Market Structure, Electoral Institutions, and Trade Policy

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Abstract

The view that intra-industry trade is politically easier to liberalize than inter-industry trade is widely held and potentially explains key features of the global trading system. This view, however, rests on weak theoretical and empirical foundations. I argue that intra-industry trade can in fact lead to higher protection, but only where electoral institutions privilege narrow protectionist interests. I support this hypothesis with an analysis of trade barriers in 4,400 sectors in 65 countries and an analysis of lobbying in the US. My results imply that scholars should stop invoking intra-industry trade as an explanation for low trade barriers in wealthy countries and advanced manufacturing sectors. They also have important implications for the more general relationship between political institutions, collective action, and policy outcomes.

Ricardo (1817: 157) believed that, in a world of free trade, "wine shall be made in France and Portugal,…corn shall be grown in America and Poland, and…hardware and other goods shall be manufactured in England." In other words, countries would produce completely different goods and would engage in *inter-industry* trade, exchanging wine for cloth or corn for steel. Today, however, much trade is *intra-industry*: countries exchange different varieties of the same product, trading wine for wine or cars for cars. Although the distinction may sound innocuous, the rise of intra-industry trade has potentially profound political implications. "New trade theory" posits that intra-industry trade is less disruptive to domestic industries than traditional inter-industry trade. If so, then growth in intra-industry trade should foster trade liberalization and more harmonious trade relations. At best, it promises to transform trade politics from a bitter struggle between winners and losers into a process in which everyone gains.

Most political economists appear to subscribe to this view. For example, one prominent review of the trade-policy literature notes that intra-industry trade is "associated with fewer displacement effects and less conflict" than inter-industry trade (Milner 1999: 94). Lipson (1982: 444) argues that "It is difficult to exaggerate the importance of [intra-industry] trade for the economic integration of advanced capitalist states…it implies that the difficulties of adjustment may be less formidable for some producers than conventional trade theory would suggest." Similarly, Balassa (1966) credits rising intra-industry trade in Europe for the remarkably smooth process of European integration. A corollary to these claims about North-North integration is that North-South and South-South trade, which is predominantly inter-industry, should be politically more difficult to liberalize—as indeed it is. The belief that intra-industry trade generates less political conflict is thus widespread and, if correct, can potentially explain the central contours of the post-World War II global trading system.

This conventional wisdom on intra-industry trade is premature for at least two reasons. First, as Gilligan (1997) observes, intra-industry trade could actually generate *more* demand for protection because producers of differentiated products face fewer collective-action problems than producers of homogeneous goods. Because intra-industry trade has offsetting adjustment-cost and collective-action effects, its net impact on trade policy is theoretically ambiguous and hence an empirical question. Second, empirical research on the politics of intra-industry trade is scarce. Marvel and Ray (1987) and Gilligan (1997) are important exceptions, but these studies examine only the US case and reach opposite conclusions. The view that intra-industry trade is politically easier to liberalize thus rests on weak theoretical and empirical foundations.

I argue that electoral institutions determine the strength, though not the nature, of intra-industry trade's impact on protection. Where electoral institutions cause politicians to cater to narrow geographic constituencies, the returns to lobbying are higher and intra-industry trade should have a larger impact—positive *or* negative—on the level of protection. Conversely, where electoral institutions lead politicians to appeal to broad constituencies such as the party base, intra-industry trade should have little effect of any kind on trade policy. The qualitative impact of intra-industry trade on protection thus remains an empirical question, but the size of this impact depends theoretically on the nature of electoral institutions.

Empirically, I find that intra-industry trade leads to higher protection where electoral rules privilege small constituencies but has no significant impact where such rules privilege large constituencies. My results thus support both my hypothesis and Gilligan's (1997) claim about the importance of collective action. They also show, however, that Gilligan's most provocative hypothesis—that intra-industry trade leads to higher protection—is true only under the most particularistic electoral rules.

My results have several implications for the study of trade policy and political economy more generally. First, they imply that scholars have misstated the role of intra-industry trade in promoting North-North integration. There may be many reasons why North-North trade is unusually liberal, such as shared democracy in Northern economies (Mansfield, Milner, and Rosendorff 2000), but intra-industry trade is not among them. Second, my results imply that interests alone cannot predict political action: one must also take collective-action problems into account (Alt and Gilligan 1994; Gilligan 1997). This complicates the effects of economic variables on political outcomes because a given economic variable—including but not limited to the degree of intra-industry trade—may weaken a group's interest in a policy outcome but increase its capacity for collective action, or vice-versa. Third, my results complement macro-level studies on the effects of electoral particularism (Rogowski 1987; Nielson 2003; Hankla 2006) by providing micro-level evidence that electoral institutions mediate societal pressures in the hypothesized ways. Similarly, and more generally, they provide a micro-level complement to macro-level studies on the interaction of institutional and societal variables (Henisz and Mansfield 2006; Rickard, forthcoming). Finally, my analysis lends empirical weight to Alt and Gilligan's (1994) claim that political institutions not only aggregate societal demands but also determine the incentives to demand policies in the first place.

Market Structure and the Demand for Trade Policy

New trade theory postulates that intra-industry trade reduces the demand for protection. To see why, consider first the nature of trade in the neoclassical model. In neoclassical trade theory, goods are homogeneous: wine is different from cloth, but all wine is identical, as is all cloth. Because goods of a given type are homogeneous, they compete on the basis of cost alone: if all wine is identical, consumers buy the wine that costs least. This purely cost-based

competition has two important implications. First, intra-industry trade should not occur because it makes no sense to import a good that is also exported and hence produced cheaply at home.[1] Second, domestic trade liberalization imposes severe costs on domestic import-competing producers because cheaper foreign imports displace domestic output entirely. Neoclassical trade theory thus predicts that all trade will be inter-industry and that import-competing producers will lobby vigorously for protection.

Neoclassical theory's failure to explain intra-industry trade has had a profound impact on economic theory because, empirically, such trade is not the exception but the norm. Between 1970 and 1997, intra-industry trade as a share of national trade rose from 50 to 77 percent in Britain, from 53 to 67 percent in Germany, and from 45 to 67 percent in the US.[2] This empirical fact has led, over the last thirty years, to the growth of new trade theory capable of explaining intra-industry trade.

New trade theory (e.g. Krugman 1981; Helpman 1981) departs from neoclassical theory in assuming that products are differentiated: there exist different varieties of cars, computers, jeans, and so on. Product differentiation is motivated by consumers' taste for variety: different consumers may prefer different cars, or a single consumer may wish to wear different jeans on different days of the week. While consumer tastes motivate the existence of multiple varieties of goods, economies of scale ensure that each variety will be produced by only one firm. Because economies of scale confer cost advantages on existing firms, new market entrants choose to

[1] However, see Davis (1995) for a neoclassical account of intra-industry trade.

[2] Author's own calculation using the Grubel-Lloyd (1975) index and three-digit SITC data from the Statistics Canada *World Trade Database*.

produce new varieties rather than compete with producers of existing varieties.[3] Each firm is thus a monopoly producer of its own variety. Scale economies also limit the number of varieties produced domestically, thus creating the possibility of variety gains from trade.

Under these conditions, trade integration has very different effects than in neoclassical theory. Because consumers want variety, and because the product varieties produced in different countries are not perfect substitutes for one another, demand in the integrated market can support all existing firms. Each country exports its varieties to others and all firms continue to produce, so no firm goes out of business or has its domestic output displaced. This does not mean that everyone necessarily gains from trade: for example, in Krugman (1981), scarce types of labor suffer wage reductions that may or may not be fully offset by variety gains. However, the negative wage effects decline, and the variety gains grow, with the degree of intra-industry trade. Hence, even if intra-industry trade does not make everyone better off, it does reduce the costs of trade relative to the inter-industry scenario.

As noted above, scholars have invoked this result to explain many outcomes, such as the ease of North-North integration (Balassa 1966; Lipson 1982) and the difference between US-Europe and US-Japan trade relations (Gawande and Hansen 1999). The shared assumption is that intra-industry trade liberalization is politically easier than inter-industry liberalization. The appeal of this argument is easy to understand, as it is both parsimonious and consistent with a number of stylized facts. Intra-industry trade is lower in poor countries than in rich countries, in

[3] New firms would produce existing varieties if profits were positive. However, the threat of such entry drives profits to zero.

North-South dyads than in North-North dyads, and in agriculture than in manufacturing.[4] Protection, on the other hand, is higher in poor countries than in rich countries, in North-South dyads than in North-North dyads, and in agriculture than in manufacturing. It is tempting to draw causal arrows between these two sets of trends, especially when new trade theory provides good theoretical reasons to do so. However, as Gilligan (1997) observes, the theoretical linkages are less clear-cut than they seem.

Gilligan argues that the central features of new trade theory—product differentiation and monopolistic competition—could imply more rather than less demand for protection. His argument revolves around the number of producers protected by a given trade barrier, and hence the degree to which they face collective-action problems. Barriers on homogeneous goods can shelter numerous producers: for example, a tariff on corn imports protects all corn farmers regardless of whether they lobbied for protection. Because this tariff is therefore a public good, corn farmers have strong incentives to free ride and may not lobby for the tariff in the first place. In contrast, a barrier on a differentiated-product variety protects only the monopoly producer of that variety: for example, in the US, a tariff on sporting motorcycles protects only Buell. Because this tariff is Buell's private good, Buell faces no collective-action problems and is very likely to lobby for protection.[5] In short, the product differentiation that reduces the adjustment costs of trade also facilitates collective political action.

Note that Gilligan does not challenge the conventional wisdom on the *economic* effects of intra-industry trade, which, he acknowledges, may entail lower adjustment costs than inter-

[4] In 1997, intra-industry trade accounted for less than three percent of national trade in Uganda and Nigeria, for less than twenty percent of US trade with China and India, and for less than three percent of US trade in corn.

[5] In 2005, US ad valorem protection for this class of motorcycles was over 90 percent.

industry trade. His point is, rather, that these adjustment-cost effects may be offset by collective-action effects, so that the *political* implications of new trade theory are less straightforward than they seem. More concretely, Gilligan assumes that firms considering costly political action maximize the objective function $U_k = P(d_k)G_k - c(d_k)$, where U_k is the utility of firm k, G_k is the benefit to k of protection against imports, c is the cost of lobbying, and P is the probability that k's lobbying effort will be critical to the passage of the protectionist policy. Both P and c are increasing functions of d_k, firm k's lobbying effort, which firm k sets at a level that equates the marginal benefits and costs of lobbying. This objective function implies that k will lobby harder when (1) the gains from protection are large and (2) a given increase in lobbying has a large impact on the probability of passing protectionist legislation. New trade theory speaks directly to (1): a rise in the degree of intra-industry trade reduces the gains from protection and hence the incentives to lobby. Gilligan addresses point (2): the product differentiation that characterizes intra-industry trade reduces the number of firms protected by the trade barrier and thus increases the impact of k's lobbying on the probability of a successful outcome. Because intra-industry trade has cross-cutting effects on the incentives to lobby via G and P, its net impact on these incentives is theoretically ambiguous. Gilligan (1997: 466) thus concludes that "the effect of intra-industry trade on firms' incentives to lobby…is an empirical issue."

Empirical evidence on this question is limited and inconclusive. Marvel and Ray (1987) examine a cross-section of four-digit Standard Industrial Classification (SIC) industries in the US in 1970 and conclude that higher intra-industry trade leads to lower protection. Gilligan (1997) examines the determinants of complaints to the US International Trade Commission (ITC) by four-digit SIC industries between 1988 and 1992 and finds that higher intra-industry trade leads to more complaints to the ITC. There are reasons to question both sets of results, aside from the

fact that they contradict each other. First, both analyses employ a fairly high level of aggregation, forcing us to ask whether their measures of intra-industry trade really capture two-way trade in different varieties of the same product as opposed to trade in different products. Second, both analyses examine only US industries, raising questions about their generalizability. If, as I argue below, the effects of intra-industry trade depend on domestic political institutions, then results based on the US case may be unrepresentative.

Both new trade theory and Gilligan (1997) posit a straightforward relationship between market structure and the demand for trade policy. Research suggests, however, that the strength if not the nature of this relationship should depend on the design of domestic political institutions. Rogowski (1987), Nielson (2003), and Hankla (2006) argue that particularistic electoral institutions—i.e. ones that induce politicians to cater to small constituencies—make politicians more responsive to narrow protectionist interests. Put differently, particularistic electoral institutions raise the returns to interest-group lobbying. If so, then such institutions should amplify the relationship between intra-industry trade and the demand for protection, regardless of whether this relationship is positive or negative. I develop this argument below.

Electoral Institutions and Trade Policy

Perhaps the most important characteristic of electoral systems is *constituency size*: do politicians cater to narrow geographic constituencies or to larger constituencies such as the party base? As Carey and Shugart (1995) show, the answer depends on electoral rules. Where rules allow candidates to compete successfully for legislative seats regardless of their party's success or support—as in many single-member-district (SMD) plurality systems—candidates cultivate only enough support to win particular seats and constituency size is small. Conversely, where a candidate's electoral prospects depend on her party's electoral success and the support of her

party's leadership—as in closed-list proportional representation (PR) systems—candidates attempt to maximize their party's seat share and constituency size is large. For convenience, I henceforth use the terms "constituency size" and "particularism" interchangeably, with smaller constituencies implying higher degrees of particularism.

The degree of electoral particularism has important implications for trade policy because particularistic institutions make politicians more responsive to narrow protectionist interests (Rogowski 1987; Nielson 2003; Hankla 2006). The logic is developed formally in Lohmann and O'Halloran (1994), who model the effects of delegating trade policymaking authority from the Congress to the President. In their model, the locus of policymaking authority matters because individual Congress members and the President represent different constituencies: the former represent narrow geographic districts, while the latter represents the whole country. This causes the two sets of actors to have different objective functions.

In a country of n legislative districts, a legislator from district i maximizes the district utility function $U_i(p_1,...,p_n) = \beta_i p_i - p_i^2 - \gamma \sum_{j \in N \setminus i} p_j^2$, where $i \in N = \{1,...,n\}$; p_i is a district-specific level of protection greater than or equal to zero; β_i is the weight attached to the benefits of district-specific protection, and γ is the weight attached to the costs district i incurs due to protection in other districts. The first expression on the right-hand side, $\beta_i p_i$, captures the benefits of district i's protection to that district's industries. The second, p_i^2, captures the costs of district i's protection to that district's consumers. The third, $\gamma \sum_{j \in N \setminus i} p_j^2$, captures the costs of protection in other districts to district i's consumers, i.e. the negative cross-district externalities. Note that legislator i does not care about the costs that protection for her district imposes on other districts.

The President, in contrast, has a national constituency and thus maximizes the sum of the *n* districts' utility functions. In the nonpartisan case—which, for the sake of generality, I focus on here—this is $U_P(p_1,...,p_n) = \sum_{i=1}^{n}\left(\beta_i p_i - p_i^2 - \gamma \sum_{j \in N \setminus i} p_j^2\right)$. Note that, when setting trade policy, the President takes into account the costs that every district *j*'s protection imposes on every district *i*. In other words, because the President has a national constituency, the President's utility function internalizes all cross-district externalities.

If trade policy is set by the Congress, each legislator seeks high protection for her own district while ignoring the negative externalities it imposes on others. The equilibrium outcome is a protectionist logroll in which each legislator supports protection for other districts in exchange for protection for her own.[6] This outcome is inefficient, in that all legislators would prefer low protection for all districts to high protection for all districts. Nonetheless, legislators vote for the high-protection outcome because they fear exclusion from a logroll that provides no protection to their district but high protection to all others. In this "Congressional Dominance" game, equilibrium protection for each district is $\beta_i / 2$.

Delegating policymaking power to the President solves this Prisoner's Dilemma because the President's utility function internalizes all cross-district externalities. When the President sets policy, equilibrium protection for each district is $\beta_i / 2[1 + \gamma(n-1)]$. Because γ is positive and *n* is greater than one, each district receives lower protection when the President sets policy than when the Congress does.

Although Lohmann and O'Halloran focus on the US, their result has more general implications. These become apparent if we replace the term "district" with "seat," thus

[6] See Lohmann and O'Halloran (1994) for the details of the game.

highlighting the model's relevance for multi-member as well as single-member-district systems. The Presidential equilibrium ($\beta_i / 2[1+\gamma(n-1)]$) shows that a policymaker's incentives to protect domestic industries decline with the number of seats she represents. If *n* equals one—i.e. if each policymaker represents only one seat—then protection for each seat's constituents is $\beta_i / 2$, as in the Congressional Dominance game. However, as *n* rises and each policymaker represents more and more seats, equilibrium protection for each seat's constituents falls. The cases of US Congressional and Presidential dominance should thus be viewed as only two points on a larger continuum, in which politicians can represent varying numbers of seats. Candidate-oriented electoral systems are similar to the Congressional case: politicians seek individual seats by cultivating personal constituencies and protection should be high. Party-oriented systems, in contrast, lie closer to the Presidential case: candidates cater to broad party constituencies and protection should be low. More simply, protection should fall with constituency size. This hypothesis, first put forward by Rogowski (1987), receives strong empirical support from Nielson (2003) and Hankla (2006).

This result has important implications for the relationship between intra-industry trade and protection because it means that both the efficacy and the level of lobbying depend on the nature of the electoral system. To see this, consider the firm's objective function from Gilligan (1997), which I augment to incorporate the effects of intra-industry trade and constituency size:

$$U_{ijk} = P(d_{ijk}, I_j)\frac{[\beta_{ijk}(I_j)]^2}{2[1+\gamma(n_i-1)]} - c(d_{ijk}).$$

U_{ijk} is the utility from lobbying for firm *k* in sector *j* in political district *i*. As in Krugman (1981), a sector is a group of products that are close substitutes for one another. The term "district"

refers to the smallest political jurisdiction to which firm k belongs that is represented in the trade policymaking process by an independent political actor. For example, in Lohmann and O'Halloran's (1994) Congressional Dominance game, firm k's district is its Congressional district, but in the Presidential Dominance game, firm k's district is the entire country. Similarly, firm k's district encompasses only one legislative seat in a SMD plurality system with weak party control (because each legislator is an independent policymaking actor), but it encompasses multiple seats in a multi-member district closed-list PR system with strong party control (because the principal policy actors are parties that represent multiple seats).

As before, the probability that k's lobbying effort will be critical to the passage of protectionist legislation (P) depends on k's lobbying effort d_{ijk}. Now, however, the objective function explicitly reflects this probability's dependence on I_j, the degree of intra-industry trade in sector j. Gilligan's (1997) argument implies that P is an increasing function of I—i.e. k's efforts are more likely to be critical when intra-industry trade is high—because increased product differentiation reduces the number of firms protected by a given trade barrier.

$[\beta_{ijk}(I_j)]^2 / 2[1 + \gamma(n_i - 1)]$ replaces G, the gains from protection in Gilligan's (1997) objective function. This expression is simply β_{ijk}, firm k's gains from a unit increase in protection, multiplied by $\beta_{ijk}(I_j) / 2[1 + \gamma(n_i - 1)]$, the equilibrium level of protection from Lohmann and O'Halloran (1994). I have modified their result in that protection is now not only district-specific but also sector-specific (and firm-specific, if products are differentiated). This change is trivial, since the district protection in their model is presumably shorthand for a vector of trade barriers across each district's industries. Note that n is also now subscripted and refers to the number of seats represented by politicians from district i.

In Lohmann and O'Halloran (1994), the gains from protection (β_{ijk}) depend on district-specific macroeconomic conditions. Without excluding this possibility, I assume that they also depend on the degree to which trade is intra-industry. Following new trade theory, I assume that β_{ijk} is a decreasing function of I_j, i.e. that the gains from protection decline with the degree of intra-industry trade due to lower adjustment costs. This implies that protection also declines with intra-industry trade, holding constant the latter's impact on P.

The net impact of intra-industry trade on the incentives to lobby is obtained by differentiating the firm's objective function with respect to I_j:

$$\frac{\partial U_{ijk}}{\partial I_j} = \frac{1}{2[1+\gamma(n_i-1)]}\left(2\beta_{ijk}P\frac{d\beta_{ijk}}{dI_j} + \beta_{ijk}^2\frac{dP}{dI_j}\right).$$

The first term in parentheses, $2\beta_{ijk}P(d\beta_{ijk}/dI_j)$, captures the impact of intra-industry trade on lobbying incentives via the adjustment costs of trade. Because $d\beta_{ijk}/dI_j$ is negative, this term implies that an increase in intra-industry trade reduces the incentives to lobby. The second term, $\beta_{ijk}^2(dP/dI_j)$, captures the impact of intra-industry trade on lobbying incentives via the probability that firm k's lobbying effort is critical. Because dP/dI_j is positive, this term implies that an increase in intra-industry trade raises the incentives to lobby. Together, the two expressions highlight the indeterminacy of intra-industry trade's net impact on lobbying incentives. Whether this impact is positive or negative is, as Gilligan (1997) notes, an empirical question.

The expression $1 / 2[1 + \gamma(n_i - 1)]$ captures the impact of constituency size (n) on lobbying incentives. Note that constituency size does *not* qualitatively influence the effects of intra-industry trade on lobbying, because an increase in constituency size reduces the salience of both adjustment costs and collective action. A higher n reduces the level of protection and hence

the returns to lobbying. This reduces the incentives to lobby in response to both high adjustment costs and a high probability of affecting policy outcomes. The degree of intra-industry trade thus has smaller effects on the incentives to lobby *via both channels* when constituency size is large than when it is small, so electoral rules do not determine the qualitative impact of intra-industry trade on protection. They do, however, determine its magnitude. The impact of intra-industry trade on protection—positive or negative—falls with constituency size. Put differently, this impact rises with the particularism of electoral rules.

The above discussion implies two hypotheses. First, if the adjustment-cost effect of intra-industry trade outweighs its effects on collective action, then the impact of intra-industry trade on protection will be negative and will be larger under more particularistic electoral rules. Second, if the effects of intra-industry trade on collective action outweigh its effects on adjustment costs, then the impact of intra-industry trade on protection will be positive and will be larger under more particularistic electoral rules. The rest of this paper tests these hypotheses.

Analysis and Results

I test the above hypotheses by examining the relationship between intra-industry trade and protection in approximately 4,400 sectors in sixty-five non-European Union (EU) countries.[7] My analysis has three main advantages over previous studies on this topic (Marvel and Ray 1987; Gilligan 1997). First, it employs much finer sectoral classifications: I examine thousands of sectors per country, defined at the six-digit Harmonized System (HS) level, rather than hundreds of four-digit SIC industries. This ensures that my measure of intra-industry trade captures trade in different varieties of the same product rather than trade in different products.

[7] Kee, Nicita, and Olarreaga (2006) do not provide data for individual EU countries because these countries share a common commercial policy.

Second, my analysis is not restricted to the US but includes numerous countries. This not only makes my results more generalizable but also allows me to examine the effects of intra-industry trade under various electoral rules. Finally, my dependent variable encompasses all forms of protection—tariffs, nontariff barriers (NTBs), and subsidies—thus allowing me to estimate more accurately the general relationship between intra-industry trade and protection.

My dependent variable, $Protection_{ij}$, is the ad-valorem tariff equivalent (AVE) of protection in sector *j* in country *i*. The measure was developed by Kee, Nicita, and Olarreaga (2006) on the basis of Anderson and Neary's (1994) pioneering work.[8] It has three components: tariffs, NTBs, and subsidies. The AVE of tariffs is simply the ad valorem tariff rate. To calculate AVEs for NTBs, the authors first estimate the impact of a sectoral NTB dummy on sectoral imports, then, using known import demand elasticities, estimate the tariff equivalent that would be required to bring about such a reduction in imports. They perform similar calculations for subsidies. $Protection_{ij}$ is the sum of AVEs for tariffs, NTBs, and subsidies. The strength of this measure, besides its broad sectoral and national coverage, is that it encompasses all forms of protection. This is important because, according to the authors, no form of protection is trivial: tariffs account for thirty percent of global protection, while NTBs and subsidies account for the remaining seventy percent. Because the authors have calculated this measure for only one year per country—either 2005 or 2006—my analysis is purely cross-sectional.

$Intra\text{-}Industry\ Trade_{ij}$ is the Grubel-Lloyd (1975) index of intra-industry trade:

$$Intra\text{-}Industry\ Trade_{ij} \equiv \left(1 - \frac{\left|X_{ij} - M_{ij}\right|}{X_{ij} + M_{ij}}\right) \times 100,$$

[8] Data are available at http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21085342~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html

where X_{ij} is country i's exports in sector j and M_{ij} is country i's imports in sector j. Sector j's intra-industry trade thus equals zero when there is no two-way trade in this sector and 100 when trade in this sector is perfectly balanced. To minimize the impact of temporary shocks, I measure this variable as the average for 2002-2005.[9]

I employ the Grubel-Lloyd index for two reasons, besides convention. First, it ensures a close match between new trade theory and my empirical tests. Krugman (1981) employs this index to calculate the welfare effects of trade; hence its theoretical relationship to adjustment costs is well established. Second, the Grubel-Lloyd index is better suited than alternatives to capture the effects of product differentiation—which are central to both the adjustment-cost and the collective-action arguments—as opposed to other effects of two-way trade. One alternative approach, for example, would be to examine the impact of sectoral imports on protection conditional on the level of sectoral exports. Marvel and Ray (1987) adopt this approach due to the Grubel-Lloyd index's symmetric nature: it takes low values when imports are low *and* when they are high relative to exports. Marvel and Ray view this as problematic because, in their view, imports and exports have different effects on trade policy: the former lead to demands for protection and the latter to demands for liberalization. Their approach is, however, itself problematic for my purposes. Their central result—that imports have weaker effects on protection when exports are high—may say nothing about adjustment costs but may rather point to the importance of export lobbies: this is in fact the authors' interpretation. Although this result is interesting, competition between import-competing and exporting sectors has nothing to do with the arguments being tested here, and should not be captured by my analysis. Moreover, the Marvel-Ray approach is based on the somewhat dated view that imports and exports lead to

[9] Import and export data are from the United Nations Comtrade database (http://comtrade.un.org/).

higher and lower protection, respectively. This view has been questioned by Grossman and Helpman's (1994) model—in which export volumes are unrelated to trade policy and import penetration is *negatively* related to protection when sectors are politically organized—as well as by empirical studies that support Grossman and Helpman's hypotheses (Goldberg and Maggi 1999; Gawande and Bandyopadhyay 2000). The Marvel-Ray (1987) approach thus rests on weak, and empirically questionable, theoretical foundations.

In regressing protection against the Grubel-Lloyd index, I am assuming that (1) all sectors desire protection to some degree, and (2) the degree of intra-industry trade is a good proxy for product differentiation, which should affect trade policy through both adjustment costs and collective action. Both assumptions seem reasonable, and I attempt in some robustness checks to ensure that they are met. If the adjustment-cost cost effects of intra-industry trade outweigh the collective-action effects, intra-industry trade will be negatively related to protection. If collective-action effects outweigh adjustment-cost effects, intra-industry trade will be positively signed.

$Particularism_i$ is the degree of electoral particularism in country *i*. I measure particularism using Carey and Shugart's (1995) index, as operationalized by Wallack, Gaviria, Panizza, and Stein (2003). Carey and Shugart identify various institutional features that affect politicians' incentives to promote their party's reputation, on the one hand, or their personal reputation, on the other. As Nielson (2003: 477) observes, the Carey-Shugart measure "can be boiled down to three questions: Who controls the ballot? Do voters vote for parties or for individual candidates? Are votes pooled to help the party as a whole, or do they count only for individual candidates?" Answers to these questions—designated "ballot," "vote," and "pool"—determine how party-oriented or particularistic a system is. If party leaders control access to

their party label on ballots, or control ballot rank in list systems, then candidates will be more party-oriented than they would be in the absence of such party control. If voters vote for parties, then candidates will be more party-oriented than they would be if voters voted for individual candidates. If votes are pooled so that electoral success for one candidate generates positive spillovers for other candidates of the same party, then candidates will be more party-oriented than they would be in the absence of such spillovers. In each case, more party-oriented rules imply larger constituencies, and hence lower particularism, than more candidate-oriented rules. Carey and Shugart score countries on each dimension and rank different combinations of these scores according to whether they imply more party-oriented or particularistic incentives.

Wallack *et al* (2003) employ the Carey-Shugart criteria to measure the degree of electoral particularism in 158 countries from 1978 to 2001. Like Carey and Shugart (1995), they score countries from zero to two on three dimensions—ballot, vote, and pool—with higher values indicating weaker party control and more particularistic incentives. Since Wallack *et al* do not aggregate these component scores into a single index of particularism, I do so using Carey and Shugart's (1995) ranking criteria. I employ values from 2001, the most recent year available. Parameter combinations found in my sample, their associated particularism scores, and country examples are shown in Table 1.

Table 1 about here

As Table 1 shows, my sample contains seven combinations of scores for ballot, vote, and pool.[10] Countries that are party-oriented on all dimensions, such as Germany and Switzerland,

[10] Other combinations are possible and exist empirically, but not in my sample.

receive the lowest particularism score of zero.[11] Countries that are candidate-oriented on all dimensions, such as Belarus and Botswana, receive the highest particularism score of seven. Countries between these two extremes receive intermediate scores based on Carey and Shugart's ranking criteria. The last column, which shows the number of countries in my sample that receive each particularism score, indicates that some combinations of electoral rules are much more common than others: over three-quarters of the countries in my sample receive either the lowest score of zero or the next-highest score of six. This uneven distribution of scores has implications for my empirical analysis, discussed below.

As noted earlier, I do not expect the effects of intra-industry trade on protection to depend qualitatively on the degree of electoral particularism. However, the impact of intra-industry trade—positive or negative—should grow larger as electoral institutions become more particularistic. I test this hypothesis both by interacting intra-industry trade and electoral particularism and by splitting the sample into groups with different particularism scores.

My analysis includes few controls, for two reasons. First, I employ a country-fixed effects specification that entirely eliminates cross-national variation in the independent and dependent variables. Because there is no cross-national variation to explain, and because the analysis is purely cross-sectional, it is neither possible nor necessary to include national-level controls. I thus omit the standard panoply of such controls, such as GDP per capita, regime type, real exchange rates, etc. Second, I could not obtain cross-national data for most sectoral controls at the six-digit HS level (or anything approaching this level of aggregation). I thus cannot include sectoral employment, concentration ratios, and other such controls. There are at least

[11] The empirical examples have been chosen for their familiarity and are not all included in my sample. For example, Germany, France, and other EU countries are excluded from my analysis due to the EU's common commercial policy.

two reasons, however, to believe that this omission has little effect on my results. First, the omitted controls are almost uncorrelated with intra-industry trade, at least at higher levels of aggregation. In a broad cross-national sample of three-digit International Standard Industrial Classification (ISIC) industries (N = 28,731), the correlations between intra-industry trade and import penetration, export dependence, and employment are -.02, .02, and .09, respectively. Similarly, in a sample of 388 four-digit SIC US industries, the correlation between intra-industry trade and the four-firm concentration ratio is only -.10. Because these correlations are weak, the risk of omitted-variable bias is low. Second, both Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000) find that standard sectoral controls lose significance once one controls for Grossman and Helpman's (1994) key explanatory variables. I thus attempt to control for the latter and also employ sector fixed effects as an additional robustness check.

Grossman and Helpman hypothesize, and Goldberg and Maggi and Gawande and Bandyopadhyay show, that sectoral price elasticities of import demand have important effects on trade policy. Specifically, higher absolute elasticities of demand should be associated with lower protection because, when elasticities are high, protection causes greater economic distortions. I thus include $Elasticity_{ij}$, the absolute value of the price elasticity of import demand in country *i*'s sector *j*. Sectoral elasticity data are from Kee, Nicita, and Olarreaga (2004). If the Grossman-Helpman hypothesis is correct, elasticity will be negatively signed.

The remaining Grossman-Helpman variables—political organization and the output-import ratio—are harder to include due to data limitations. I attempt to proxy the latter with $Export\text{-}Import\ Ratio_{ij}$, the ratio of export to import values in country *i*'s sector *j*. This seems reasonable, since sectoral exports are highly correlated with output: in a cross-national sample of three-digit ISIC industries, the two variables are correlated at .81. That said, the expected sign

of this variable is ambiguous for two reasons. First, according to Grossman and Helpman, the sign should vary depending on whether or not a sector is politically organized. Since I cannot measure organization directly, I cannot say which of these signs should dominate overall. Second, the export-import ratio might reasonably be treated as a measure of revealed comparative advantage. Although Goldberg and Maggi and Gawande and Bandyopadhyay find that comparative advantage does not matter, other research (e.g. McGillivray 1997) finds that it does. This other research implies that the export-import ratio should be negatively signed: the opposite of what Grossman and Helpman predict if this ratio proxies the output-import ratio and most sectors are politically organized. Because it is not wholly clear what this variable proxies, and because it turns out to be insignificant, I omit it from most of my analyses and include it only as a robustness check.

Intra-industry trade is endogenous to the level of protection because trade barriers depress imports, which are a component of the Grubel-Lloyd index. Addressing this endogeneity problem requires appropriate instruments, but these are difficult to find due to the scarcity of data at this level of sectoral aggregation. My solution is to employ the average value of sectoral intra-industry trade in the ten other countries with most similar per capita incomes. In other words, the instrumental variable for Intra-Industry Trade$_{ij}$ is the average value of the Grubel-Lloyd index in sector *j* in the ten countries with GDPs per capita most similar to *i*'s. The logic is that the degree of intra-industry trade should reflect both factor endowments and trade policies. However, while all ten of the other countries' per capita GDPs are correlated with country *i*'s, at least some of their trade policies should not be. The average intra-industry trade values from these countries should thus approximate those that would be produced by *i*'s non-policy determinants of intra-industry trade alone. Empirically, this measure has the statistical properties

of a good instrument: it is significantly related to intra-industry trade ($F = 39.33$, $p>F = 0.0000$) but is not significantly related to the dependent variable. I employ the same approach to instrument the export-import ratio—also endogenous to trade policy—when this variable is included in the analysis.

I employ two-stage least-squares regressions. The first stage regresses intra-industry trade against the instrumental variable and all other regressors and generates predicted values of intra-industry trade. The second stage regresses protection against these predicted values and other regressors. I employ country fixed effects and control for the non-independence of sectoral observations within countries with robust-cluster standard errors clustered by country.

Table 2 about here

I begin by examining the unconditional effects of intra-industry trade on protection. Results are shown in the first column of Table 2. This first regression includes only intra-industry trade and the price elasticity of demand. Elasticity is negatively signed and highly significant, providing strong support for the Grossman-Helpman (1994) model. Intra-industry trade is positively signed and significant, indicating that higher intra-industry trade leads to higher protection. The unconditional results thus suggest that, on average, the protectionist collective-action effects of intra-industry trade outweigh the liberalizing adjustment-cost effects.

In the second column of Table 2, I include the interaction between intra-industry trade and electoral particularism to examine the conditional effects of intra-industry trade. Following Easterly (2003) and Miguel, Satyanath, and Sergenti (2004), I instrument the interaction term with the interaction between electoral particularism and the instrument for intra-industry trade. Although one would normally include both components of the interaction term (Brambor, Clark,

and Golder 2005), I cannot include particularism in this case due to the country-fixed effects specification. For the same reason, however, there is little risk of omitted-variable bias.

The coefficient on intra-industry trade shows that the latter has no significant impact on protection when particularism equals zero. The coefficient on the interaction term, however, shows that the impact of intra-industry trade on protection rises significantly as electoral institutions become more particularistic. To interpret these results fully, we must calculate conditional intra-industry trade coefficients and standard errors at different levels of electoral particularism. I do this and present the results graphically in Figure 1.

Figure 1 about here

Figure 1 plots conditional intra-industry trade coefficients, on the y-axis, against electoral particularism scores, on the x-axis. The solid line indicates coefficient values, while the dashed lines indicate ninety-five percent confidence intervals. The figure shows that intra-industry trade has no significant impact on protection when electoral particularism equals zero or one. Thereafter, however, this impact becomes larger and statistically significant, rising to a maximum of .65 when particularism equals seven. The impact of intra-industry trade on protection is thus more than ten times larger when particularism is very high than when it is very low. Figure 1 thus supports my hypothesis: the impact of intra-industry trade on protection does not depend qualitatively on the degree of electoral particularism, but it does become larger as electoral institutions become more particularistic. The results also support Gilligan's (1997) claim that intra-industry trade may affect protection more through its impact on collective action than through its impact on adjustment costs.

Although my approach to instrumenting the interaction term has been used in previous research (Easterly 2003; Miguel, Satyanath, and Sergenti 2004), it is subject to the following critique. The advantage of this approach is that it produces an instrument for the interaction term that is highly correlated with the latter. However, this is true because the instrument contains one component of the interaction term, in this case electoral particularism. This is potentially problematic because we typically assume that both components of the interaction term affect the dependent variable directly, in which case the instrument is not exogenous. For this reason, I exploit the size of my sample to employ the methodologically simpler and more reliable approach of splitting the sample. Splitting the sample has several advantages. First, the results are easy to interpret: the coefficient on intra-industry trade gives the impact of this variable within this sub-sample. Second, there is no need to instrument the interaction term, since there is none. Finally, this approach does not constrain the impact of intra-industry trade to change linearly as particularism rises, as the interactive analysis does. This is important because some changes in electoral rules might well matter more than others.

As Table 1 shows, particularism scores are not distributed evenly across the sample. Forty-six percent of the sample receives the lowest score of zero. Another thirty-one percent of the sample receives the second-highest score of six. Most of the remaining cases—twenty percent of the sample—fall between these two extremes. Because so many of the cases are clustered at the values of zero and six, I use these as cut-points for splitting the sample. I thus split it into three groups: countries with particularism scores of zero, countries with scores between zero and six, and countries with scores of six or seven. Given my theory and the interaction-term results, I expect the impact of intra-industry trade on protection to be larger in groups with higher particularism scores.

Table 3 about here

The first set of results, shown at the top of Table 3, re-estimate the baseline model on the sub-samples. Results are consistent with expectations, although they also differ from the interaction-term results in notable ways. Intra-industry trade has an insignificant coefficient of .073 when particularism equals zero. This result is very similar to that from the interaction-term analysis. Intra-industry trade has a larger but still insignificant coefficient of .106 when particularism is between zero and six. This differs somewhat from the interaction-term results, which implied that the impact of intra-industry trade is both larger and more significant over most of this range. Finally, intra-industry trade has a large and highly significant coefficient of .721 when particularism equals six or seven, which is again quite consistent with the interaction-term results. Together, these results reaffirm my conclusion that the impact of intra-industry trade on protection is larger when electoral institutions are more particularistic. However, the split-sample results also show that the mediating impact of electoral institutions is not linear: going from low to moderate values of particularism leads to only a small increase in the protectionist effects of intra-industry trade, but these effects become much larger under highly particularistic electoral institutions. The significance of the interaction term thus seems largely to reflect the difference between highly particularistic institutions and all the rest. It is worth noting that import demand elasticities remain correctly signed and significant across all three subsamples, underlining the power of the Grossman-Helpman (1994) model.

One might reasonably ask whether electoral rules matter in countries that are not fully democratic. The second set of results in Table 3 thus shows what happens when the sample is restricted to full democracies. Following Mansfield, Milner, and Rosendorff (2000), I classify as full democracies countries with Polity scores of six or above. Although this reduces the sample

by twenty countries—from sixty-five to forty-five—the sample change has very little impact on my results. Intra-industry trade still has insignificant effects on protection at low to moderate levels of particularism, but much larger and significant effects under highly particularistic institutions. The similarity between the two sets of results is interesting, in that it suggests that electoral institutions have similar effects under both fully and imperfectly democratic regimes.

My analysis assumes that all sectors want protection to some degree, but that the extent to which they demand it depends on the degree of intra-industry trade. It is possible, however, that some sectors do not want protection at all, perhaps because they do not exist domestically. Inclusion of nonexistent sectors in the analysis could bias my results because such sectors would not export and would thus have zero intra-industry trade. This could produce a positive relationship between intra-industry trade and protection even though, in this scenario, the former is not causally related to the latter. To guard against this possibility, I restrict the analysis to only protected sectors on the grounds that sectors only receive protection if they demand it, and hence if they exist.[12] This reduces the sample by about twenty percent, from 257,659 sectors to 207,940 sectors. However, as the third set of results in Table 3 shows, this sample restriction has little effect on my results. Intra-industry trade again has no significant impact on protection when electoral particularism is low or moderate but has significant positive effects when particularism is high.

As a final robustness check, I include the export-import ratio and dummy variables for sectoral aggregates (one-digit HS). As noted above, the export-import ratio may proxy either the output-import ratio or sectoral comparative advantage, while the sector dummies help control for omitted sector-specific influences. Results are shown at the bottom of Table 3. The export-

[12] A more direct approach would be to restrict the analysis to sectors with domestic output. However, this would require output data that are not available at this level of aggregation.

import ratio is insignificant in all three subsamples, which, given its theoretically ambiguous status, is perhaps not surprising. Most of the sector dummies (not shown here) are significant and signed as one would expect: for example, agricultural and textile sectors exhibit unusually high protection. The inclusion of these additional variables does not, however, alter my central result: intra-industry trade again has no significant impact at low and moderate levels of particularism but a significant positive impact at high levels of particularism. This result thus stands up to a large number of robustness checks.

My results imply that the substantive effects of intra-industry trade on protection vary greatly across electoral institutions. The baseline results from Table 3 indicate that, when electoral particularism is low, a one-standard deviation increase in intra-industry trade (about 28 percentage points) leads to only a two-percentage point increase in the ad-valorem equivalent of protection. This is less than one-twentieth of the standard deviation of protection and is statistically insignificant. In contrast, when electoral particularism is high, a one-standard deviation increase in intra-industry trade leads to a twenty-percentage point increase in protection: this is half the standard deviation of protection and a substantively important effect. Hence, contrary to conventional wisdom, intra-industry trade never promotes trade liberalization. On the other hand, it has noteworthy protectionist effects only under the most particularistic electoral institutions.

Do these conditional effects in fact reflect variation in the intensity of lobbying? To answer this question definitively, one would need to examine the impact of intra-industry trade on lobbying under different electoral institutions. Unfortunately, I am unable to do this due to the paucity of cross-national lobbying data by detailed economic sector. I am, however, able to perform such an analysis on the US alone. Although this does not provide a comparative

perspective, it is nonetheless a useful plausibility probe. Given the trade-barrier results, intra-industry trade should lead to significantly greater lobbying under particularistic electoral institutions such as the US's. If it does not, we must question whether the trade-barrier results in fact reflect my hypothesized causal mechanisms. The analysis of US lobbying thus has the potential to refute, if not to confirm, my causal claims. Conversely, a positive finding would establish their plausibility if not their generalizability.

The dependent variable for this analysis is $Contributions_j$, the value of political contributions by four-digit SIC sector *j* in thousands of dollars.[13] Specifically, this variable is the sum of individual contributions, PAC contributions, and soft-money contributions. These contributions are for all purposes, i.e. they are not restricted to those meant to influence trade policy. Although this might be seen as a drawback, the multidimensional nature of these contributions should, if anything, weaken the relationship between them and intra-industry trade. It thus makes rejection of my hypothesis more likely and provides a very conservative test.

As before, I measure intra-industry trade with the Grubel-Lloyd index.[14] Because the US has a highly particularistic electoral system, intra-industry trade should lead to significantly higher contributions and should be positively signed. I include two controls. $Sales_j$, the value of sales in sector *j* in millions of dollars, controls for sector size. *Ceteris paribus*, larger sectors should contribute more; hence sales should be positively signed.[15] $Concentration_j$ is sector *j*'s four-firm concentration ratio—i.e. the proportion of sector *j*'s output provided by the four largest

[13] I employ four-digit SIC because this is the most disaggregated industrial classification employed by the Center for Responsive Politics, who provide the contributions data (http://www.opensecrets.org/).

[14] Import and export data at the four-digit SIC level are available at Peter Schott's website (http://www.som.yale.edu/faculty/pks4/sub_international.htm).

[15] Sales data are from the US Census Bureau (http://www.census.gov/).

firms—and is included to control for industry concentration.[16] Because more concentrated sectors should be better able to overcome collective-action problems, concentration should be positively signed.

Although trade data are available annually, other data are not. The contributions data are provided for each election cycle (i.e. every two years) from 1994 to 2006. Sales and concentration data are provided every five years by the Census Bureau, although concentration data at the four-digit SIC level extend only through 1992. I thus structure the analysis in the following way. I perform three cross-sectional analyses, each corresponding to different election cycles, to ensure that the results are not idiosyncratic. The dependent variables for these analyses are the average of contributions for the 1994 and 1996 cycles, the 1998 and 2000 cycles, and the 2002 and 2004 cycles. I average over two cycles to reduce the influence of cycle-specific shocks. The independent variables are lagged values of intra-industry trade, sales, and concentration. Intra-industry trade values are the average of the three years preceding the first of each pair of election cycles (1992-1994, 1996-1998, and 1998-2000). Sales data correspond to census dates (1992, 1997, and 2002) and are matched with the closest subsequent electoral cycle. Concentration data are from 1992. Although concentration is therefore significantly lagged for the 1998-2000 and 2002-2004 analyses, this should not be a major problem because (1) concentration data are very stable over time—the correlation across industries between 1972 and 1992 is .80—and (2) my results are very robust to the inclusion and exclusion of this variable.

Table 4 about here

[16] Concentration data are from the US Census Bureau and are available at the four-digit SIC level at http://www.wooster.edu/economics/archive/indconc.html

The results, shown in Table 4, are easily summarized. Neither sales nor concentration is generally significant, although the former is significant and positive in the 2002-2004 election cycle. Intra-industry trade, in contrast, leads consistently to significantly higher contributions. A one-standard deviation increase in intra-industry trade raised contributions by $240,000 in 1994-1996, by $325,000 in 1998-2000, and by $309,000 in 2002-2004. These figures are modest, amounting, on average, to twelve percent of the standard deviation in contributions. However, because contributions are made for many reasons other than trade policy, we cannot expect the degree of intra-industry trade to explain the lion's share of variation. What is important is that these results are consistent with the trade-barrier results and provide a compelling explanation for intra-industry trade's positive impact on protection under particularistic electoral rules.

It would be useful, in future research, to verify that intra-industry trade has smaller effects on lobbying when electoral particularism is low, as the trade-barrier results imply. Doing this will require additional data on sectoral lobbying in countries with less particularistic electoral rules. For now, however, it is reassuring to find that intra-industry trade leads to higher lobbying under highly particularistic rules, as the trade-barrier results lead us to expect. Together, the two sets of results imply that intra-industry trade can, at least under certain conditions, foster collective action and greater lobbying for protection.

Conclusion

Conventional wisdom tells us that new trade theory implies a new type of trade politics: one without the stark distributional consequences and heated political battles predicted by neoclassical models of trade. This paper has shown that intra-industry trade is indeed politically different from inter-industry trade, but not in the way that new trade theory predicts. Rather than

fostering liberalization, intra-industry trade actually leads to higher protection. This result does not imply that new trade theory is wrong: intra-industry trade may well entail low adjustment costs. However, as Gilligan (1997) argues, it also reduces collective-action problems and thus increases the demand for protection.

Although Gilligan's argument is correct on average, it does not hold in all places. The effects of intra-industry trade on protection are neither statistically significant nor substantively important in the majority of countries in my sample. These effects become important only under the most particularistic electoral rules. My results thus highlight the degree to which the political effects of economic conditions depend on domestic political institutions.

My results have several implications for the study of trade policy and political economy more generally. First, and most obviously, scholars should stop invoking intra-industry trade as an explanation for lower protection among wealthy countries and in advanced manufacturing sectors. There are many plausible explanations for such phenomena, such as shared democracy (Mansfield, Milner, and Rosendorff 2000), but intra-industry trade does not seem to be among them. Second, my results imply that the impact of economic variables on political outcomes may depend critically on collective action (Alt and Gilligan 1994; Gilligan 1997). This does not mean that economic interests alone can *never* predict political action: if the former are uncorrelated with the capacity for collective action, then they should be strongly related to political activity. However, when a given economic variable affects interests and collective action in cross-cutting ways—for example, by reducing one's interest in protection while enhancing one's ability to lobby for it—then the relationship between this variable and political outcomes become theoretically ambiguous and a largely empirical question.

Third, my results complement previous research on electoral institutions and protection. Although previous studies support the claim that particularistic institutions lead to higher protection (Rogowski 1987; Nielson 2003; Hankla 2006), these studies focus on macro-level relationships, regressing national levels of protection against national electoral institutions. By providing micro-level evidence that electoral institutions mediate societal pressures in hypothesized ways, my results strengthen our confidence in the theory's microfoundations. More generally, my results complement previous studies showing that the effects of societal variables depend on political institutions (Henisz and Mansfield 2006; Rickard, forthcoming) by showing that such institutions indeed mediate the effects of sub-national societal pressures.

Finally, my analysis supports the claim that political institutions do not simply mediate societal demands but also affect their intensity (Alt and Gilligan 1994). Because particularistic institutions make politicians more responsive to interest-group demands, they raise the incentives to demand policies in the first place. The traditional distinction between the "demand side" and the "supply side" of trade policy is thus somewhat misleading, in that the former depends to some degree on the latter.

Perhaps the most interesting direction for future research would be to endogenize fully the qualitative impact of intra-industry trade on protection. Although my results imply that the protectionist collective-action effect outweighs the liberal adjustment-cost effect on average, it is not clear why this is so, and there may be conditions under which it is not. Identifying when and why one or the other effect dominates would greatly advance our knowledge of the relationship between market structure and trade policy.

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Table 1. Electoral Particularism					
$Particularism_i$	$Ballot_i$	$Vote_i$	$Pool_i$	Examples	Frequency
0	0	0	0	Germany, Switzerland	30
1	1	0	1	Austria, Norway	6
2	1	1	1	Australia, Ireland	1
3	1	0	2	Finland, Sweden	2
4	1	2	1	France, Russia	3
5	2	2	1	Fiji, Papua New Guinea	1
6	1	2	2	Canada, United States	20
7	2	2	2	Belarus, Botswana	2

Table 2. Intra-Industry Trade and Protection, Full Sample		
	Unconditional	Conditional
Intra-Industry Trade$_{ij}$	.276 (.090)*	.057 (.098)
Intra-Industry Trade$_{ij}$ × Particularism$_{ij}$		.084 (.029)*
Elasticity$_{ij}$	-1.86 (.264)*	-1.85 (.267)*
Countries	65	65
Observations	257,659	257,659
F, P > F	25.63, 0.0000	17.93, 0.0000
Dependent variable: Protection$_{ij}$ *p<.05 Robust (country-clustered) standard errors in parentheses		

Table 3. Intra-Industry Trade and Protection, Split Samples			
	Particularism		
	Low (Particularism = 0)	Moderate (0 < Particularism < 6)	High (Particularism ≥ 6)
All Countries			
Intra-Industry Trade$_{ij}$	.073 (.100)	.106 (.205)	.721 (.186)*
Elasticity$_{ij}$	-1.63 (.362)*	-1.25 (.263)*	-2.76 (.679)*
Countries	30	13	22
Observations	118,807	51,445	87,407
F, P > F	10.61, 0.0003	10.84, 0.0020	11.46, 0.0004
Democracies Only (Polity$_i$ ≥ 6)			
Intra-Industry Trade$_{ij}$	.089 (.092)	.116 (.194)	.560 (.238)*
Elasticity$_{ij}$	-1.47 (.315)*	-1.43 (.283)*	-.770 (.239)*
Countries	27	10	8
Observations	108,224	39,448	32,895
F, P > F	10.48, 0.0005	13.08, 0.0022	5.45, 0.0374
Protected Sectors Only (Protection$_{ij}$ > 0)			
Intra-Industry Trade$_{ij}$	-.093 (.125)	-.126 (.217)	.566 (.192)*
Elasticity$_{ij}$	-1.98 (.414)*	-1.73 (.267)*	-3.37 (.745)*
Countries	30	13	22
Observations	97,301	36,861	73,778
F, P > F	11.17, 0.0003	23.44, 0.0001	12.14, 0.0003
Sector Fixed Effects and Export-Import Control			
Intra-Industry Trade$_{ij}$	.136 (.091)	.297 (.182)	.448 (.168)*
Elasticity$_{ij}$	-1.90 (.358)*	-1.50 (.241)*	-3.00 (.653)*
Export-Import Ratio$_{ij}$	-.300 (.613)	-.323 (.600)	-1.77 (1.54)
Countries	30	13	22
Observations	117,100	50,797	85,977
F, P > F	10.47, 0.0000	482.49, 0.0000	72.88, 0.0000
Dependent variable: Protection$_{ij}$ *p<.05 Robust (country-clustered) standard errors in parentheses			

Table 4. Intra-Industry Trade and Lobbying Expenditures			
	1994-1996	1998-2000	2002-2004
Intra-Industry Trade$_j$	8.91 (3.37)*	12.4 (5.16)*	11.4 (4.84)*
Sales$_j$	6.60 (6.70)	11.6 (9.19)	6.46 (2.23)*
Concentration$_j$	-1.29 (4.28)	-5.25 (6.33)	-7.71 (6.14)
Observations	386	386	385
F, P > F	2.92, 0.0342	3.26, 0.0215	6.01, 0.0005
Dependent variable: Contributions$_j$ *p<.05 Robust (country-clustered) standard errors in parentheses			

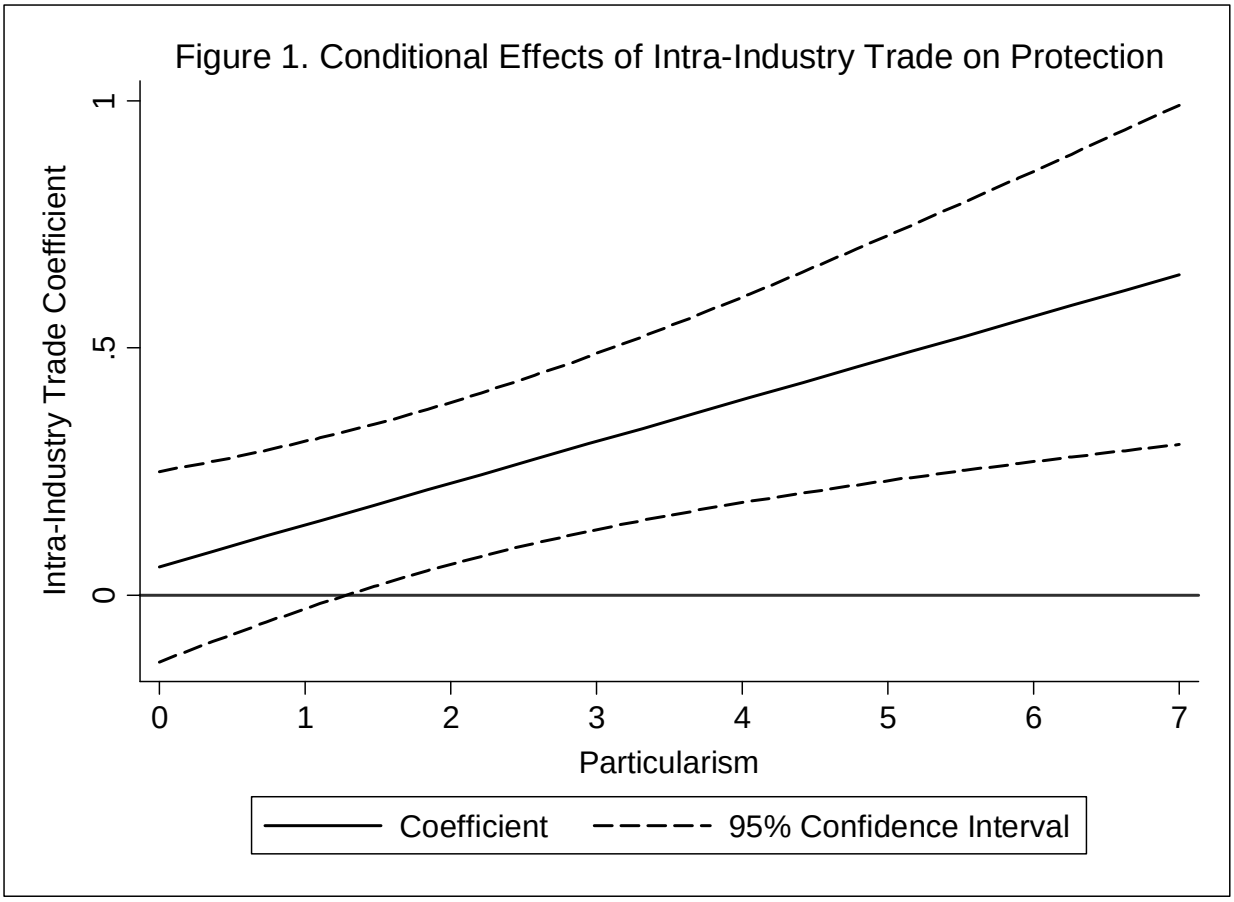
Figure 1. Conditional Effects of Intra-Industry Trade on Protection
Intra-Industry Trade Coefficient
1
.5
0
0
1
2
3
4
5
6
7
Particularism
Coefficient
95% Confidence Interval