exporter interests. This joint omission results in a biased view of trade politics. Exporters benefit from expanding market access abroad. With reciprocity, they lobby for domestic tariff cuts in exchange for liberalization abroad, which alters the link between domestic institutions and trade policies. Institutions favoring narrow interests should privilege both protectionist groups and exporters, and hence have an indeterminate effect on average tariff levels. Instead, more interest group influence should result in more dispersed tariff rates across products. The paper provides empirical evidence for this proposition, helps reconcile existing findings in the literature, and offers a specific example of how international institutions affect domestic politics.

Keywords: trade politics; endogenous protection; trade agreements; domestic institutions; international institutions; firm heterogeneity

Short title: Trading Interests

Replication files are posted in the JOP Data Archive on Dataverse (`http://thedata.harvard.edu/dvn/dv/jop`). Supplementary material is available in an online appendix. I gratefully acknowledge support from a Horace H. Rackham Predoctoral Fellowship.

Trade policies are a central topic in the political economy literature and have broad ramifications for other policy choices. What explains differences in trade policies across countries? A large literature points to domestic institutions (e.g., Rogowski 1987; Mansfield, Milner and Rosendorff 2000; McGillivray 2004; Milner and Kubota 2005; Kono 2006). The literature shares some common lines of argument: Trade politics is about the conflict between narrow interest groups, which favor protectionist policies, and voters as consumers, who favor free trade. Institutions that privilege narrow interests relative to voters – narrow interest institutions – therefore produce more protectionist trade policies and higher average tariffs.

Despite this straightforward link, the literature produced mixed evidence. Perhaps most prominently, plurality rule is expected to advance the interests of protectionist groups, resulting in higher tariffs. Yet, while some indeed find a protectionist bias in trade policies, others find a free trade bias or document the absence of systematic differences (Rogowski, 1987; Mansfield and Busch, 1995; Rogowski and Kayser, 2002; Evans, 2009; Hatfield and Hauk, 2014; Rickard, 2015). The lack of a systematic relationship is also evident in Figure 1, which compares average tariff protection under plurality rule and under proportional representation. Beyond trade, these inconclusive findings touch upon fundamental issues in political science: the balance between public interests and interest group influence, and how political institutions translate this balance into policy outcomes.

This paper proposes an explanation of these inconclusive findings by integrating international institutions into the literature on domestic institutions and trade. It has long been noted that reciprocal trade agreements encourage exporting firms to lobby for domestic tariff cuts in exchange for market access abroad, thereby helping to offset protectionist demands by import-competing firms (Bailey, Goldstein and Weingast, 1997; Gilligan, 1997; Hiscox, 1999; Pahre, 2008). The paper highlights how this exporter lobbying breaks the link between domestic institutions and average tariff levels. Because most countries are members to trade agreements, their tariff schedules have been subject to trade negotiations. Trade negotiations proceed prod-

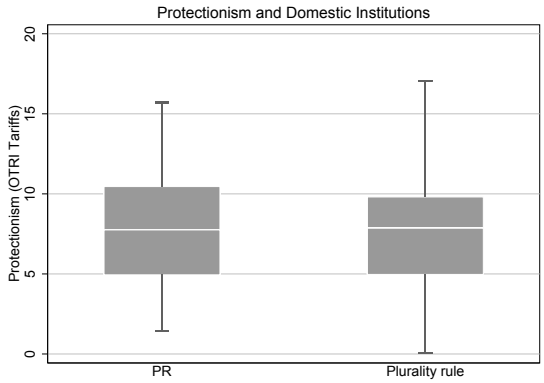

Figure 1: Applied tariffs, Overall Trade Restrictiveness Index (Kee, Nicita and Olarreaga, 2009), for proportional representation and plurality rule. Mean, upper and lower quartile, and upper and lower adjacent values. p-value equality of means: .282.

uct by product; tariff cuts on a product by a partner country are reciprocated with tariff cuts on another product in the own country. This negotiation structure creates concentrated benefits and costs for the producers of each good. Because most goods are exported only by a small number of firms within industries, as is highlighted in the literature on firm heterogeneity in trade (Bernard and Jensen, 1999; Melitz, 2003), the resulting conflict over trade policies fragments sectoral coalitions. This concentration of benefits and costs on small groups of firms, and sometimes even individual firms within sectors, plays into the particularistic tendencies of narrow interest institutions. Trade agreements encourage political involvement by exporters most effectively under the same institutions that favor political involvement by protectionist groups, offsetting the perceived protectionist bias of narrow interest institutions. The same institutions that privilege protectionist groups should also privilege interest groups in support of free trade.

Hence, domestic institutions cannot explain differences in average levels of trade openness based on differences in interest group influence. Instead, given the heightened incentives to raise tariffs on some products and to lower them on others, narrow interest institutions should result in more dispersed tariff rates across products, reflecting the incentives to appeal to protectionist groups and exporters simultaneously.

Empirical evidence supports this proposition: Plurality rule is associated with an increase in tariff dispersion of about thirty percent. This result is robust to several estimation techniques, alternative measures of narrow interest institutions, the inclusion of various control variables, and attempts to rule out alternative explanations. Additional results show that the protectionist bias of plurality rule disappears, and turns into a free trade bias, as participation in trade agreements and the number of exporters increases; and that the dual incentives to appeal to exporter and protectionist interests are also reflected in electoral campaigns.

While the seemingly straightforward link between institutions and protectionism has made trade policies popular for evaluating the effects of domestic institutions on redistributive policies, this link is tenuous. A unilateral account of trade politics that ignores exporting firms results in biased expectations about the effects of domestic institutions. Given the redistributive character of trade policies and considering that questions of distributive politics are at the center of much of political science, the paper provides an important illustration of the effects of international institutions on domestic politics. These are the more relevant when considering the implications of trade reform for social stability and welfare policies (Ruggie, 1982), growth (Wacziarg and Welch, 2007), capital account policies (Brooks and Kurtz, 2007), and the respective links to domestic political institutions.

Finally, by highlighting the interaction between domestic and international institutions, the paper adds to the literature on the domestic effects of international institutions and international economic integration (Davis, 2005; Simmons, 2009; Baccini and Urpelainen, 2014). Parts of this literature emphasize that international agreements can inform and activate constituencies in favor of policy change (Dai, 2007; Chaudoin, 2014). This paper points to a complementary implication: international institutions and economic integration can affect domestic politics by modifying how domestic institutions translate societal demands into policies. International institutions may have the best prospects at inducing policy change through domestic actors in those settings where domestic institutions make governments beholden to

interest groups. The same domestic institutions that favor anti-cooperation constituencies also favor pro-cooperation constituencies, resulting in more domestic contestation over policies and potentially washing out any aggregate effects of domestic institutions on policy outcomes in the presence of international institutions.

Reciprocity and the domestic politics of trade

International trade agreements, such as the GATT and WTO, have the explicit goal of "negotiating the reduction or elimination of obstacles to trade."[1] With currently 161 members, the WTO encompasses most countries in the world. It is supplemented by a dense network of preferential trade agreements (PTAs); around 600 trade agreements have been notified to the GATT/WTO between 1948 and 2014. For most countries, the vast majority – more than 90 percent – of tariff lines are negotiated in international agreements, with only a small number of tariffs based on unilateral policy-making.[2]

In the negotiation of tariff cuts, trade agreements rely on reciprocity: to gain tariff concessions for some of its products abroad, a government has to liberalize some of its own tariffs. Typically, governments demand tariff reductions on select goods from negotiating partners, and offer concessions on select goods in turn. These demands may cover only a few goods – during the Torquay Round of the GATT in 1950 and 1951, Canada asked Haiti for concessions on seven product lines[3] – or several hundred, as in many preferential trade agreements.

Two additional aspects of reciprocal trade negotiations are relevant in the following. First, the exchange of offers typically occurs across sectors. Partly, this negotiation structure accommodates differences in comparative advantage. Intersectoral reciprocity is considered the

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[1]Mission Statement at `http://www.wto.org`.

[2]Calculations based on data from the WTO.

[3]Negotiation protocols from the 1950-1951 Torquay Round, available on the WTO website.

standard negotiation procedure now (Freund, 2003), but was common in earlier trade negotiations as well. In negotiations between Germany and Switzerland in 1891, for instance, "it was known that Switzerland would accept a trade agreement [to lower tariffs on German machinery] only if it would achieve advantages for its cheese exports" (Weitowitz, 1978, p. 93). Second, tariff concessions are reciprocated in value. A country receives better market access the more concessions it makes at home. These tariff concessions of equivalent value, but not to equivalent levels, have been dubbed first-difference reciprocity (Bhagwati, 1988). In addition to being the guiding principle in negotiations at the GATT and the WTO (Stern, 2007), most current preferential trade agreements are based on reciprocity (Mansfield and Milner, 2012).

Exporting firms benefit from tariff concessions of other countries in several ways. Lowering tariffs increases sales and creates new export markets. Even where exporters do not yet exist for a specific market, improved foreign market access can create new export opportunities. This is especially the case for firms that have experience in other export markets and can transfer infrastructure and knowledge from existing markets to new ones (Albornoz et al., 2012). Exporters also benefit from the policy certainty of legally binding and formally negotiated tariff rates (Handley, 2014). And exporters may seek improved market access to avoid a loss of competitiveness in response to trade agreements negotiated by competitors (Dür, 2010).

The norm of conducting trade negotiations through reciprocity creates incentives for exporters to get involved in the domestic politics of trade, seeking reciprocal tariff cuts in the context of trade agreements (Bailey, Goldstein and Weingast, 1997; Gilligan, 1997; Hiscox, 1999; Pahre, 2008). Given that membership in the GATT/WTO is so widespread that selection effects in membership may become negligible (Pelc, 2011), exporters are plausibly aware of this norm of reciprocity. The international norm of negotiating tariffs through reciprocity, then, makes exporters relevant interest groups in the domestic politics of trade. Exporters support tariff cuts if those come in the context of trade agreements and gain them market access abroad. Conversely, anticipating that domestic tariff cuts without reciprocity imply losing bargaining

leverage in future negotiations, exporters oppose unilateral tariff cuts.

Many exporters clearly recognize and articulate this relationship between domestic and foreign tariffs, lobbying for domestic tariff cuts through reciprocal trade agreements. In 1907, D. M. Perry, Vice-President of the Manufacturers Bureau of Indiana, pointed out that protectionist trade policies in the United States and the refusal to lower tariffs reciprocally are "barring us out of Canada and building up the industries of that country. Many factories have been established there in late years to supply a trade that could just as well have been supplied by our own factories. This is an example in which the tariff serves to protect the foreign producer instead of the home producer" (Perry, 1907, p. 465). Another lobbyist, recognizing that "reciprocity is the game of give and take," was explicit in specifying demands for domestic trade liberalization, noting about reciprocal trade negotiations between the United States and European countries in the early 20th century that, "If arrangements for the entry of many farm and factory products to these great continental markets can be made on the basis of conceding up to twenty per cent of the Dingley duties, the bargain is a good one [...]. We maintain that four-fifths of the existing duties, plus 3,000 miles of transportation, is protection enough for any domestic industry" (Sanders, 1907, pp. 452-453). Similar demands for domestic concessions in exchange for market access abroad were made by the semi-conductor and aviation industries in the United States in the 1980s (Milner and Yoffie, 1989). Conversely, instances of unilateral trade policy-making are viewed unfavorably by exporting firms. In a presentation at the European Commission in January 2012, a Ford representative lamented that recent unilateral reforms provide "insufficient opportunities for exports."[4]

As emphasized in the theoretical and empirical literature on firm heterogeneity in trade (Bernard and Jensen, 1999; Melitz, 2003), on each good, few firms within industries are usu-

[4] `http://trade.ec.europa.eu/doclib/docs/2012/february/tradoc_149058.pdf` . Last accessed January 25, 2015.

ally able to take advantage of export opportunities. The demands by exporting firms for domestic tariff cuts through reciprocal trade negotiations, and the concentration of the gains from exporting on few firms, have several implications for the domestic politics of trade which, in turn, affect the link between domestic institutions and trade. Arguments relating domestic institutions to trade policies are commonly based on two assumptions: interest groups in support of protectionism are small relative to those favoring free trade; and interest groups in support of protectionism enjoy collective action, and therefore lobbying, advantages relative to those favoring free trade. The literature concludes that institutions that increase the influence of interest groups relative to consumers (who prefer free trade) should result in more protectionist trade policies; institutions that have a larger concern for consumers should result in lower tariff rates. Exporter lobbying for domestic tariff cuts challenges both assumptions and therefore changes the relationship between domestic institutions and trade policies.

First, reciprocal trade negotiations fragment interest group coalitions. Getting involved in international trade comes with sizeable start-up costs for firms. For instance, firms need to establish distribution networks and need to acquire the legal and technical expertise to export to foreign markets. Thus, only the most competitive firms are able to take advantage of improved export opportunities. Even within generally competitive industries, few – and only the most productive – firms are able to reap the gains from exporting. In a sample of 38 countries, the median number of exporting firms per product is less than three in the majority of the cases, and less than seven in three quarters of the cases (Cebeci et al., 2012). Indeed, United States trade agreements contributed to uneven gains from trade, favoring large, productive firms (Baccini, Pinto and Weymouth, 2016). Moreover, trade negotiations proceed on a product-by-product basis. Tariffs are negotiated individually for each good (Freund, 2003). The gains from increased export opportunities for any specific good are therefore concentrated on a small number of firms. This creates, for each product, a narrow set of winners. It also creates two narrow sets of losers: less productive firms, which now face higher prices for inputs

and wages (Melitz, 2003); and firms in the previously protected industry, which after a tariff reduction face increased competition from abroad.[5]

Were there no reciprocal trade agreements, a small number of protectionist firms within a sector would suffice to drive the sector's overall stance towards protectionism, since other firms in the sector do not lose from protecting the own industry. This changes with reciprocity. Previously protectionist sectors may change their stance and become divided or turn into supporters of tariff cuts; sectors that were previously indifferent to trade liberalization may turn into supporters of free trade for select goods. By creating political conflict within industries, the concentration of potential gains and losses from exporting undermines the sectoral organization of interest groups emphasized in the endogeneous protection literature. For instance, the apparel industry in a country may have an industry association representing its interests, and firms within the apparel industry plausibly share the same comparative advantages based on factor endowments. Yet, standard tariff schedules list distinct tariff rates for men's suits and for women's suits, and likewise list distinct tariff rates for jackets, shirts, and trousers, even when made of the same materials. Plausibly, each of these products is associated with a different set of firms producing and exporting them, and therefore with differences among these firms in their stance towards trade policies. Thus, while differences in comparative advantage create conflict across sectors, reciprocal trade agreements heighten the relevance of individual firms and small groups of firms. By driving a wedge between firms in the same industries, this fragmentation plays into the particularistic tendencies of narrow interest institutions, which privilege small, heterogeneous interest groups; and while some of these interest groups are

[5]This effect is different from intra-industry trade and product differentiation, which has been credited with reducing protectionist forces. Intra-industry trade may erode protectionist demands if there are fewer displacement effects. However, intra-industry trade, without reciprocal tariff cuts, does not create new support for domestic trade liberalization.

indeed protectionist, others support domestic tariff cuts.

Second, exporting firms tend to be characterized by features that typically are associated with political influence. Exporting firms tend to be larger, to have more employees, to be more profitable, and to pay higher wages than firms that are producing for the domestic market (Bernard and Jensen, 1999; Bernard et al., 2007). These attributes should translate into political influence. Their profits allow exporting firms to engage in lobbying, for instance through campaign contributions; and the associated employees can be an important political asset, which counters some of the advantages of import-competing firms. Moreover, and similar to import-competing firms, which have a credible exit threat if unshielded from international competition – they are unable to stay in business, thereby providing them with bargaining leverage (Goodhart, 2014) – exporting firms have a credible exit threat as well. They have the option of leaving the home market and relocating production to the target market through tariff jumping, circumventing trade barriers by substituting foreign direct investment for exports. Thus, even if their employees are not mobilized immediately as voters, the government's concern of losing these jobs provides exporting firms with substantial political leverage to back up campaign contributions.

Consequently, similar collective action considerations that under unilateral policy-making privilege import-competing firms, which lobby for tariff increases, under reciprocity apply to exporting firms, which lobby for tariff reductions. While the benefits of tariff increases tend to be concentrated on a relatively small number of import-competing firms, the benefits of foreign tariff concessions are concentrated on a small number of exporting firms. Indeed, the benefits of exporting might be concentrated on such a small number of firms (as suggested, for instance, by Bernard et al. 2007 and Baccini, Pinto and Weymouth 2016) that exporting firms face fewer collective action problems than protectionist firms – contrary to a key assumption in the literature. Nonetheless, import-competing firms do enjoy some advantages over exporting firms, which may help them maintain influence. Import-competing firms generally enjoy a

status quo bias, and are therefore easy to target (Goodhart, 2014). Interest groups appear to be mobilized more effectively by attempts to protect against losses than to increase gains, which further advantages import-competing firms (Dür, 2010). Moreover, because foreign exporters will seek market access on goods where they expect large gains, demands for tariff cuts fall on goods where domestic firms successfully lobbied for protection in the past – that is, attempts to liberalize trade domestically will be concentrated on goods produced by import-competing firms of above-average political influence. Commitment problems might further reduce the incentives of import-competing firms to accept alternative forms of compensation (Davis, 2015), causing them to fight more adamantly to maintain protection (Hiscox, 1999).

In sum, with trade agreements, governments face two sets of trading interests: import-competing firms asking for higher tariffs on select products, and exporting firms asking for lower tariffs on select products; there is no reason to assume, a priori, that one type of demand systematically outperforms the other. Thus, narrow interest institutions increase the incentives for governments to accommodate both import-competing and exporting interests – the same set of institutions that is typically associated with unambiguously more protectionist trade policies.

With more than 5,000 tariff lines in modern tariff schedules, governments have the opportunity to accommodate some exporting and some protectionist groups at the same time. Governments can maintain high tariff rates on some goods, thereby providing support to select protectionist firms, and liberalize tariffs on goods where concessions can be turned into valuable market access abroad and where political pressure from protectionist groups is outweighed by exporters. Often, governments exempt select products from tariff cuts a priori or drop them during the negotiations, while sacrificing others. For instance, in bilateral negotiations between the United States and Italy during the GATT's Annecy Round in 1949, United States negotiators agreed to tariff cuts demanded by their Italian counterparts on candied orange peel – from eight cents a pound to four cents a pound – but refused to grant any concessions on floor coverings, for which the Italian negotiators had seeked tariff cuts to 30 per

cent.[6] The incentives of governments to maintain protection on select goods, and their ability to do so, are also well documented in the literature on tariff peaks and tariff escalation (e.g., Hoekman, Ng and Olarreaga 2002).

First-difference reciprocity ensures that stronger demands for the liberalization of export markets translate into stronger demands for domestic tariff cuts and, where exporters prevail over import-competing firms, lower tariffs on those goods. This consequence of first-difference reciprocity offsets protectionist demands. It ensures that exporting firms demand larger tariff cuts in order to expand their access to export markets, mirroring demands by protectionist firms; and this mechanism should be especially effective where interest groups have more influence. The import-competing group may be more likely to influence policy and secure higher tariffs under narrow interest institutions. But where the exporting group wins the political contest, narrow interest institutions will be associated with a steeper reduction in tariffs, since this will secure better market access abroad. Moreover, if narrow interest institutions have lower barriers for political involvement, more interest groups are able to affect trade policies, producing more tariff lines that deviate from what would be the optimal tariff from the perspective of voters. Narrow interest institutions allow more exporting firms to lobby, increasing their ability to offset the protectionist bias of narrow interest institutions that exists under unilateral policy-making. By contrast, under broad-based institutions, interest groups have less influence, resulting in fewer upward or downward deviations in tariff rates due to interest group influence: institutions that reduce the influence of interest groups reduce the influence both of protectionist groups and of groups in support of tariff cuts.

In sum, narrow interest institutions drive tariff rates further apart than broad-based institutions, and they result in spotty liberalization under reciprocity: The most politically savvy firms in particular may well be able to maintain protectionist policies in their favor, while oth-

[6]Negotiation protocols from the 1949 Annecy Round, available on the WTO website.

ers face lower tariffs. These larger deviations in tariff rates on any given product produce more dispersed tariff rates under narrow interest institutions.

Proposition 1. *In the presence of trade agreements, narrow interest institutions should be associated with more dispersion in tariff rates across products than broad-based institutions.*

This dispersion-enhancing effect of narrow interest institutions, relative to broad-based institutions, should increase as countries join trade agreements for the first time and move from unilateral policy-making to reciprocally negotiated tariff rates. The argument makes no prediction about whether the difference in tariff dispersion between narrow interest institutions and broad-based institutions should increase as the number of trade agreements increases.

Two implications for tariff levels follow from the argument. First, if some tariff rates are pushed down and some up, the effect of domestic institutions on the average across products becomes ambiguous, depending on the number and strength of exporting interests in a country. Thus, in the presence of interest groups in support of tariff cuts, higher average tariffs are a poor indicator of interest group influence. Second, while the average effect of narrow interest institutions on tariff levels is ambiguous, the effect should be conditional on the number of exporting firms pushing for lower tariffs and the number of trade negotiations in which a country participated. As the opportunities for reciprocal trade liberalization increase and more exporters push for trade liberalization of the domestic market, the protectionist bias of narrow interest institutions should be offset more effectively; if demands for domestic tariff cuts are sufficiently large, they even have the potential of creating a free trade bias of narrow interest institutions.

This argument offers a two-pronged explanation for an empirically inconclusive relationship between domestic institutions and trade policies. Within countries, some firms succeed in gaining protection, while others lose out to exporting firms that push for domestic trade liberalization. Additionally, across countries, narrow interest institutions can result in a protectionist bias in some countries, but in a free trade bias in others, depending on the balance

of interest groups that support and oppose protection. If narrow interest institutions produce higher average tariffs in some countries and lower averages in others, the results on average are ambiguous and depend on the sample.

Empirical evidence

This section provides empirical evidence to assess the above proposition: narrow interest institutions should be associated with more dispersed tariff rates. To obtain a measure of the dispersion in tariff rates, I draw on tariff data from the Trade Analysis Information System (TRAINS) of the United Nations Conference on Trade and Development, which provides tariff data for a cross-section of countries from 1988 to 2010 and, after accounting for data limitations on other variables, a sample of up to 126 developed and developing countries that are either members of the GATT/WTO or of preferential trade agreements[7] and, as a minimum threshold of a competitive electoral process, have at least two parties winning seats in legislative elections. This corresponds to a score of at least 5.5 on the legislative index of electoral competitiveness (Beck et al., 2001). The following results are robust to including all countries for which data are available or using polity scores to define democracies. I obtain data at the Harmonised System's four-digit level (HS4 in the following), which provides tariffs on up to 1,248 products for each country-year, from the World Bank's World Integrated Trade Solution data base. For instance, the data provide separate tariffs for 'Wrist-watches, pocket-watches and other watches, including stop-watches, with case of precious metal or of metal clad with precious metal', depending on whether they feature a 'case of precious metal or of metal clad with precious metal' (code 91.01) or whether they do not (code 91.02). For each country-year, I then compute the standard deviation in tariff rates across products as a measure of dispersion

[7]Members of the European Communities/European Union are omitted.

for the regression models reported below.[8]

To define narrow interest institutions, I follow Rogowski (1987) and the literature on trade politics since and equate narrow interest institutions with plurality rule. While Rogowski (1987), as well as Grossman and Helpman (2005), emphasized that plurality rule should favor interest groups, others argue that proportional representation systems, due to lower seat-vote elasticities, privilege interest groups (e.g., Rogowski and Kayser 2002). An important distinction between these arguments is the underlying assumption about interest group preferences: whereas arguments about seat-vote elasticities assume that all interest groups share the same preferences – for, say, higher prices – arguments which suggest that plurality rule privileges interest groups are based on an underlying assumption of preference heterogeneity.

The discussion in the previous section, and the underlying model of trade (Melitz, 2003), suggests substantial heterogeneity among interest groups concerned with trade policies, both over the size of tariff barriers and over the products on which tariff barriers are applied. Some interest groups, and because of that electoral districts, prefer free trade, while others prefer protection. The fragmentation of interest groups further suggests that industry-wide associations or class-based coalitions should be less relevant for trade policies than individual firms. Hence, narrow interest institutions like plurality rule, and not broad interest institutions like proportional representation, should privilege interest groups with a stake in trade policies. Plurality systems tend to have a smaller population size per district and weaker parties, which enables interest groups to exert disproportionate influence (Grossman and Helpman, 2005). Moreover, the single-member districts typical under plurality rule create incentives for legisla-

[8]The number of tariff lines reported for each country varies, which in turn influences the accuracy of the estimate of the standard deviation. The results are robust to accounting for this using weighted least squares. Where tariff data were missing for a year but identical rates were reported for earlier and later years, those tariffs are used.

tors to provide policies that benefit the local constituency. Small single-member districts also imply a congruence between firm and voter interests, reinforcing the incentives for legislators to benefit firms in their constituency – especially when the fortunes of voters are tied to local economic conditions (Scheve and Slaughter, 2001).

Data on electoral institutions are available from Beck et al. (2001). PLURALITY is coded 0 for countries that use proportional representation for the majority of seats in the lower house and 1 for countries that use plurality rule. While an indicator for plurality rule is a simplification, it has the advantage of being unambiguous, therefore being available for a large number of countries, and it is the variable used in the seminal literature. I consider alternative variables for narrow interest institutions – such as the distinction between democracies and autocracies, the number of electoral districts, or the distinction between parliamentary and presidential systems – in the online appendix.

Because all countries in the sample are members to trade agreements, the difference between plurality rule and proportional representation is conditional on the presence of reciprocal trade agreements. Thus, and according to Proposition 1, the data allow evaluating whether, under reciprocity, plurality rule is associated with a higher dispersion in tariff rates than proportional representation. Additional results consider whether the effect of plurality rule increases as countries join the WTO and as they join preferential trade agreements.

Country size is associated with electoral institutions and trade openness, and also with the ability to engage with other countries in international negotiations. I therefore include the log of gross domestic product, GDP, and gross domestic product per capita, GDP PER CAPITA. The variables are obtained from the World Development Indicators and lagged by one period. Additional control variables are considered below and in the appendix.

The data feature strong temporal dependence, with a coefficient on the lagged residual of above .7. The main results reported in the following therefore are based on generalized linear models that allow for serial correlation in the error term through a first-order autocorrelation

structure and for heteroskedasticity across panels. Alternative estimators are discussed below and in the appendix.

Table 1 reports the results from models relating the standard deviation in tariff rates to political institutions. Proposition 1 implies that the coefficient on PLURALITY should be positive. The first column omits any control variables, while the second column includes two control variables, GDP and GDP PER CAPITA. The results are consistent with the first proposition: plurality rule is associated with more dispersed tariff rates than proportional representation. The effect increases substantially after controlling for GDP and GDP PER CAPITA; the coefficient reported in column 2 corresponds to an increase in the tariff dispersion of almost thirty per cent compared to the sample average. Plurality rule is associated with substantially more unequal tariff rates across products than proportional representation.

Some sectors and industries – such as agriculture – are prone to be more protected, which would drive up the standard deviation in tariff rates. Column 3 accounts for such systematic, industry-specific effects by first regressing tariff rates on industry fixed effects (defined by two-digit categories) in order to obtain tariff rates net of industry-specific effects and then calculating the standard deviation from the residuals. The coefficient decreases in size, but remains positive and statistically significant.

The remaining columns allow for country-specific effects. Column 4 shows that the results are robust to estimating a system GMM model, which allows for country-specific effects and includes a lagged dependent variable; lagged variables are used as instruments for current variables. The appendix shows that the positive, significant coefficient remains also when estimating a maximum likelihood estimator; when including only countries with no change in the electoral rule and estimating the appropriate GMM estimator for time-invariant covariates; or when relying on the Driscoll-Kraay estimator. Columns 5 and 6 account for country-specific effects by estimating random effects and fixed effects models, respectively, with standard errors clustered by country. While the coefficient decreases in size, especially in the case of fixed

Table 1: Dispersion in tariff rates

	(1) FGLS	(2) FGLS	(3) FGLS	(4) GMM	(5) RE	(6) FE
PLURALITY RULE	1.18***	3.00***	2.17***	3.63***	2.53**	1.33**
	(.155)	(.118)	(.179)	(1.11)	(1.22)	(.664)
GDP		.318***	.018	.339**	.424	-.130
		(.043)	(.061)	(.135)	(.677)	(1.17)
GDP PER CAPITA		.012	.123***	.093***	.231*	.349**
		(.024)	(.025)	(.011)	(.121)	(.137)
LAG SD TARIFF				.486***		
				(.005)		
CONSTANT	9.11***	.035	5.27***	-4.95*	-2.2	11.1
	(.092)	(.923)	(1.37)	(2.91)	(15.4)	(27.7)
AR(1) LAG	.747	.718	.743	–	–	–
Observations	1513	1504	1504	1377	1505	1505
Countries	126	125	125	125	126	126

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. Columns (1)-(3): GLS, AR(1) error process. Column 3 uses tariff rates net of industry fixed effects for calculating the standard deviation. (4): System GMM. (5): Random-effects linear model, standard errors clustered by country. (6) Fixed-effects linear model, standard errors clustered by country.

effects, it remains positive and statistically significant.

The appendix discusses results when including additional controls and when considering alternative estimation techniques, such as models that account for spatial interdependence or that allow for correlation within time periods and within countries simultaneously. The following presents several robustness checks and attempts to rule out alternative explanations. Unless noted otherwise, results are reported in Table 2.

Standard deviation and average tariffs. To ensure that a higher dispersion is not the consequence of higher protection for select products (but not lower tariffs on others), column 1 includes the average tariff rate. If the dispersion-enhancing effect of plurality rule were to work only through higher tariffs on some products, the coefficient on plurality rule should be-

come insignificant once controlling for average tariffs. The results in column 1 underscore that the higher dispersion is not driven by more protectionist trade policies under plurality rule. The standard deviation might also increase as a consequence of tariff cuts if tariff cuts are not applied uniformly. Column 2 therefore includes the first difference in average tariffs (multiplied by -1). Tariff cuts are associated with more dispersed tariff rates, but not significantly so. Plurality rule is also associated with a higher share of tariff rates that are pushed to the zero bound. This result (reported in the appendix) is inconsistent with standard accounts that associate plurality rule with more protected, but not with more liberalized industries.

Alternatives to the standard deviation. An alternative to relying on the standard deviation that is robust to outliers and skewed distributions is to compare the entire distribution of tariff rates. I implement the test statistic suggested by Brown and Forsythe (1974), which is based on absolute deviations from the median (specific to each country and electoral rule); to account for the non-independence of observations within countries, and following Iachine, Petersen and Kyvik (2010), I use a sandwich estimator. Plurality rule is associated with significantly more dispersed tariff rates than proportional representation (reported in the appendix).

Another option is to compare the entire distribution of tariff rates at different quantiles. If plurality rule results in an increase in tariff dispersion, then the coefficient estimate on the electoral rule should increase when moving from lower quantiles to higher quantiles (detailed in the appendix). Figure 2 plots the coefficient on plurality rule at different quantiles of the data and shows that this is indeed the case.[9] Plurality rule is associated with lower tariff rates than proportional representation at lower quantiles, and with higher tariff rates at higher quantiles. Notably, the effect at the median is close to zero, reinforcing the mixed results in the literature.

Outliers and extreme values. Some tariffs assume extreme values. Outliers may skew results

[9]Standard errors are clustered by country-product. The models include GDP and GDP per capita. Tariff rates are net of country-fixed effects.

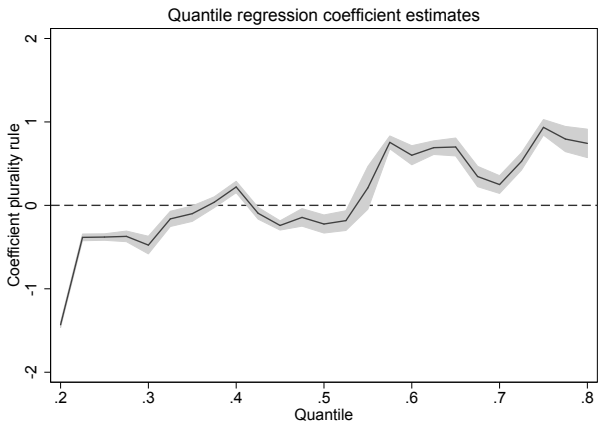

Figure 2: Coefficient estimates of plurality rule at different quantiles of the data (along horizontal axis); shaded area represents 95 percent confidence interval. Dependent variable: Tariff rates, net of country-fixed effects. At lower quantiles, plurality has a negative effect on tariffs; at higher quantiles, plurality rule has a positive effect on tariffs. At the median, the effect is close to zero.

in linear regression models, and they may skew the dependent variable itself, the standard deviation in tariff rates. A related problem can arise because tariff rates are bounded from below, which may cause clustering at the lower bound and consequently low values on the standard deviation. To alleviate the effect of outliers in the standard deviation, column 3 presents the results from a quantile regression at the median, which is less sensitive to outliers than mean-based estimators; standard errors are clustered by country to account for arbitrary within-country, in particular serial, correlation (Parente and Santos Silva, 2016). The results are also robust to dropping tariff rates above or below specific cut-offs from the calculation of the standard deviation, and to dropping observations where the standard deviation remains above or below specific cut-offs (reported in the appendix). The appendix further shows that the results are not explained by the difference between observations with positive standard deviation and observations with zero or small values on the standard deviation.

Consumer interests. Consumer interests are affected by tariffs on different products to varying degrees. Where the elasticity of demand is high, tariffs are most distortionary, which might

reduce the incentives for all governments, regardless of the electoral system, to impose tariffs. If that is the case, the effect of plurality rule would be concentrated in products with low demand elasticity. To evaluate whether this is the case, I define products with a demand elasticity above the median, using elasticity data specific to countries and products from Kee, Nicita and Olarreaga (2009). I then calculate the standard deviation separately for products below and for products above the median elasticity and interact the dummy variable with the electoral rule. Column 4 shows that the effect of the electoral rule is reduced in size for products with high demand elasticity, but that the effect of plurality rule is not statistically significantly smaller. The effect of plurality rule remains positive and statistically significant for both product categories.

Intermediate inputs. Interest groups aside from exporters have incentives to support domestic trade liberalization. Most notably, these are firms that use imported intermediate goods for production (Gawande, Krishna and Olarreaga, 2012). If narrow interest institutions are more susceptible to these demands, they would have an indeterminate effect on average tariff levels and create more dispersed tariff rates. To distinguish this explanation from the argument in the paper I leverage that, if the dispersion is due to downstream producers pushing for lower tariffs on intermediate goods, the lobbying should be concentrated on intermediate goods and inputs. I calculate the dispersion in tariff rates separately for goods classified as intermediate goods, using the Broad Economic Categories (BEC) classification and the concordances from BEC to the fourt-digit Harmonized System, and all other goods. I then interact the dichotomous variable for intermediate goods with the electoral rule. Column 5 shows that plurality rule is associated with higher tariffs for goods other than intermediate goods, and that the effect is stronger for those than for intermediate goods. The marginal effect of plurality rule is positive and statistically significant for both intermediate goods and other goods.

Market and industry structure. Differences in tariff rates might mirror differences in trade exposure across industries. Column 6 includes a control variable for the standard deviation in trade flows across products as a measure of heterogeneity in trade exposure (calculated from

six-digit trade flow data from UN Comtrade). The appendix shows that similar results obtain when including the standard deviation in imports or exports; when including the Herfindahl-Hirschman index (HHI) for the concentration of trade, imports, or exports across products; or when including control variables for the intensive margin of trade, the extensive margin of trade, or export diversification.

To further account for differences between sectors, I disaggregate the data by defining fifteen sectors. I then calculate the standard deviation across tariff rates for each country-year within sectors and include control variables for each sector's log imports and log exports (column 7).[10] Because these results leverage the standard deviation in tariff rates within sectors, they also account for differences in comparative advantage across sectors that are reinforced by narrow interest institutions: According to an explanation based on comparative advantage, dispersion should arise across sectors, whereas tariff rates should be level within sectors.

While theories of comparative advantage suggest relatively level tariffs within sectors, this need not be the case with heterogeneous firms: if only select firms gain protection on (narrowly defined) products, more dispersed tariffs within sectors would arise even without the pressure to liberalize. In that case, the higher dispersion would be driven by the increase in the average tariff rate. The appendix shows that the coefficient on plurality rule remains positive when including a control variable for the average tariff rate within sectors. To additionally account for the heterogeneity of trade interests across products within sectors, column 8 includes the standard deviation in trade flows across products within country-year-sectors. As with the country-level results, the appendix shows that the results are also robust to including the standard deviation in imports or exports; including the HHI in trade, imports, or exports; and to accounting for the multi-level structure by estimating hierarchical linear models.

Level of development. Countries could reduce tariffs in exchange for market access abroad,

[10]While the coefficient estimate decreases in size, so does the scale of the dependent variable.

but implement non-tariff barriers that have not (yet) been subject to reciprocal negotiations. Wealthy countries might be better able to devise and implement non-tariff barriers, allowing them to lower tariffs. If that is the case, the effect of plurality rule on tariff dispersion should be conditional on the level of development. Interacting plurality rule with GDP per capita as a measure of wealth, this does not appear to be the case (reported in the appendix).

Intra-industry trade. Protectionist firms may be able to lobby for protectionist policies more effectively, resulting in more dispersed tariff rates, with high levels of intra-industry trade, which makes lobbying for protection attractive to individual firms (Kono, 2009). The selective provision of protectionism with intra-industry trade is an alternative explanation for a higher dispersion under plurality rule if countries with plurality rule engage in more intra-industry trade than countries with proportional representation. Yet, there is little evidence that this is the case. Relying on the standard Grubel-Lloyd index of intra-industry trade at the two-digit level, plurality rule is not associated with significantly more intra-industry trade. The difference is less than one percentage point, with a p-value of .945.[11] Similarly, including intra-industry trade in the empirical model does not alter the results (reported in the appendix).

Number of exporters and exported products. If plurality rule results in more dispersed tariff rates because exporting firms lobby for domestic tariff reductions, the effect of plurality rule should be most pronounced where exporters are numerous and represent narrow interests. I rely on three measures of the number of export interests. First, the number of product categories that are exported (from WITS), which gives an indication of the number of exporters in the economy. Second, the number of markets to which any products are exported (from WITS). Because many exporting firms learn from experience in existing markets (Albornoz et al., 2012), the variable provides a measure of potential export interests in trade negotia-

[11]The model controls for industry fixed effects, log GDP, and GDP per capita. Similar results obtain when omitting these variables or when estimating the model at the sector level.

Table 2: Dispersion in tariff rates – robustness checks

	(1) Average tariff	(2) Tariff cut	(3) Median	(4) Consumer interests	(5) Inputs	(6) Sd trade	(7) Sector trade	(8) Sector sd trade
PLURALITY RULE	3.2***	2.88***	2.46***	2.9***	2.88***	3.51***	1.53***	1.65***
	(.123)	(.12)	(.761)	(.124)	(.262)	(.148)	(.040)	(.031)
X ELASTICITY				-.384				
				(.265)				
X INTERMEDIATES					-1.2***			
					(.279)			
GDP	.335***	.257***	.004	.070	.36***	.462***	.175***	-.078***
	(.043)	(.048)	(.257)	(.048)	(.041)	(.073)	(.021)	(.014)
GDP PER CAPITA	-.006	.000	.080	-.011	.012	.020	-.034***	-.035***
	(.022)	(.029)	(.093)	(.019)	(.016)	(.029)	(.003)	(.003)
AVG TARIFF	-.006							
	(.012)							
TARIFF CUT		.016						
		(.018)						
ELASTICITY				1.26***				
				(.224)				
INTERMEDIATES					-2.24***			
					(.211)			
SD TRADE						-.245***		
						(.077)		
SECTOR IMPORTS							-.267***	
							(.014)	
SECTOR EXPORTS							-.037***	
							(.007)	
SD SECTOR TRADE								-.316***
								(.055)
CONSTANT	-.232	1.35	6.5	5.09***	.18	-3.59**	7.74***	8.12***
	(.935)	(1.01)	(6.07)	(1.07)	(.928)	(1.63)	(.364)	(.318)
Obs.	1504	1373	1505	2873	3003	1329	19788	19623
Countries	125	120	126	108	125	117	118	117

Columns (1)-(6): Dependent variable: standard deviation in tariff rates at the country-year level. Column (4) calculates standard deviation separately for products with high and low demand elasticity. Column (5) calculates standard deviation separately for intermediate goods/inputs and all other goods. Columns (7)-(8): Dependent variable: standard deviation in tariff rates at the country-year-sector level. Column (3): Quantile median regression, standard errors clustered by country. All others: GLS, AR(1) error process. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%.

tions: The larger is the number of markets to which a country exports, the larger should be the number of exporters in any given multilateral trade negotiation that have incentives to lobby for domestic tariff cuts in exchange for access to that market. Third, the economic complexity index (from Hausmann et al. 2014), which gives an indication of the number and sophistication of goods that a country produces and exports, and hence reflects the diversity of export interests. As is shown in the appendix, domestic institutions systematically interact with the prevalence of export interests: The effect of plurality rule increases in the number of exported products, in the number of export market destinations, and in economic complexity.

Participation in trade agreements. The effect of plurality rule should be larger for countries that participate in trade agreements than for countries where the tariff schedule has not been subject to trade negotiations. Extending the sample and interacting a variable for countries that are not members to any trade agreements, the appendix shows that this is the case: the effect of plurality rule is larger for countries that are members to trade agreements; moreover, plurality rule has no statistically significant effect on tariff dispersion for countries that are not members to any trade agreements. However, participation in trade agreements is nearly universal. The sample includes only two countries (with three years each, for a total of six observations) that are not coded as members to any trade agreements during the sample period, which makes it difficult to draw generalizable inferences.

The sample displays more variation on the types of trade agreements in which countries participated. Several countries joined the WTO during the sample period, and several countries participated in preferential trade agreements during the sample period for the first time. The appendix shows that the effect of plurality rule on tariff dispersion increases both with WTO membership and with membership to preferential trade agreements. Moreover, WTO membership has no (statistically significant) effect on tariff dispersion under proportional representation, suggesting relatively even tariff cuts across products under broad-based institutions, but a positive effect on tariff dispersion under plurality rule. While not providing a full contrast

between unilaterally determined and reciprocally negotiated trade policies, these results provide some support for the notion that plurality rule results in more dispersed tariff rates due to participation in reciprocal trade agreements.

Finally, while the main estimation samples covered countries that were members to at least one trade agreement, the appendix shows that restricting the sample further to consider only plurilateral trade agreements, regional trade agreements, or trade agreements between approximately equal countries does not alter the main results. Similarly, restricting the sample to countries that participated in the WTO during the entire sample period (and dropping countries that newly joined the WTO) does not alter the main results.

Tariff levels and the conditional effect of plurality rule

If narrow interest institutions result in more dispersed tariff rates because exporting firms successfully push for tariff reductions, the effect of plurality rule on tariff levels should decline in the number of trade negotiations in which a country has participated (regardless of its total effect). As the number of trade negotiations increases, more exporters push for trade liberalization of the domestic market. If the number and political strength of exporters far outweighs that of import-competing firms, this effect even has the potential to create a free trade bias under narrow interest institutions. By contrast, electoral institutions that are less responsive to narrow interests are less affected by the logic of trade negotiations. Where the government receives larger benefits from liberalization because free trade benefits the public, and interest groups have less influence, tariff reductions do not depend as much on receiving concessions from trading partners in turn.

The left panel of Figure 3 displays the average tariff rate for plurality rule and proportional representation from 1990 to 2010, together with the average number of trade agreements for the two groups (calculated from the DESTA database, Dür, Baccini and Elsig 2014). Average tariffs differed substantially across electoral systems in the early 1990s. Concomitant with the

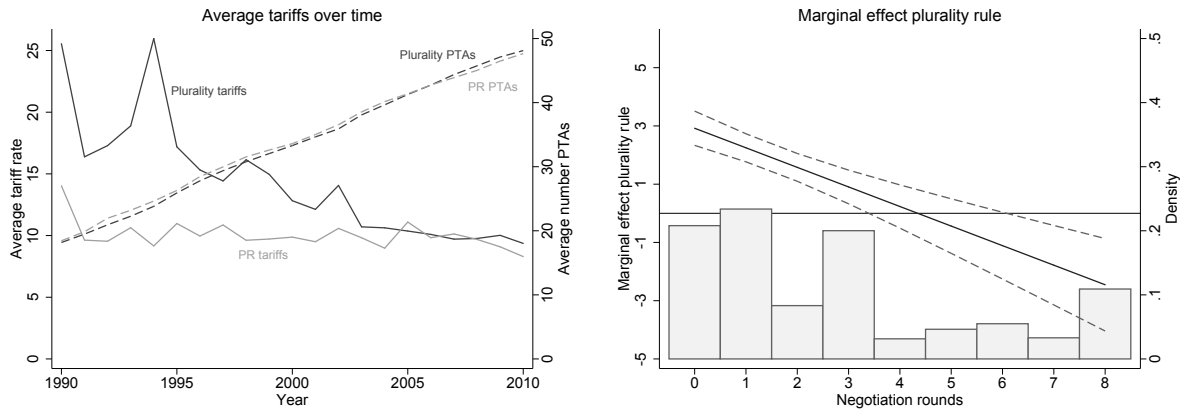

Figure 3: Left panel: Average tariff rates, 1990-2010, solid lines, and average number of preferential trade agreements, dashed lines, for plurality rule (dark grey) and proportional representation (light grey). Right panel: Marginal effect of electoral rule on tariff levels (solid line) and 95 per cent confidence intervals (dashed line), as a function of GATT/WTO rounds. Histogram in the background shows the distribution of the data in the sample.

increase in trade negotiations, the difference between electoral systems in terms of the average tariff rate is successively declining, especially after the conclusion of the Uruguay Round in 1994. The figure shows no noticeable difference in the propensity to join trade agreements between the two types of electoral rule.

To evaluate more rigorously whether the effect of plurality rule on tariff levels decreases with participation in trade agreements, I interact the variable for plurality rule with the number of GATT/WTO negotiation rounds in which a country has participated. In contrast to preferential trade agreements, the timing of these rounds is largely exogenous for most countries in the sample, which alleviates concerns about endogeneity. The dependent variable is the average most-favored nation tariff rate, obtained from the World Bank database. The model specifications are otherwise identical to previous models and include a year polynomial of degree three to account for common time trends; full estimates are reported in the appendix.

The dampening effect of trade negotiations on the protectionist bias of plurality rule is displayed in the right panel of Figure 3, which reports the marginal effect of plurality rule on the average tariff as a function of the number of GATT/WTO negotiation rounds in which a country

participated. The background shows the distribution of the data on GATT/WTO negotiation rounds. The effect of plurality rule on average tariff rates decreases in the number of trade negotiations in which a country has participated. For countries with few trade agreements, plurality rule has a protectionist bias, as a unilateral account of trade politics would suggest: plurality rule is associated with about three percentage points higher tariff rates. At the upper end of the distribution – those countries that participated in the WTO the longest – the effect of plurality rule on tariff levels turns negative, producing a free trade bias. For countries that participated in at least one negotiation round, the average marginal effect of plurality rule is close to zero and fails to reach statistical significance at the five percent level, reinforcing some of the inconclusive findings in the literature. And for nearly a third of the observations in the sample, the average effect of the electoral rule is either insignificant or negative, such that plurality rule is associated with lower tariff rates. Notably, many of these countries are high-income countries, suggesting that the association between plurality rule and average tariff levels differs starkly depending on the sample choice.

The appendix shows that these results are robust to the inclusion of country-fixed effects and to accounting for differences in WTO rounds by weighting them by (i) the number of negotiating parties, (ii) the share of world-wide trade covered by the negotiating parties, or (iii) the share of world-wide exports covered by the negotiating parties. Similar results obtain when interacting the variable for plurality rule with a dummy for WTO membership, with a dummy for membership in trade agreements, or with the number of a country's trade agreements.

An analogous implication is that the effect of plurality rule on tariff levels should decline in the number of export interests: the more interest groups support domestic trade liberalization relative to protectionism, the less pronounced the protectionist bias of plurality rule should be. To obtain a measure of the number of exporting firms, I again rely on the number of exported product categories, the number of export market destinations, and the index of economic complexity, and interact these variables with the electoral rule. As expected, the coefficient on the

interaction term is negative and statistically significant for the number of exported products and the number of export markets; for the index of economic complexity, the interaction term is negative, but close to zero and statistically not significant (reported in the appendix). These results indicate that plurality has indeed a protectionist bias, as implied by a unilateral view of trade politics, but that this protectionist bias wears down as export interests offset protectionist demands. While narrow interest institutions are plausibly geared towards privileging narrow interest groups, these groups need not be protectionist.

Electoral campaigns

The incentives to appeal to both protectionist and exporter interests should also be evident in political campaigns. If exporters and protectionist groups are relevant narrow interest groups, plurality rule should be associated with more references to both free trade and protectionism in political campaigns. This proposition contrasts with the existing literature, which stipulates that institutions that create more incentives to appeal to the broad public should create more incentives to appeal to free trade (which benefits consumers) and fewer incentives to appeal to protectionism (which benefits protectionist firms).

I leverage data from the Comparative Manifestos Project (Volkens et al., 2011), which codes the proportion of sentences in electoral platforms of political parties devoted to specific topics.[12] I create three variables, aggregating data across parties for each election-year. To avoid that the positions of extreme but politically irrelevant parties bias the results, positions are weighted by vote shares. The first variable is the proportion of positive references to protectionism, which reflects the electoral appeal of protectionist trade policies. The second variable measures positive references to free trade. The third variable is the difference between the first two and represents the net appeal of free trade. The data set contains observations on 48 developed

[12]For a related use of the manifesto data on trade, see Kono (2006).

and developing countries from 1975 to 2010. The first two variables are proportions. In about 13 per cent of the observations no party made any references to protectionism or free trade. Due to the presence of zeros, I estimate a generalized linear model with logit link (Papke and Wooldridge, 1996); the appendix provides the results from alternative models. The third variable may take on positive or negative values, and I estimate a linear regression model. Results are provided in the appendix.

Moving from proportional representation to plurality rule doubles positive references to protectionism. However, plurality rule is also associated with more support for free trade. Plurality rule yields about three times as many references in favor of free trade as proportional representation. Thus, the simultaneous incentives to appeal to interest groups in support of free trade and protectionism appear to be evident in political campaigns as well. Notably, plurality rule is not biased in favor of protectionism in terms of net references, mirroring the inconclusive results in the literature when using trade policies as the dependent variable.

Conclusion

While both exporting firms and international trade agreements are the subject of substantial literatures, the literature on the domestic institutional roots of trade policies has largely ignored the role of exporters as narrow interest groups. This omission results in a biased view of trade politics. Trade agreements, and the resulting lobbying by exporting firms, mute the protectionist bias of narrow interest institutions, which instead are associated with more dispersed tariff rates – which reflects the conflicting demands on policy-makers by exporters and import-competing firms. Considering both international and domestic factors is necessary to account for the political dynamics in trade politics, reinforcing recent warnings that domestic political economy accounts cannot ignore international politics (Oatley, 2011).

The paper has several broader implications. First, by emphasizing the role of domestic tariff reductions in exchange for tariff cuts abroad as a way to accommodate exporting firms,

this paper provides a step toward resolving the anti-trade puzzle: the question of why trade policies are biased systematically towards protectionist interest groups, which is echoed in a literature that largely equates trade policy with protectionist trade policy (see, e.g., Alt et al. 1996; Rodrik 1997). Domestic tariff reductions, by effecting a reciprocal lowering of foreign tariffs, are also trade policy. This implies that pro-trade behavior need not take the form of pro-trade policies, but may be evident in the removal of anti-trade policies. Hence, the absence of obvious trade-expanding policies does not imply that trade policy-making is biased towards protectionist interest groups. If reciprocal tariff reductions are a response to exporter interests that obviate other measures, governments may not even need to turn to alternative pro-trade policies, creating the mere appearance of a lack of pro-trade policies.

Second, an important role ascribed to international institutions is to provide solutions to commitment and information problems. In particular, trade agreements may work as signals to voters that a government is free of interest group influence and abstains from extracting rents from them (e.g., Mansfield and Milner 2012). Yet, tariff reductions in the context of trade agreements can be rent-seeking, too, except that the rents are coming from groups that prefer tariff reductions on specific goods and at a specific time. Rather than signaling a government's independence from interest groups, trade agreements demonstrate the government's support for a specific set of interest groups, some of them protectionist and some of them exporters.

Finally, the paper points to the complicated relationship between domestic institutions and international cooperation. On the one hand, parts of the literature emphasize how the insulation of domestic policy-makers from interest groups influence supports policy reform and compliance with international agreements. This has been the basis for the argument that delegation of trade policy-making to the President ensured free trade policies in the United States, for instance (e.g., Gilligan 1997); similar arguments are present in the literature on intergovernmental cooperation (e.g., Moravcsik 1994). On the other hand, parts of the literature emphasize the importance of domestic interest groups for the long-term viability of interna-

tional cooperation. For instance, in international environmental and human rights agreements, domestic interest groups can be crucial for monitoring and enforcing compliance with international norms (Dai, 2007; Simmons, 2009). The paper underscores the contrast between these accounts. Institutions that insulate policy-makers from interest groups not only reduce the influence of interest groups opposing reform and compliance, but also reduce the influence of supportive interest groups. Hence, by undercutting the influence of such groups, delegation may reduce the prospects for the long-term success of international agreements – an argument that echoes the concerns voiced by Hiscox (1999) about the explanatory power of institutional reforms in the context of United States policy-making. It appears promising to pay more attention to these interactions to gain a better understanding of the negotiation, functions, and effects of international institutions.

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A Online appendix

This appendix contains additional empirical models. I consider a combination of additional control variables, different variable measurements, and different estimation methods.

List of Tables

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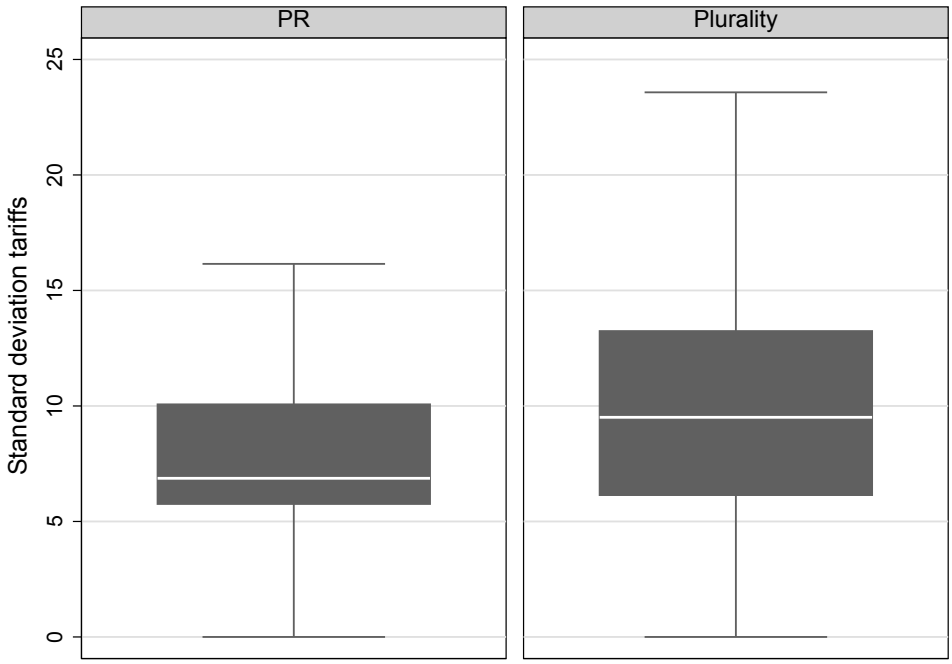

Figure A.1: Standard deviation in tariff rates under proportional representation (PR, left panel) and plurality rule (right panel). Standard deviation calculated at the country-year level, across HS 4-digit product categories.

A.1 Dispersion in tariff rates

Figure A.1 displays the standard deviation in tariff rates across electoral systems in box plots. The graph shows that plurality rule is indeed associated with higher dispersion. Also note that the highest values of dispersion occur under plurality rule. Figure A.2 displays the same data in a histogram of the standard deviation in tariff rates across electoral systems: for proportional representation (PR, left panel) and plurality rule (right panel).

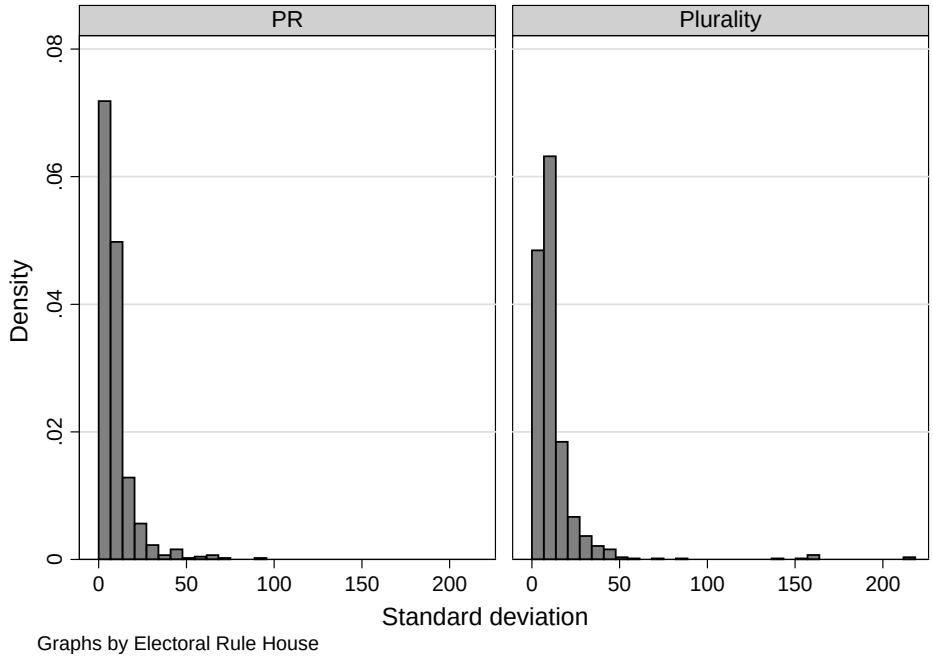

Figure A.2: Standard deviation in tariff rates under proportional representation (PR, left panel) and plurality rule (right panel). Standard deviation calculated at the country-year level, across HS 4-digit product categories.

A.1.1 Additional control variables

The empirical models in the main body of the paper include few control variables. Table A.1 provides additional models that include control variables common in studies of trade politics. Column 1 controls for the logged length of a country's coast line. Countries with longer coast lines tend to be more reliant on trade; at the same time, longer coast lines also make it harder to combat smuggling, which may have implications for a country's tariff rates. The variable is available from the CIA Factbook. While there are quite substantial problems in measuring and estimating coast lines (mainly because of the dependence on the level of aggregation), this variable is publicly available and used elsewhere and appears as sufficient for the present purposes. Where different measures were available, I used only the coast line of a country's main land, not of related islands. As the results show, countries with longer coast lines tend to have more dispersed tariff rates, but the inclusion of the control variable does not affect the coefficient on plurality rule.

Second, country size has been associated with both trade openness and the electoral rule: smaller countries tend to be more dependent on trade and also tend to be more likely to have electoral rules following proportional representation. Logged population size, available from the World Bank, is a popular alternative to log GDP. Column 2 shows that population size is not associated with the dispersion in tariff rates, and that the coefficient on plurality rule remains positive and significant after including the variable. The third column includes a variable for natural resource wealth, obtained from the World Bank. Again, the coefficient estimate on plurality rule is hardly affected by including this control variable.

Fourth, left governments have been argued to pursue more protectionist trade policies. Left governments also tend to be represented in government more often under proportional representation (Iversen and Soskice, 2006), such that partisanship may be an important confounder. Column 4 therefore includes a variable to control for the partisanship of the chief executive, obtained from the Database of Political Institutions (Beck et al., 2001), which emphasizes the

economic orientation of governments. The results in column 4 show that left governments have more dispersed tariff rates, but including the variable in the empirical model does not wash out the effect of the electoral rule; while the coefficient drops in size, much of this change is attributable to the change in the estimation sample that is due to including the additional variable; note that the number of observations decreases by about a third.

Fifth, the number of veto players may be a confounding variable. Veto players are actors who can block a policy change (Tsebelis, 2002). Moreover, veto players assume an important role in trade politics (Mansfield and Milner, 2012): Their ability to block policy change may prevent the negotiation of trade agreements; at the same time, governments with large numbers of veto players may feel compelled to 'tie their hands' by negotiating trade agreements that overcome domestic opposition. Column 5 includes the number of veto players, as measured by the Database of Political Institutions (Beck et al., 2001). The variable is increased by one, for instance, if in a presidential system the government is divided (the chief executive is from a different party than the legislature's majority), and in parliamentary systems for each party in the government coalition. Since the number of parties in particular has been related to the electoral rule, there is some concern that the number of veto players may be correlated with the electoral rule. The results in column 5 show that the main results are unaffected by the inclusion of the additional control variable.

Finally, column 6 controls for regional fixed effects, since electoral rules and, plausibly, tariff rates share some regional clustering. Column 7 includes year fixed effects as one way to account for contemporaneous correlation and common time shocks. While the coefficient on plurality rule decreases in size when including region-fixed effects, the main results are robust to these modifications.

Table A.1: Dispersion: Robustness checks I

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
PLURALITY RULE	2.18***	2.61***	3.08***	2.42***	2.67***	.692***	1.94***
	(.151)	(.162)	(.153)	(.191)	(.115)	(.209)	(.285)
GDP	-.128*	.148	.286***	-.228***	.393***	.435***	.086
	(.071)	(.107)	(.056)	(.070)	(.042)	(.094)	(.108)
GDP PER CAPITA	.062**	.025	.033	.107***	.025	.007	.039
	(.027)	(.037)	(.027)	(.028)	(.026)	(.032)	(.031)
COAST LINE	.254***						
	(.027)						
POPULATION		.0484					
		(.114)					
NATURAL RESOURCES			.020***				
			(.007)				
LEFT GOVERNMENT				1.26***			
				(.166)			
VETO PLAYERS					-.052		
					(.054)		
CONSTANT	8.96***	3.08**	.348	11.6***	-1.27	.804	5.78**
	(1.58)	(1.38)	(1.25)	(1.6)	(.912)	(1.99)	(2.62)
Region Dummies	-	-	-	-	-	yes	-
Year Dummies	-	-	-	-	-	-	yes
Obs.	1468	1504	1502	974	1478	1481	1504
Countries	122	125	125	85	125	123	125

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errrors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.2 provides more robustness checks. Column 1 includes a control variable for FDI stocks in the country to account for the influence of multinational corporations, which may push for lower tariff rates on re-imported goods. Column 2 controls for exchange rate overvaluation. Protectionist trade policies, by reducing the trade deficit, can induce an appreciation of the real exchange rate, which harms import-competing and exporting firms. These firms may push for trade liberalization in order to avoid the real exchange rate effects.[*] Column 3 shows that, as discussed in the main text, plurality rule is also associated with a larger share of tariffs that are pushed down to the zero lower bound, a result that is unexpected from standard theories. Column 4 drops intermediate goods, as defined by the BEC classification, before calculating the standard deviation in tariff rates across products.

A.1.2 Market and industry structure

As noted in the main text, the standard deviation in tariff rates may be reflecting differences in trade flows across products. The following provides several models that better account for market and industry structure. Table A.3 maintains the standard deviation in tariff rates at the country-level as the dependent variable. Column 1 includes the logged number of export markets as control variable (obtained from WITS). Column 2 includes the logged number of product lines with positive exports as control variable, or what is usually considered the extensive margin of trade (calculated from six-digit UN Comtrade data). Column 3 includes the logged number of product lines with positive imports as control variable (calculated from six-digit UN Comtrade data). Column 4 uses a similar measure of the extensive margin of trade, obtained from the International Monetary Fund. Column 5 includes a measure of export di-

[*]Moreover, while concerns about the real exchange rate provide an explanation for demands for trade liberalization, they do not explain why these demands should result in a higher dispersion. To obtain meaningful real exchange rate effects, tariffs should be liberalized across the board, not on specific goods, which in turn would make it harder for firms to organize for such measures. In fact, because the general equilibrium effects of protectionism tend to be small (Baldwin and Baldwin, 1996), firms typically lobby for sector- or even firm-specific relief, such as anti-dumping duties or trade disputes, when faced with overvalued real exchange rates.

Table A.2: Dispersion: Robustness checks II

	(1) Std. dev.	(2) Std. dev.	(3) zero bound	(4) drop interm.
PLURALITY RULE	2.99***	2.9***	.25***	2.79***
	(.211)	(.112)	(.08)	(.25)
FDI	-.053***			
	(.016)			
GDP	-.052	.253***	.013	.146
	(.061)	(.046)	(.024)	(.102)
GDP PER CAPITA	.156***	.028	.045***	.121***
	(.025)	(.026)	(.005)	(.027)
OVERVALUATION		-.004**		
		(.002)		
AVERAGE TARIFF			-.0235***	
			(.004)	
CONSTANT	8.07***	1.42	-2.96***	4.27*
	(1.39)	(.938)	(.555)	(2.25)
Obs.	1319	1493	1507	1500
Countries	112	124	125	125

Dependent variable: Columns 1 and 2: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Column 3: logged share of tariff rates at zero lower bound. Column 4: drops intermediate goods before calculating the standard deviation. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.3: Dispersion: Market and Industry Structure I

	(1)	(2)	(3)	(4)	(5)
PLURALITY RULE	2.69***	3.44***	3.45***	2.92***	3***
	(.196)	(.161)	(.167)	(.149)	(.138)
GDP	.104	.245***	.344***	.291***	.173**
	(.113)	(.081)	(.068)	(.055)	(.071)
GDP PER CAPITA	.039	-.003	.001	.010	.017
	(.029)	(.026)	(.026)	(.025)	(.023)
EXPORT MARKETS	.582**				
	(.263)				
EXPORT LINES		.283***			
		(.086)			
IMPORT LINES			.109		
			(.085)		
INTENSIVE MARGIN				.22***	
				(.064)	
EXPORT DIVERSIFICATION					.36***
					(.064)
CONSTANT	2.47	-.63	-1.76	1.25	4.47***
	(2.01)	(1.5)	(1.51)	(1.3)	(1.72)
Obs.	1504	1336	1340	1456	1456
Countries	125	117	117	120	120

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

versification, also obtained from the International Monetary Fund. The coefficient on plurality rule remains positive and statistically significant in all of the models, and in several models increases in size.

Table A.4 provides additional results for the country-year data that account for (the dispersion in) trade flows. Column 1 includes log trade. Columns 2 and 3 include log exports and log imports, respectively. Column 4 and 5 account for differences across sectors by including the standard deviation in imports and the standard deviation in exports, respectively. Alternative measures of market structure are provided in columns 6-8, which include the Herfindahl-Hirschman index for total trade, imports, and exports, respectively. All measures of trade dis-

persion are calculated from six-digit Harmonized System trade data, obtained from UN Comtrade.

Tables A.5 and A.6 provide similar robustness checks at the country-sector-year level, accounting for differences within sectors. The models account for trade flows, exports, and imports within each country-sector-year; for intra-industry trade, defined by the Grubel-Lloyd index; for the average tariff rate within sectors (Table A.5); and for the standard deviation and Herfindahl-Hirschman index in trade flows, imports, and exports for the country-sector-year (Table A.6). The coefficient on plurality rule remains significant and positive in all cases.

Table A.7 presents additional models at the country-sector-year level. Column 1 accounts for the nested structure of the data by estimating a hierarchical linear model, with sector-specific intercepts. Column 2 allows for country-sector-specific intercepts. The coefficient on plurality rule remains positive and statistically significant in both cases. Only when allowing for separate country- and sector-specific intercepts does the coefficient lose statistical significance. Finally, Column 3 presents results from a linear regression model with sector-fixed effects.

A.1.3 Outliers in tariff rates and standard deviation

Relying on tariff rates, and the standard deviation in tariff rates across products, makes the results potentially susceptible to outliers in the data. The following results show that the results in the paper are not driven by (i) unusually high or low tariff rates that influence the standard deviation unduly, (ii) unusually high or low values of the standard deviation, (iii) potential clustering of observations where the standard deviation is zero or close to the zero bound.

Figures A.3 through A.5 plot the coefficient estimate on plurality rule when estimating the main model from the paper (which controls for log GDP and GDP per capita) when performing a number of modifications to the data (for Figure A.5, because the dependent variable is dichotomous, I present results from a logit model with standard errors clustered by country to account for serial correlation). Coefficient estimates that are statistically significant at the

Table A.4: Dispersion: Market and Industry Structure II

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PLURALITY RULE	2.74***	2.63***	2.91***	3.53***	3.48***	3.5***	3.17***	3.47***
	(.172)	(.174)	(.171)	(.146)	(.153)	(.18)	(.203)	(.167)
GDP	-.409**	-.534***	-.189	.447***	.464***	.433***	.273***	.373***
	(.177)	(.166)	(.159)	(.071)	(.074)	(.069)	(.084)	(.062)
GDP PER CAPITA	.043*	.055**	.021	.014	.018	.008	.054*	.005
	(.026)	(.027)	(.025)	(.029)	(.030)	(.025)	(.028)	(.026)
TRADE FLOWS	.586***							
	(.178)							
EXPORTS		.666***						
		(.157)						
IMPORTS			.43***					
			(.157)					
SD IMPORTS				-.376***				
				(.117)				
SD EXPORTS					-.561***			
					(.217)			
HHI TRADE						.0249***		
						(.005)		
HHI IMPORTS							.040***	
							(.012)	
HHI EXPORTS								.014***
								(.004)
CONSTANT	3.35**	4.94***	2.16	-3.26**	-3.61**	-3.78**	-.359	-2.12
	(1.6)	(1.6)	(1.51)	(1.59)	(1.66)	(1.57)	(2.06)	(1.39)
Obs.	1483	1483	1483	1340	1336	1347	1347	1347
Countries	123	123	123	117	117	117	117	117

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.5: Dispersion: Market and Industry Structure III (Sector data)

	(1)	(2)	(3)	(4)	(5)
PLURALITY RULE	1.64***	1.65***	1.51***	1.65***	.99***
	(.034)	(.033)	(.037)	(.029)	(.020)
GDP	-.049***	.062***	.123***	-.098***	.024***
	(.018)	(.015)	(.019)	(.014)	(.008)
GDP PER CAPITA	-.041***	-.047***	-.028***	-.035***	-.000
	(.003)	(.003)	(.003)	(.003)	(.002)
SECTOR TRADE FLOWS	-.035***				
	(.008)				
SECTOR EXPORTS		-.069***			
		(.006)			
SECTOR IMPORTS			-.26***		
			(.013)		
SECTOR IIT				-.416***	
				(.069)	
AVG TARIFF					.078***
					(.002)
CONSTANT	8.08***	6.06***	8.2***	8.66***	4.76***
	(.349)	(.305)	(.332)	(.304)	(.185)
Obs.	19731	19880	20043	19731	21409
Country-sectors	1720	1725	1738	1720	1867

Dependent variable: standard deviation in tariff rates, at the country-sector-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.6: Dispersion: Market and Industry Structure IV (Sector data)

	(1)	(2)	(3)	(4)	(5)	(6)
PLURALITY RULE	1.65***	1.53***	1.61***	1.59***	1.53***	1.46***
	(.031)	(.029)	(.031)	(.030)	(.030)	(.030)
GDP	-.078***	-.021	-.059***	-.033**	.042***	-.046***
	(.014)	(.013)	(.014)	(.013)	(.011)	(.013)
GDP PER CAPITA	-.035***	-.041***	-.036***	-.038***	-.041***	-.036***
	(.003)	(.003)	(.003)	(.003)	(.003)	(.003)
SD SECTOR TRADE	-.316***					
	(.055)					
SD SECTOR IMPORTS		-.439***				
		(.093)				
SD SECTOR EXPORTS			-.499***			
			(.087)			
SECTOR HHI TRADE				-.077**		
				(.036)		
SECTOR HHI IMPORTS					.247**	
					(.125)	
SECTOR HHI EXPORTS						-.044
						(.030)
CONSTANT	8.12***	6.86***	7.69***	7.1***	5.33***	7.41***
	(.318)	(.291)	(.31)	(.3)	(.248)	(.295)
Obs.	19623	20038	19805	20135	20135	20135
Country-sectors	1714	1738	1720	1738	1738	1738

Dependent variable: standard deviation in tariff rates, at the country-sector-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.7: Dispersion: Sector Data Multilevel

	(1) HLM	(2) HLM	(3) Sector FE
PLURALITY RULE	1.56**	1.2***	1.56***
	(.71)	(.423)	(.593)
GDP	.139	-.054	.139
	(.16)	(.224)	(.185)
GDP PER CAPITA	.023	.074	.023
	(.058)	(.061)	(.046)
CONSTANT	3.39	7.75	8.2*
	(3.38)	(5.03)	(4.67)
Obs.	23148	23148	23148

Dependent variable: standard deviation in tariff rates, at the country-sector-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. Columns (1)-(2): Hierarchical linear model, sector-specific and country-sector-specific random effects, respectively. Model (3): Sector fixed effects, linear regression model.

5 percent level are marked with a cross, coefficient estimates that fail to reach the 5 percent level are marked with dots. The horizontal dashed line indicates the coefficient estimate from the main sample, reported in the paper.

First, I drop products where the tariff rate is below specific cut-offs (left panel of Figure A.3) or above specific cut-offs (right panel of Figure A.3) before calculating the standard deviation across products. Second, I drop observations where the standard deviation across products is below specific cut-offs (left panel of Figure A.4) or above specific cut-offs (right panel of Figure A.5). The figures show that the coefficient estimate on plurality rule remains positive and statistically significant. Third, I dichotomize the dependent variable and code the dependent variable zero for observations where the standard deviation remains below specific cut-offs and one for observations above the cut-off. If the results are driven by observations where the standard deviation is zero or close to zero, the results with the dichotomized variable should be similar to those from the full sample. This is not the case, as Figure A.5 shows: the

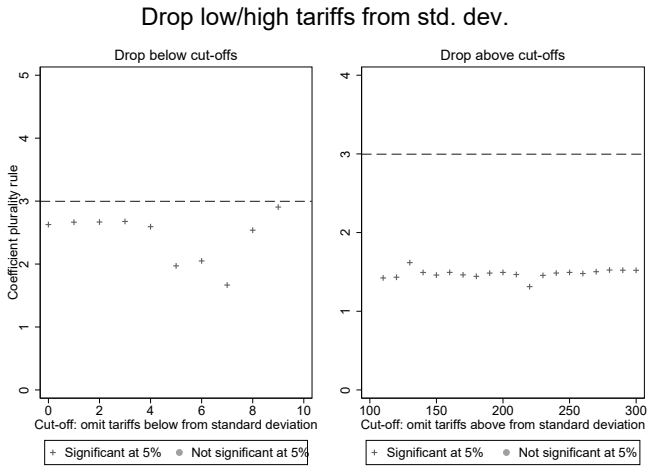

Figure A.3: Coefficient estimate on plurality rule when dropping tariff rates below (left panel) and above (right panel) specific cut-offs from the sample before calculating the standard deviation in tariff rates. The dashed horizontal line represents the coefficient estimate in the full, unmodified sample.

coefficient estimate on plurality rule is initially negative (but not statistically significant), then turns positive but only in a few cases gains statistical significance.

A.1.4 Alternatives to standard deviation

The main models in the paper evaluated whether the dispersion in tariff rates increases by using the standard deviation in tariff rates across products. While the standard deviation provides a familiar and convenient measure of dispersion, it also has a number of drawbacks, not least due to its strong parametric form. Moreover, it makes the previous models sensitive to outliers in two ways: single high tariff rates may skew not only the coefficient estimates from linear models based on means, but also the calculation of the standard deviation in the first place. As an alternative to modeling the dispersion in tariff rates using the standard deviation, this subsection provides results from quantile regression models.

Quantile regression provides a flexible means to evaluate the relationship between the variance in tariff rates and electoral rules. While a regression line estimates a line at the mean,

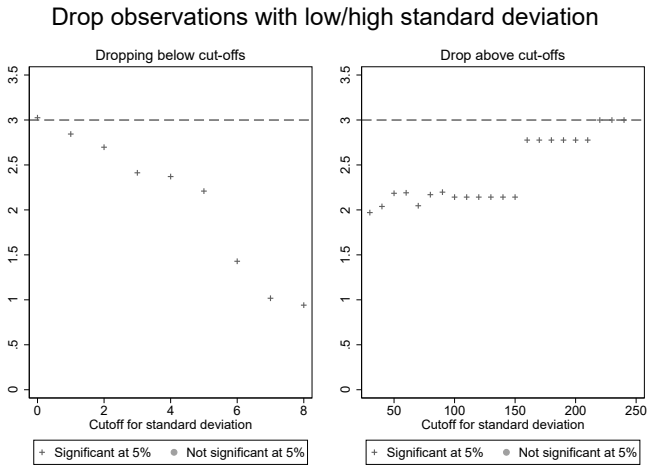

Figure A.4: Coefficient estimate on plurality rule when dropping observations with values on the standard deviation below (left panel) and above (right panel) specific cut-offs. The dashed horizontal line represents the coefficient estimate in the full, unmodified sample.

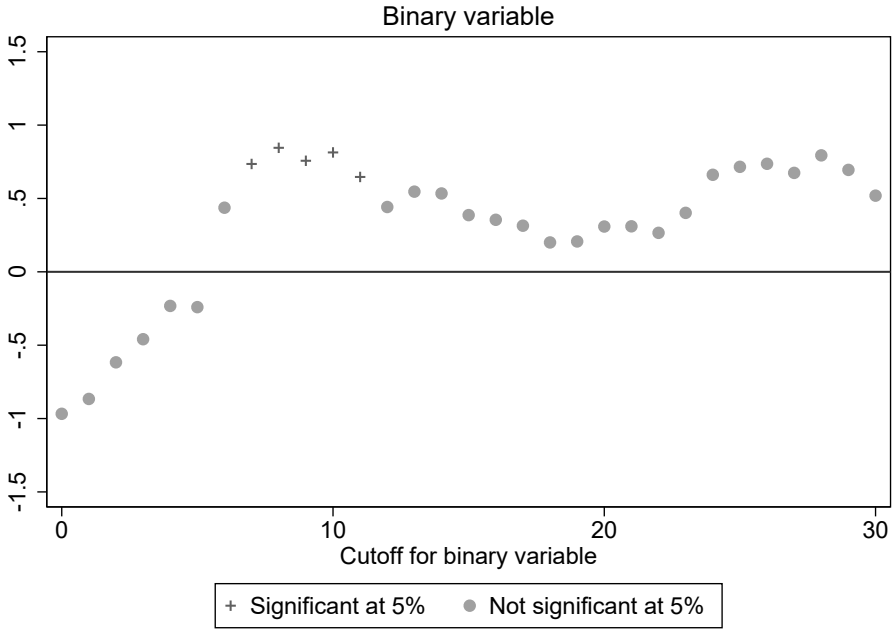

Figure A.5: Coefficient estimate on plurality rule when dichotomizing the dependent variable, coding it zero below specific cut-offs on the standard deviation and one above.

quantile regression provides a regression line for percentiles of the data. Most commonly, this is the median, or the 50th percentile, because the median is identical to the mean if the data is symmetric, yet it is more robust to extreme values in the data than the mean. However, quantile regression can also be applied to other percentiles of the data, which in turn can be used to evaluate the relationship between the variance in the dependent variable and a covariate. If the variance of the dependent variable is independent of the covariate, then the regression lines for different percentiles should have the same slope, that is, they should run in parallel. By contrast, if the variance of the dependent variable is a (linear) function of the covariate, then the slopes for different percentiles will differ. Most importantly, if the dependent variable fans out as the value of the covariate increases, then the quantile regression lines for different percentiles should also fan out. Specifically, the slope at lower percentiles should be smaller than the slope at higher percentiles, and consequently the difference in the slope, the interquartile range, should increase in x. Most commonly, the interquartile slope is calculated for the 25th and the 75th percentile or the 10th and the 90th percentile.

Figure A.6 provides two examples to illustrate these points. The left panel represents data where the variance of the dependent variable on the y-axis is independent of the covariate on the x-axis. Consequently, the slopes of the quantile regression at the 25th, 50th, and 75th percentile are identical. By contrast, the right panel represents data where the variance of the dependent variable increases with the predictor variable. Consequently, the slopes of the quantile regression at the 25th, 50th, and 75th percentile fan out, indicating the larger dispersion in the data at higher values of the covariate.[*]

The implication for the link between electoral systems and variation in tariff rates is that the coefficient on plurality electoral systems should increase at higher percentiles of the data, such that the interquartile range – the difference in the slopes at different percentiles of the

[*] See Koenker and Bassett (1978) for the first description of quantile regression models. Deaton (1997, pp. 80-83) offers a brief overview. Stasavage (2002) provides an application to assess whether an increase in political constraints in associated with less variation in private investment levels.

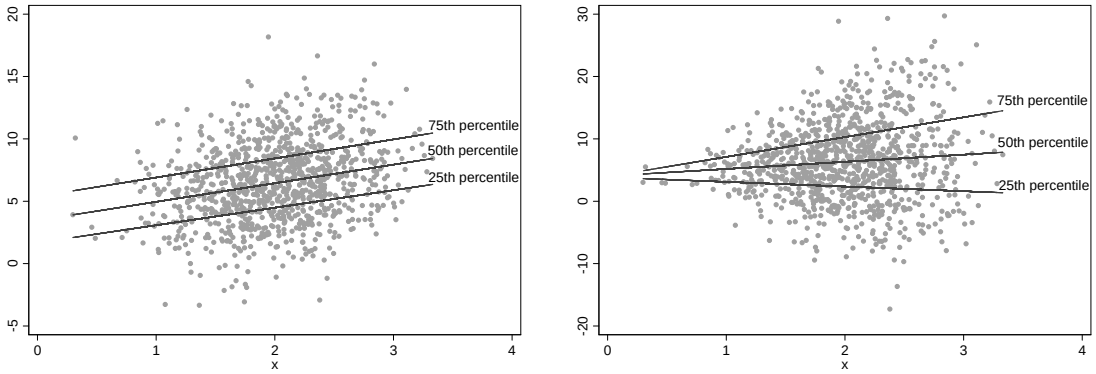

Figure A.6: Illustration of quantile regression to evaluate whether the dispersion in tariff rates increases in a covariate x. In the left panel, the dispersion in tariff rates is constant and not a function of x. In the right panel, the dispersion increases in x. Both panels include quantile regression lines for the 25th, 50th, and 75th percentiles. Note how the lines fan out in the right panel, while they are parallel in the left panel. Consequently, if the difference between quantiles, the interquantile range, increases in x, the dispersion increases.

data – should be higher under plurality rule. Table A.8 shows that this is indeed the case for the comparison between the 25th and the 75th percentile, which are commonly used for comparing the interquantile range. The models in Table A.8 are identical to previous ones and control for log GDP and GDP per capita. As the results show, the interquartile range indeed increases in plurality rule.

Columns 2 through 5 rely on a second alternative to the standard deviation by comparing the entire distribution of tariff rates across electoral systems. I implement the test statistic suggested by Brown and Forsythe (1974), which is based on absolute deviations from the median; the median is specific to each country and the electoral rule to account for country-specific differences in the average tariff rate (similar results obtain when just using the median specific to each electoral system and not accounting for country-differences). Because observations within countries are unlikely to be independent, I account for the within-country correlation by relying on a robust sandwich estimator, following Iachine, Petersen and Kyvik (2010). Columns 4 and 5 use double-clustered standard errors to simultaneously account for within-country, serial

Table A.8: Dispersion: Alternatives to Standard Deviation

	(1)	(2)	(3)	(4)	(5)
PLURALITY RULE	3.6***	1.24**	1.23**	1.24**	1.23**
	(.047)	(.558)	(.529)	(.582)	(.556)
GDP	-.624***		.179		.179
	(.011)		(.153)		(.154)
GDP PER CAPITA	-.125***		-.091**		-.091**
	(.003)		(.039)		(.039)
CONSTANT	27***	6.1***	2.5	6.1***	2.5
	(.26)	(.303)	(3.52)	(.312)	(3.53)
Obs.	1719316	1731424	1719316	1731424	1719316

Column (1): Dependent variable: tariff rates for HS4 tariff categories. Difference in coefficient estimates between 75th and 25th quantile and bootstrapped standard errors for the difference. Columns (2)-(5): Deviation from median (median specific to country and electoral rule). Standard errors clustered by country (columns 2 and 3) and country and year (columns 4 and 5). *** significant at 1%, ** significant at 5%, * significant at 10%.

correlation over time and spatial, contemporaneous correlation between countries in the same year. In all four cases, plurality rule is associated with a significantly larger variance in tariff rates than proportional representation.

A.1.5 Alternative estimators

The main results reported in the paper were based on feasible generalized least squares and allowed for serial correlation in the error process through an AR(1) process. Table A.9 considers alternative estimators. Column 1 relies on the Driscoll-Kraay estimator for the covariance matrix, which provides standard errors that are robust to cross-sectional correlation as well as to heteroskedasticity and autocorrelation that follows a moving-average process (as opposed to autocorrelation, which was the assumption underlying the FGLS estimates). The estimator is robust to spatial correlation, since it is a heteroskedasticity and autocorrelation (HAC) robust covariance matrix estimator based on cross-sectional averages of the moment conditions (as opposed to averages of each individual's HAC covariance matrix). Vogelsang (2012) provides

an asymptotic theory ('fixed-b asymptotics') which improves inference substantially compared to conventional inference based on a normal approximation.[*] As shown in Column 1, the results are robust to these alternative standard errors.

The second column employs panel-corrected standard errors, allowing for cross-sectional heterogeneity and serial correlation. The results are robust to this modification. To account for temporal dynamics explicitly, an alternative is to estimate an error correction model that includes both differenced and lagged independent variables, as well as a lagged independent variable, and replaces the dependent variable by its differenced version (De Boef and Keele, 2008). The model estimates suggest that in the short-run, plurality rule is associated with a modest increase in the tariff dispersion of about .972, with a p-value of .035. The long-run effect is comparable in size to the coefficient estimates from previous models: plurality rule is associated with an increase in the tariff dispersion of about 3.10 points, with a p-value of .000 (based on the Delta method).

The third and fourth columns model the potential spatial correlation explicitly through a spatial lag, following the discussion in Franzese and Hays (2007). In particular, the model to be estimated is, following equation 2 in Franzese and Hays (2007),

$$\mathbf{y} = \rho \mathbf{W}\mathbf{y} + \mathbf{X}\beta + \epsilon, \tag{1}$$

with dependent variable $\mathbf{y}$, covariate matrix $\mathbf{X}$, coefficient vector β, scalar ρ, residual vector ϵ, and a spatial-weighting matrix $\mathbf{W}$. The spatial model defined in equation (1) gives rise to two considerations. First, the spatial lag, $\mathbf{W}\mathbf{y}$, allows the dependent variable – tariff dispersion – to be affected by the tariff dispersion in other countries. As noted by Franzese and Hays (2007, p. 142), this is different from, for instance, time shocks that affect all countries the same way (which could be modeled using year fixed effects) or external shocks whose effects may depend

[*] See Mueller (2014) for a discussion; Bunzel, Kiefer and Vogelsang (2001) provide additional discussion and an application to non-linear models.

country characteristics. Instead, the spatial lag allows the tariff dispersion in other countries to directly affect a country's tariff dispersion, and for this country's tariff dispersion to feed back into other countries' tariff dispersion. As this latter part indicates, spatial dependence thus defined implies endogeneity of the spatial lag, and consequently estimating equation (1) by ordinary least squares results in biased, inconsistent estimates. I therefore follow Franzese and Hays (2007) and employ their spatial maximum likelihood estimator.

Second, to estimate the model, the spatial-weighting matrix **W** has to be specified. I model these spatial effects as occurring through joint membership in a preferential trade agreement. This implies that the spatial lag, **Wy**, for observation i effectively becomes the average tariff dispersion in countries $j \neq i$ that have negotiated a trade agreement with i; the tariff dispersion in countries $j \neq i$ that have not negotiated a trade agreement with i does not enter the spatial lag for country i at all. The results in Column 3 of Table A.9 show that the positive association between plurality rule and tariff dispersion remains. In addition, the results show that spatial interdependence is present in the data on tariff dispersion, as indicated by the coefficient on the spatial lag. Column 4 row-normalizes the spatial lag. While this increases the substantive effect of spatial dependence, the coefficient on plurality rule remains positive and significant.

Columns 5 and 6 report results from dynamic panel data models. Column 5 reports results from a GMM model when restricting the sample to countries without changes in their electoral rule over time. Column 6 reports results from a quasi-maximum likelihood estimator that allows for country-specific random effects; the estimator is suitable for data sets with many panels and short time periods, as is the case in the present context (Bhargava and Sargan, 1983; Kripfganz, 2016).

Table A.9: Dispersion: Alternative Empirical Models

	(1) Driscoll-Kraay	(2) PCSE	(3) Spatial lag	(4) Spatial lag	(5) GMM	(6) QML
PLURALITY RULE	2.61***	2.54**	2.7***	2.7***	1.54***	1.53**
	(.413)	(1.2)	(.728)	(.726)	(.591)	(.65)
GDP	.641***	.655	.617***	.558***	2.97***	.338
	(.137)	(.467)	(.199)	(.199)	(.998)	(.418)
GDP PER CAPITA	.102*	.086	.093**	.097***	.045	.114
	(.052)	(.114)	(.037)	(.037)	(.076)	(.078)
SPATIAL LAG			.046***	.146***		
			(.011)	(.029)		
LAGGED SD					.424***	.385***
					(.022)	(.083)
CONSTANT	-6.42*	-6.82	-6.32	-4.95	-66.3***	-3.3
	(3.13)	(10.6)	(4.66)	(4.66)	(23.6)	(10)
Obs.	1505	1505	1505	1505	1378	1556
Countries	126	126	126	126	114	119

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. (1) Driscoll-Kraay, fixed-b asymptotics. (2) Panel-corrected standard errors, allowing for panel heteroskedasticity and serial correlation. (3) Spatial lag, joint membership in preferential trade agreements as spatial weight. (4) Spatial lag, joint membership in preferential trade agreements as spatial weight, row-normalized. (5) GMM, only countries without change in electoral rule. (6) Quasi Maximum Likelihood.

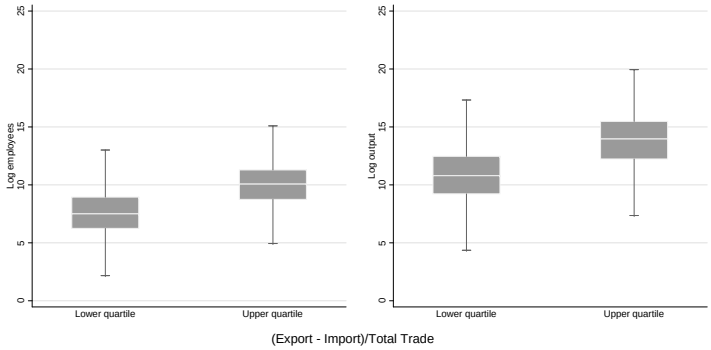

Figure A.7: Log employees (left panel) and log output (right panel) for industries in the lower quartile and upper quartile of the export-import ratio. Industries more successful at exporting have more employees and higher output. Data from Nicita and Olarreaga (2006), covering 96 countries. Mean, upper and lower quartile, and upper and lower adjacent values.

A.1.6 Exporters, trade agreements, and tariff dispersion

Figure A.7 displays box plots of the logged number of employees and logged output for industries that are in the lower and upper quartile of the export-import ratio, using data from 96 developed and developing countries (Nicita and Olarreaga, 2006). Industries dependent on exports have more employees and higher output.*

Table A.10 includes various interactions between the electoral rule and the economic structure of a country. Column 1 includes an interaction between plurality rule and GDP per capita. The results show that the effect of plurality rule is not statistically significantly different for wealthier countries. Column 2 includes the interaction with the logged number of export products, column 3 the interaction with the logged number of export markets. In both cases, plurality rule has (statistically significantly) larger effects for countries with more exporter interests. Column 4 shows that effect of plurality rule also increases in the economic complexity index.

*The export-import ratio is the difference between the value of exports and imports for each industry, divided by the sum of exports and imports for that industry. The ratio is bound between -1 and 1 and hence not a function of industry size. Similar results are obtained when factoring out gross domestic product and wealth.

Table A.10: Dispersion: Exporters

	(1)	(2)	(3)	(4)
PLURALITY RULE	3.2***	1.45**	-4.58***	3.83***
	(.151)	(.582)	(1.19)	(.275)
x GDP PER CAPITA	-.031			
	(.049)			
x NO. PRODUCTS		.275**		
		(.118)		
x NO. MARKETS			1.76***	
			(.309)	
x ECONOMIC COMPLEXITY				.814***
				(.264)
GDP PER CAPITA	.053	.060**	.049*	-.005
	(.042)	(.025)	(.029)	(.035)
GDP	.209***	.059	.088	.855***
	(.064)	(.108)	(.113)	(.093)
NO. PRODUCTS		.080		
		(.12)		
NO. MARKETS			.066	
			(.286)	
ECI				-.539**
				(.235)
CONSTANT	2.04	5.19***	4.88**	-13.3***
	(1.42)	(1.96)	(2.1)	(2.16)
Obs.	1504	1504	1504	1058
Countries	125	125	125	91

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.11 displays the estimation results when interacting plurality rule with a dummy variable for membership in any trade agreement; WTO membership; PTA membership; and the number of PTAs a country is member to. The marginal effect of plurality rule, when member of a trade agreement (i.e., the coefficient on plurality rule plus the coefficient on the interaction term), is always positive and statistically significant at the five percent level. Moreover, note that the coefficient on trade agreements is, in all four cases, negative, suggesting that under proportional representation, trade agreements result in less tariff dispersion. That is, under proportional representation, trade agreements appear to be associated with more even tariff cuts across sectors.

Table A.12 shows that the main results hold up when choosing different sample restrictions. The first column replicates the main model in the standard sample, which includes countries that are either WTO members or members to trade agreements. The definition of trade agreements is then restricted in several ways, counting only plurilateral agreements and omitting bilateral agreements (column 2); excluding North-South agreements (following the Desta definition counting the US, Canada, Western Europe, Japan, Australia, and New Zealand as North) (column 3); and excluding bilateral and inter-continental trade agreements (column 4). Column 5 restricts the sample to countries that were WTO members over the entire sample period. Column 6 restricts the sample to countries that newly joined the WTO during the sample period. The previous table contains results with an interaction term for WTO membership.

Table A.11: Dispersion: Trade agreements

	(1)	(2)	(3)	(4)
PLURALITY RULE	-.578	1.64***	-4.03***	.728**
	(1.85)	(.408)	(1.5)	(.337)
x ANY AGREEMENT	3.58*			
	(1.85)			
x WTO MEMBER		1.47***		
		(.416)		
x PTA MEMBER			7.09***	
			(1.51)	
x NUMBER PTAS				.184***
				(.037)
ANY AGREEMENT	-2.09*			
	(1.13)			
WTO MEMBER		-.121		
		(.369)		
PTA MEMBER			-4.01***	
			(.798)	
NUMBER PTAS				-.097***
				(.026)
GDP	.318***	.321***	.334***	.19**
	(.044)	(.052)	(.041)	(.078)
GDP PER CAPITA	.012	.018	.005	.067**
	(.024)	(.026)	(.024)	(.026)
CONSTANT	2.13	.0468	3.71***	3.64**
	(1.47)	(1.19)	(1.22)	(1.64)
Obs.	1510	1510	1510	1510
Countries	125	125	125	125

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

Table A.12: Dispersion: Sample restrictions

	(1)	(2)	(3)	(4)	(5)	(6)
		only consider			WTO members	
	all PTAs	plurilateral	similar	regional	existing	new
PLURALITY RULE	3***	3***	3***	3.05***	2.9***	.819**
	(.118)	(.12)	(.118)	(.126)	(.16)	(.346)
GDP	.318***	.321***	.318***	.372***	.245***	-.637***
	(.043)	(.044)	(.043)	(.043)	(.061)	(.154)
GDP PER CAPITA	.012	.012	.012	-.001	.026	.179***
	(.024)	(.024)	(.024)	(.024)	(.032)	(.040)
CONSTANT	.035	-.014	.035	-1.08	1.64	21.1***
	(.923)	(.928)	(.923)	(.919)	(1.31)	(3.41)
Obs.	1504	1501	1504	1441	1223	287
Countries	125	125	125	120	93	32

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%. All models: GLS, AR(1) error process.

A.1.7 Alternative institutions

Table A.13 presents the model results when using alternative measures of political institutions. First, as the number of electoral districts increases, the incentives to provide policies to narrow interest groups should increase as well: through a larger number of districts, smaller interest groups can gain representation in the political process (Rogowski, 1987; Ehrlich, 2007). Data on the number of electoral districts are available from Golder (2005).[*] Second, legislators from national constituencies should have more broad based interests than legislators from smaller geographic constituencies. I obtain a variable on the proportion of national constituencies from Seddon et al. (2002). The variable ranges from zero to one, where a value of zero represents a system where all legislators come from national districts. Third, the influence of narrow interest groups should increase as legislators have more 'Incentives to Cultivate a Personal Vote' (Carey and Shugart, 1995). Data are again available from Seddon et al. (2002). The

[*]Because the data are only available for one or two years for many countries in the sample, the table reports ordinary least squares estimates with standard errors clustered by countries.

variable is an index of party control over ballots, whether and how votes are pooled, and how votes are allocated. The resulting index ranges from zero to eight, with higher values indicating more incentives to cater to narrow interest groups. As with the variable on plurality versus proportional representation, incentives to cultivate a personal vote have been associated with more protectionist trade policies (Nielson, 2003). The results using these alternative measures confirm the previous results: as the number of electoral districts increases, the share of legislators from nation-wide districts decreases, and incentives for individual legislators to cater to narrow groups increase, the standard deviation in tariff rates increases. Moreover, these variables appear to pick up relevant aspects of the distinction between plurality rule and proportional representation. When including each of them in addition to the plurality rule variable, the coefficient on plurality rule loses statistical significance at conventional levels (except for the variable on subnational districts, where both coefficients remain significant).

Similar results obtain when capturing narrow interest institutions through the distinction between parliamentary and presidential systems (column 4) or the distinction between democracies and autocracies (column 5). Presidential systems, with a national electorate, should create more broad-based incentives than individual legislators, and therefore result in less dispersed tariff rates. Democracies, where voters as consumers have more influence, should display less dispersion in tariff rates than autocracies. The results are also robust to reintroducing the electoral rule as the independent variable and controlling for the distinction between presidential and parliamentary systems, ruling out the concern that the results are driven by the correlation between plurality rule and presidential systems. Finally, the results are robust to using a polity score of at least seven for restricting the sample (column 6).

Table A.13: Dispersion: Alternative Institutions

	(1)	(2)	(3)	(4)	(5)	(6)
NUMBER OF DISTRICTS	1.19**					
	(.492)					
SUBNATIONAL DISTRICTS		2.66***				
		(.833)				
PERSONAL VOTE			.788***			
			(.089)			
PARLIAMENTARY				1.39***		
				(.100)		
DEMOCRACY					-1.97***	
					(.176)	
PLURALITY RULE						3.26***
						(.234)
GDP	-.611	-.424***	-.0959	.379***	.651***	-.165**
	(.422)	(.1)	(.117)	(.053)	(.074)	(.077)
GDP PER CAPITA	.12	.008	-.034	.009	-.060**	.135***
	(.086)	(.044)	(.046)	(.026)	(.028)	(.030)
CONSTANT	19.2*	16.8***	8.96***	-.632	-5.41***	10***
	(10.1)	(2.42)	(2.75)	(1.15)	(1.66)	(1.79)
Obs.	121	668	668	1537	1432	871

Dependent variable: standard deviation in tariff rates, at the country-year level, across HS4 tariff categories. Coefficient estimates and *p*-values. *** significant at 1%, ** significant at 5%, * significant at 10%. Column (1): OLS, clustered standard errors. Columns (2)-(6): GLS, AR(1) error process. Column (6): only countries with polity score above 6.

A.2 Tariff levels and PTAs

Figures A.8 through A.9 replicate the left panel of Figure 3, but use different categorizations of PTAs by excluding bilateral PTAs, excluding North-South PTAs (defined as PTAs between US. Canada, Western European countries, Japan, Australia, New Zealand and other states), and excluding PTAs that are not regional PTAs. In all three cases, the average number of PTAs under plurality rule and proportional representations track each other.

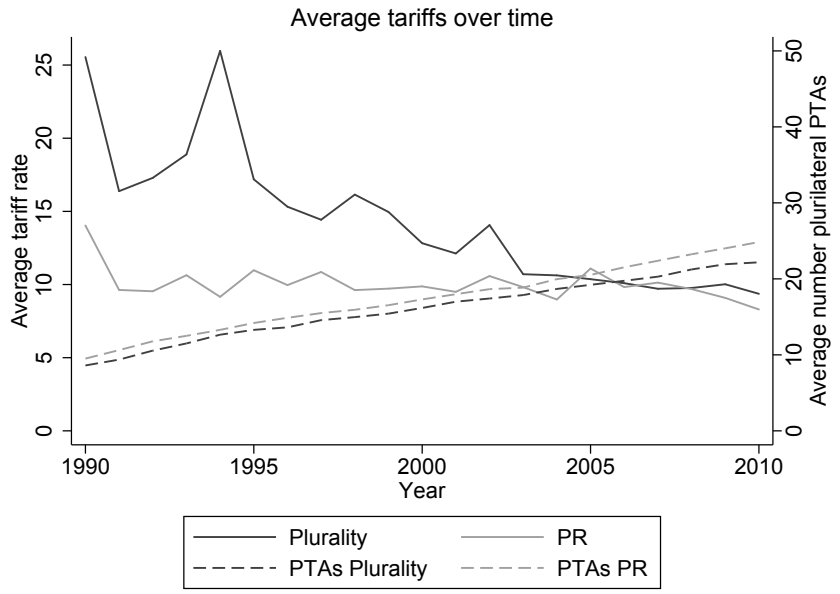

Figure A.8: Average tariff rates, 1990-2010, solid lines, and preferential trade agreements, dashed lines, for plurality rule (dark grey) and proportional representation (light grey). Only plurilateral trade agreements.

A.3 Exporters, trade agreements, and tariff levels

To capture the conditional impact of plurality rule, I interact the variable for the electoral rule with variables on participation in GATT/WTO trade negotiations. The dependent variable is the average most-favored nation tariff rate. As in the previous models, all variables are lagged by one period. To account for common time trends in both the participation in trade agreements and tariff levels, the models include a year polynomial of degree three.

Table A.14 contains several results. The interaction term between the electoral rule and trade negotiations should be negative. The results in Table A.14 conform to this expectation. Column 1 uses the number of negotiation rounds in which a country participated, which ranges from zero to eight. As anticipated, the coefficient on the interaction term is negative, showing that the protectionist bias of plurality rule wears down with participation in trade agreements. The marginal effect plot is included in the main paper. Note that, in fact, plurality rule results

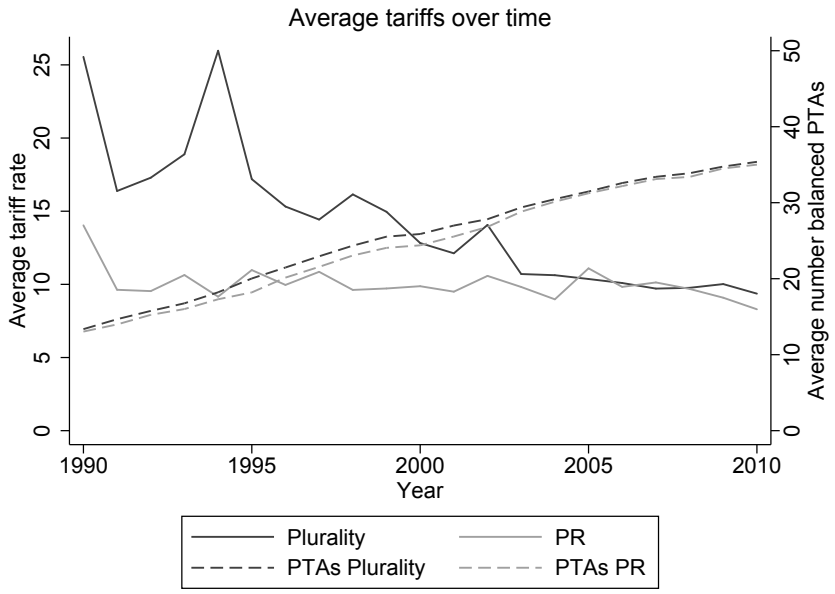

Figure A.9: Average tariff rates, 1990-2010, solid lines, and preferential trade agreements, dashed lines, for plurality rule (dark grey) and proportional representation (light grey). Excluding North-South PTAs.

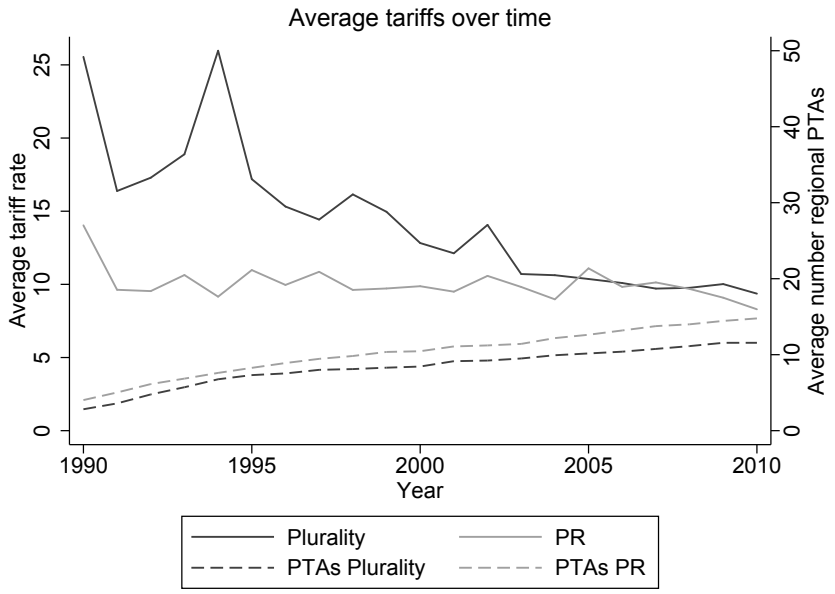

Figure A.10: Average tariff rates, 1990-2010, solid lines, and preferential trade agreements, dashed lines, for plurality rule (dark grey) and proportional representation (light grey). Only regional PTAs.

in a free trade bias for those countries that participated in negotiation rounds most frequently. Surprisingly, the coefficient on negotiation rounds itself is positive, implying that under proportional representation, an increase in GATT/WTO negotiation rounds is associated with higher tariff rates. Column 2 includes country-fixed effects, with standard errors clustered by country. The coefficient on the interaction term increases substantially in size. The implication is that for the majority of observations in the sample, plurality rule is associated with a negative effect on average tariffs, that is, a free trade bias. Note that, once accounting for country-fixed effects, the coefficient on negotiation rounds (which is the marginal effect of negotiation rounds for proportional representation) becomes smaller, slightly negative, and loses statistical significance.

The remaining columns replicate the first two models, but use different weighting schemes to account for differences across GATT/WTO negotiation rounds. Columns 3 and 4 weight each negotiation round by the number of participating countries (obtained from the WTO website). Columns 5 and 6 weight each negotiation round by the share of world trade that is accounted for by GATT/WTO members at the time of the negotiation round. Columns 7 and 8 weight each negotiation round by the share of world exports that is accounted for by GATT/WTO members. To make the estimatation results comparable across columns, I rescale the variables on weighted negotiation rounds such that they are on the same scale as the unweighted negotiation rounds, ranging from zero to eight. The results are, in all cases, consistent with the previous results: the protectionist bias of plurality rule declines with participation in GATT/WTO negotiations. Moreover, the average marginal effect of plurality rule is not statistically significantly different from zero in several of the models, reinforcing the inconclusive results in the literature. As with the unweighted variable on negotiation rounds, the constitutive term, which reflects the marginal effect of negotiation rounds under plurality rule, is small and never statistically significant when including country-fixed effects: under broad-based institutions, governments are less dependent on the additional pressure from narrow interest groups in fa-

vor of free trade – these governments liberalize trade, but they are less dependent on trade agreements for doing so.

Table A.14: Tariff levels: GATT/WTO negotiation rounds

	(1) FGLS	(2) FE	(3) FGLS	(4) FE	(5) FGLS	(6) FE	(7) FGLS	(8) FE
			weighted rounds					
	rounds		participants		trade shares		export shares	
PLURALITY RULE	2.92***	4.54**	3.39***	4.65**	3.1***	4.62**	3.1***	4.63**
	(.3)	(2.22)	(.36)	(2.3)	(.304)	(2.27)	(.304)	(2.28)
X ROUNDS	-.672***	-3.24**	-.592***	-1.63**	-.715***	-2.95**	-.723***	-2.99**
	(.12)	(1.53)	(.090)	(.77)	(.117)	(1.4)	(.118)	(1.41)
ROUNDS	.328***	-.191	.305***	.016	.348***	-.047	.353***	-.033
	(.093)	(1.27)	(.068)	(.516)	(.091)	(1.02)	(.092)	(1.02)
GDP	-1.98***	-.051	-1.97***	-.07	-1.97***	-.062	-1.97***	-.063
	(.134)	(.984)	(.136)	(.986)	(.134)	(.985)	(.134)	(.985)
GDP PER CAPITA	.024	.193***	.016	.193***	.024	.193***	.024	.193***
	(.024)	(.065)	(.023)	(.066)	(.023)	(.065)	(.023)	(.065)
CONSTANT	29***	19.3**	28.7***	17.3**	28.8***	18.6**	28.8***	18.6**
	(1.3)	(7.75)	(1.31)	(7.67)	(1.3)	(7.67)	(1.3)	(7.67)
Obs.	1270	1274	1270	1274	1270	1274	1270	1274
Countries	127	131	127	131	127	131	127	131

Dependent variable: average most favored nations tariff rate. Odd-numbered columns: GLS, AR(1) error process. Even-numbered columns: Linear regression, country-fixed effects, standard errors clustered by country. All models include a year polynomial of degree three. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%.

Table A.15 evaluates whether the marginal effect of plurality rule also declines with the number of export interests, using the same variables as before. The table shows that the effect of plurality rule declines in the number of export markets and in the number of export product categories; the dampening effect is much smaller for, and not statistically significantly modified by, economic complexity. Finally, the last column shows that the marginal effect also declines in the export share in the economy: as exports have a larger weight in the economy, relative to total trade, the protectionist bias of plurality rule declines.

A.4 Party platforms

Table A.16 provides the main results referenced in the paper, relating plurality rule to campaign statements.

Figure A.11 displays the marginal effects of plurality rule on the number of references to protectionism and free trade, respectively, for the models shown in Table A.16 in the main paper. The marginal effect is expressed as a percentage and represents the difference between plurality rule and proportional representation, relative to proportional representation. Thus, Figure A.11 shows that plurality rule is associated with about 200 per cent more references in support of protectionist trade policies, but also with more than 300 per cent more references in support of free trade. As mentioned in the main body of the text, the first result is broadly consistent with the extant literature, while the second is not. Moreover, and in line with the mixed effects in the case of average tariff rates, there is no evidence that plurality rule produces policy-makers that are, in terms of net statements in favor of free trade, any more or less protectionist than those under proportional representation (see Column 3 in Table A.16).

Table A.15: Tariff levels: Exporters

	(1)	(2)	(3)	(4)
PLURALITY RULE	13.1***	4.67***	.81***	4.22***
	(1.53)	(1.04)	(.276)	(1.12)
x NO. MARKETS	-2.82***			
	(.377)			
x NO. PRODUCTS		-.477***		
		(.174)		
x ECONOMIC COMPLEXITY			-.006	
			(.246)	
x EXPORT SHARE				-5.39**
				(2.44)
GDP	-2.36***	-1.63***	-1.43***	-2.1***
	(.128)	(.152)	(.165)	(.15)
GDP PER CAPITA	.039*	.007	-.000	.007
	(.022)	(.022)	(.019)	(.022)
NO. MARKETS	2.09***			
	(.303)			
NO. PRODUCTS		-.331***		
		(.11)		
ECONOMIC COMPLEXITY			-.794***	
			(.214)	
EXPORT SHARE				3.45*
				(1.84)
CONSTANT	27.4***	30.4***	30.4***	28.6***
	(1.28)	(1.31)	(3.39)	(1.51)
Obs.	1248	1248	853	1250
Countries	126	126	90	125

Dependent variable: average most favored nations tariff rate. GLS, AR(1) error process. All models include a year polynomial of degree three. Coefficient estimates and standard errors. *** significant at 1%, ** significant at 5%, * significant at 10%.

Table A.16: Manifesto Data: Main Models

	(1) Protectionism	(2) Free Trade	(3) Difference
PLURALITY	.771***	1.09***	.001
	(.002)	(.000)	(.183)
GDP	-.038	-.074	-.000
	(.445)	(.316)	(.734)
GDP PER CAPITA	-1.55	-.026	.001
	(.122)	(.976)	(.238)
CONSTANT	-5.80***	-5.07***	.001
	(.000)	(.006)	(.773)
Number Obs.	341	341	341
Number Countries	48	48	48

Coefficient estimates and p-values. *** significant at 1%, ** at 5%, * at 10%. Columns (1)-(2): GLM, logit link. (3): OLS, Protectionism - Free Trade.

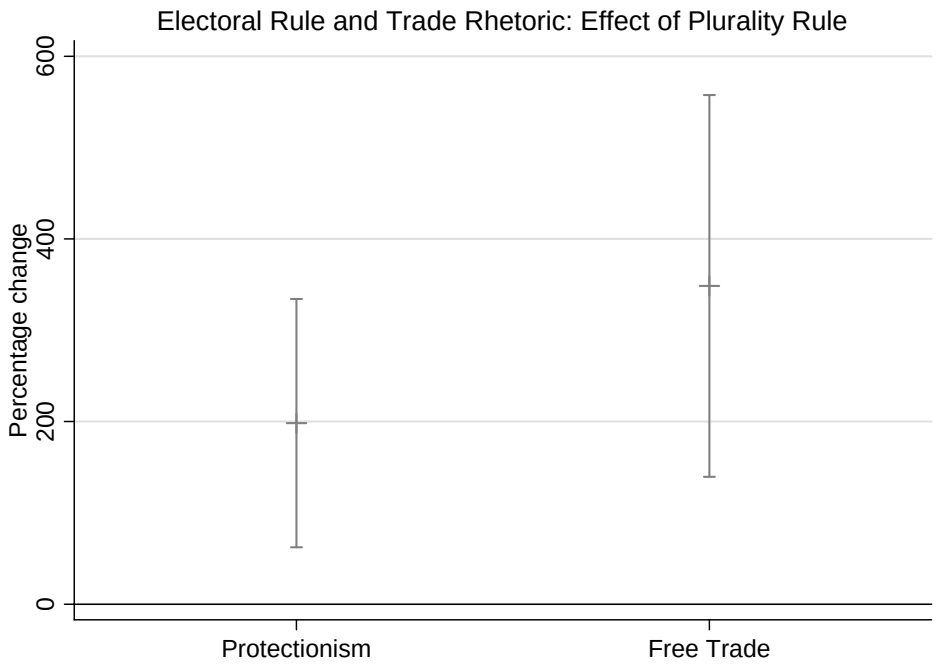

Figure A.11: Marginal effects of plurality rule on references to protectionism (left bar) and free trade (right bar). 95 per cent confidence intervals based on Delta Method. GLM, logit link.

Table A.17 provides a number of robustness checks for the association between plurality rule and support for free trade. First, the higher number of references in favor of free trade may be reflecting a more contentious political climate with respect to economic policies more generally, not support for exporters explicitly. Thus, column 1 additionally controls for the total dispersion in the number of references to economic issues across parties in a country. Second, party size, which reasonably is correlated with the electoral system, may be an important confounder: larger parties, and in particular 'catch-all parties', may need to appeal to a larger number of segments of the population and thereby provide fewer references to any specific topic. At the same time, plurality rule should be associated with fewer, more centrist parties. As column 2 shows, larger parties (measured by the percentage vote share) tend to make more references in favor of free trade, but the result remains that plurality rule is associated with more references in favor of free trade as well. Third, while the standard errors were clustered on countries in order to take into account serial correlation, the strong correlation of the dependent variable over time may warrant a lagged dependent variable. Column 3 therefore presents the results from non-linear least squares, where the lagged dependent variable enters additively the logistic function that 'wraps' the other covariates. That is, column 3 reports the coefficient estimates and p-values from estimating

$$y_{i,t} = y_{i,t-1} + \frac{\exp(x'_{i,t}\beta)}{1+\exp(x'_{i,t}\beta)} + \epsilon_{i,t}, \tag{2}$$

with non-linear least squares, where i indicates the country, t is time, x' is a vector containing the variable on the electoral rule and the two control variables, y is the dependent variable, and ϵ is a residual. As column 3 shows, the coefficient on the lagged dependent variable is indeed positive and statistically significant, underscoring the temporal dependence in the data.

Column 4 reports non-linear least squares estimates when using the 'fixed-b asymptotics' for obtaining test statistics robust to serial correlation in the data (Bunzel, Kiefer and Vogelsang,

2001). To obtain the test statistics and p-values, moment conditions similar to HAC estimators familiar from time-series cross-section models are used; similar to the Driscoll-Kraay estimates reported above, I construct these as the HAC estimator of the cross-sectional average of the moment conditions and then construct test statistics as described in Bunzel, Kiefer and Vogelsang (2001).

Column 5 reports the estimates when disaggregating the data by relying on party-election level. I include two additional control variables relative to the main model, the party size (since now the dependent variable is no longer weighted by party size) and references by other parties running the same election to protectionist trade policies, in order to ensure that more references in favor of free trade are not simply an electorally driven response to more support for protectionist trade policies by other parties (which, according to the standard account, should be more attractive under plurality rule).

Table A.17: Manifesto Data: References to Free Trade

	(1) GLM	(2) GLM	(3) NLS	(4) NLS	(5) GLM
PLURALITY	1.09***	.935***	1.56**	1.46***	.638**
	(.000)	(.000)	(.014)	–	(.015)
GDP	-.071	-.098*	-.098	-.005	-.133**
	(.183)	(.065)	(.371)	–	(.013)
GDP PER CAPITA	-.038	.119	.015	-.009	.008
	(.957)	(.866)	(.438)	–	(.313)
ISSUE POLARIZATION	.857				
	(.503)				
AVG PARTY SIZE		2.62***			
		(.001)			
PARTY COMPETITION					.134
					(.019)
PARTY SIZE					.016***
					(.000)
LAGGED DV			.704***		
			(.000)		
CONSTANT	-5.32***	-4.97***	-7.14***	-6.03*	-3.31**
	(.000)	(.000)	(.000)	–	(.012)
Number Obs.	341	341	315	315	2196

Dependent variable: references in support of free trade, at the country-election level and weighted by party vote shares (column 1-4), and at the party-election level (column 5). Coefficient estimates and p-values. *** significant at 1%, ** significant at 5%, * significant at 10%. Columns (1)-(2): GLM, logit link. Column (3): Non-linear least squares. (4): Non-linear least squares, Bunzel, Kiefer and Vogelsang (2001) fixed-b asymptotics (p-values omitted). Column (5): GLM, logit link. Standard errors clustered (by countries) for columns (1)-(3), clustered by party for column (5).

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