

# Heterogeneous Information and Trade Policy\*

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January 2011

## Abstract

Protectionism is a costly mechanism to redistribute from the average citizen to special-interest groups, yet protectionist political platforms have a surprising popular appeal. At the same time, I present evidence of a Dracula effect: protection declines when public information is greater. I explain both facts through an electoral model with heterogeneously informed voters. In a setting of probabilistic voting, I show that the equilibrium tariff for each sector caters to the preferences of agents more likely to be informed of policy proposals for the sector itself. I highlight two sources of endogenous information asymmetry. First, I assume that coworkers share industry-specific knowledge. Second, I allow costly information acquisition and assume that producers must invest in production capacity before the election. Through both channels I find that in every industry producers are more informed than consumers, inducing an overall protectionist bias. Costly learning also explains why politicians offer redistribution through distortive tariffs: transfers to producers are noticed by their beneficiaries only if they distort prices and investments. An empirical analysis of non-tariff barriers and newspaper coverage across U.S. industries supports the predictions of the model.

*JEL classification:* F13, D72, D83

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\*I am grateful to Philippe Aghion, Alberto Alesina, Pol Antràs, Matilde Bombardini, Paula Bustos, Vasco Carvalho, Stephen Coate, John Friedman, Gino Gancia, Nicola Gennaioli, Edward Glaeser, Pius ten Hacken, Elhanan Helpman, Luigi Pascali, Jesse Shapiro, Stuart Shieber, Andrei Shleifer, and seminar participants at the Collegio Carlo Alberto, Cornell University, CREI, Harvard University, the Institute for Humane Studies, and Universitat Autònoma de Barcelona for helpful comments. Data were kindly provided by Kishore Gawande. Financial assistance from the Institute for Humane Studies, the Spanish Ministry of Science and Innovation (grants ECO2008-01666, CONSOLIDER-Ingenio 2010 CSD2006-00016, and Juan de la Cierva JCI-2010-08414), the Barcelona GSE Research Network and the Generalitat de Catalunya (grant 2009 SGR 1157) is gratefully acknowledged. E-mail: gponzetto@crei.cat.

# I. Introduction

The efficiency of free trade is among the least controversial propositions in economics. Trade restrictions are understood to be mostly wasteful redistributive measures that benefit special-interest groups but harm the general public. However, protectionist policies have a surprisingly enduring popular appeal. In the United States, Taussig (1888) argued that nineteenth-century politicians supported high tariffs in response to their constituents' protectionist feelings and convictions. In the present day, protectionism has been more prominent in campaign rhetoric than in subsequent policy choices (Leonhardt 2008). In fact, the 2008 presidential race witnessed a paradoxical trade-policy scandal during the Democratic primaries. The Obama campaign was accused of privately reassuring Canadian officials of the candidate's support for free trade, acknowledging that his public criticism of NAFTA was meant to pander to protectionist sentiment among the domestic audience (DeMora 2008).

At the same time, Bhagwati (1988, p. 85) has expressed optimism that protectionism can be limited by "what [he] call[s] the Dracula effect: exposing evil to sunlight helps destroy it." The cross-national pattern of tariff rates and citizens' access to the mass media bears out this insight. In an unbalanced panel of 162 countries from 1975 to 2003, average import duties are significantly lower, the higher the rate of television ownership. This is clearly illustrated by Figure 1.<sup>1</sup> The raw correlation is not merely due to the fact that the widespread availability of television sets may proxy for a country's overall development. Table 1 shows that the result holds when controlling for income per capita and for the quality of political institutions. It is also robust to the inclusion of fixed effects that control for all constant country-specific characteristics. The finding is economically as well as statistically significant. Including the full set of controls, the specification in column (8) shows that an increase in 10 televisions per 100 people corresponds to a reduction in tariffs by 1.20 percentage points.

Neither the appeal of protectionism on the campaign trail nor the Dracula effect are accounted for by the preeminent theory of trade policy, Grossman and Helpman's (1994) model of protection for sale. In their framework, organized interest groups offer politicians strategic cash contributions, and in return they obtain favorable policies at the expense of the average citizen. Models of lobbying are inconsistent with protectionist campaign rhetoric because they depict, implicitly (Hillman 1982; Grossman and Helpman 1994) or explicitly (Magee, Brock and Young 1989; Mayer and Li 1994), a political trade-off between the increased funding from lobbies profiting from protection and the diminished electoral appeal of policies that burden voters with a deadweight loss. Candidates should then try to hide their policy bias from voters as much as possible, rather than proudly

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<sup>1</sup>Data sources are discussed in Appendix B. For readability, the plot excludes the observations for Sudan from 1975 to 1982, which have customs duties above 100% of imports and fewer than 5 television sets per 100 people.

trumpeting their protectionist platform. Moreover, greater public information has no clear mitigating effect on the inefficiency of protection for sale. It plays no role in Mitra's (1999) model of endogenous lobby formation, and it is not immediately intuitive that it should induce convergence between the preferences of the average lobby member and those of the average citizen. For a given set of lobbies, Grossman and Helpman (1996) microfound the weight of their campaign contributions in the politician's objective function. In their electoral model, increased media penetration could reduce inefficiency, if it made citizens less likely to respond to candidates' non-policy messages; or it could conversely heighten distortion, if it increased the reach and effectiveness of political advertising.

In this paper I abstract from lobbying and instead derive the equilibrium structure of trade policy from a model of electoral competition with endogenous heterogeneity in voters' information. Two office-seeking candidates choose policy platforms to compete for the support of voters. Individual voting decisions are not fully predictable by politicians and have an intensive margin, following the probabilistic-voting approach. Citizens are imperfectly informed of platform announcements. Exogenously, all voters have the same probability of independently observing the policy proposal for each sector. Endogenously, I highlight two mechanisms that make the proposed protection for each industry more likely to be learned by producers in that sector. First, I consider the diffusion of political knowledge through social networks in the workplace, consistent with sociological evidence. If colleagues share information on proposals affecting their sector, then every voter is more informed about policy for the industry he works in. Second, I let individuals invest in acquiring information about proposed tariffs for each sector. When costly effort is required to learn about policy platforms, no voter is willing to exert it purely to cast a more informed ballot, since the probability that his vote decides the election is vanishing. Thus consumers do not engage in costly information acquisition, but wait for prices to be publicly revealed after the election, when they make their consumption choices. Producers, however, need to invest in production capacity before the election, and to optimize this investment they need to forecast *ex ante* the future price of their output. Hence they benefit from advance knowledge of trade-policy proposals for their industry, and will incur a cost in order to acquire it. In equilibrium, these unequal incentives translate into an asymmetric distribution of information that is systematically skewed in producers' favor.

I find that the equilibrium level of protection for each industry reflects each agent's preferences in proportion to his likelihood of learning before the election the policy proposal for the sector, and thus of basing his voting decision on it. Together with the finding that in every industry producers are on average more informed than consumers, this implies that every sector receives positive protection. This result contrasts with the outcomes of protection for sale (Grossman and Helpman 1994). If trade policy is auctioned to lobbies, organized sectors receive protective tariffs, but industries not represented by

a lobby are subject to an import subsidy. Equilibrium policy is Pareto efficient, and if all agents are active in lobbying free trade prevails, though politicians extract contributions. The reason is that lobbies rationally bid contribution schedules that are contingent on the entire policy vector, so each organized sector demands protection for itself but also opposes protection for all other industries. In my model, I find instead that agents have political power only over the specific issues they have superior knowledge of. Members of all industries are active in acquiring or sharing sector-specific information, and thus reward with their ballots politicians who offer them import tariffs. The same agents are not equally informed about other industries. As a consequence, their voting behavior does not lead politicians to internalize the cost that providing a favor to one politically powerful group imposes onto other politically powerful groups. The equilibrium outcome is a Pareto inefficient level of protection. Therefore my model explains both the popular appeal of protectionism and the observed protectionist bias in trade policy. Costly learning also suggests why politicians resort to distortive tariffs instead of more efficient instruments of redistribution. The only incentive for information acquisition derives from producers' need to forecast prices before making investments. Hence a proposed transfer to producers is noticed by its intended recipients, and thus proves politically expedient, only if it distorts prices and investments.

As well as explaining why trade policy has an overall protectionist bias, my theory accounts for the Dracula effect. When the average voter is more likely to observe exogenously a policy proposal, there is less scope for producers to gain an endogenous informational advantage and thereby introduce protectionist distortions. Thus equilibrium policy for an industry should be closer to free trade when the media provide more public information about it. I test this empirical prediction using data on non-tariff barriers for U.S. manufacturing industries in 1983 and constructing a measure of newspaper coverage of trade policy for each sector. The evidence is consistent with my theory. Protection is lower for sectors with higher media scrutiny. The effect is inversely proportional to import demand elasticity and import penetration, as implied by the model. Moreover, trade policy for an industry is more significantly predicted by media coverage than by the presence of an industry lobby offering political contributions.

Finally, I briefly discuss two theoretical extensions. First, I show that social networking provides a channel for organized interest groups to influence politics. Instead of offering contributions to politicians, lobbies can obtain favorable policies by controlling the transmission of information among their members. Second, I suggest how my framework could account for predictable differences in the trade-policy proposals of competing political parties. Such differences emerge if some voters' partisanship makes them more likely to learn about one politician's proposals than the competitor's. Hence the theory suggests a connection between the long-run decline of protectionism and the gradual shift from economic to cultural factors as the main determinants of political polarization.

## II. Tariff Formation with Imperfectly Informed Voters

A small open economy is populated by agents with identical preferences, described by a quasi-linear utility function defined over consumption of a numeraire (indexed by 0) and  $G$  other goods:

$$u(\mathbf{c}) = c_0 + \sum_{g=1}^G u_g(c_g). \quad (1)$$

Each sub-utility function  $u_g(\cdot) \in \mathcal{C}^2$  is monotone increasing and concave. Let every agent have sufficient income  $y$  to consume a positive amount of the numeraire in equilibrium. Then the price of each non-numeraire good uniquely determines its consumption per person  $c_g(p_g) = u_g'^{-1}(p_g)$ , which is homogeneous across agents. Every individual therefore derives identical consumer surplus

$$s_g(p_g) = u_g(c_g(p_g)) - p_g c_g(p_g) \quad (2)$$

and indirect utility can be written

$$v(y, \mathbf{p}) = y + \sum_{g=1}^G s_g(p_g). \quad (3)$$

The production technology has constant returns to scale, and domestic producers are perfectly competitive. The numeraire is produced employing one unit of labor per unit of output. The endowment of labor in the economy is assumed to be sufficiently large that a positive amount of the numeraire is produced in equilibrium, fixing the wage at unity. Each non-numeraire good  $g$  is produced employing both labor and an industry-specific input. The specific factors are in exogenous, inelastic supply, so that the only adjustments to the structure of production come from the allocation of the single mobile factor, i.e., labor. For a fixed wage rate, the price of each good determines the labor intensity of its production, and therefore the aggregate reward accruing to owners of the sector-specific factor. The latter is described by the monotone increasing and convex function  $\pi_g(p_g) \in \mathcal{C}^2$ . By Hotelling's Lemma, the competitive domestic supply function for each non-numeraire good is  $x_g(p_g) = \pi_g'(p_g)$ , a function of own price alone.

The world prices of all non-numeraire goods are exogenously given by the vector  $\mathbf{p}^*$ , which is not affected by domestic conditions. However, the government can influence the domestic price vector  $\mathbf{p}$ . In particular, the policy instrument available to politicians is precisely the creation of a wedge between the domestic and international price of each good. When positive,  $t_g = (p_g - p_g^*)/p_g^*$  represents an import tariff for importing sectors and an export subsidy for exporting ones; when negative, respectively an import subsidy

and an export tax. Each sector then generates tariff revenue per capita

$$r_g(p_g) = \frac{1}{N} (p_g - p_g^*) m_g(p_g), \quad (4)$$

where  $N$  denotes the size of the population and

$$m_g(p_g) = N c_g(p_g) - x_g(p_g) \quad (5)$$

is the net import demand function, which is monotone decreasing. Government revenues are rebated homogeneously to all citizens through a lump-sum payment, or government expenditures are defrayed through a uniform poll tax. Each agent thus receives a net transfer in the amount  $\sum_{g=1}^G r_g(p_g)$ .

Individuals differ in their factor endowments. Agent  $i$  inelastically supplies an amount  $l^i > 0$  of labor, and owns a fraction  $\kappa_g^i \geq 0$  of the specific input for sector  $g$ . The sector-specific factors represent specialized human capital that, like labor, cannot be traded by their owners. Every agent's income is the sum of the government transfer, his wage, and his share of profits in each sector whose specific input he supplies:

$$y(\mathbf{p}, \boldsymbol{\kappa}^i, l^i) = l^i + \sum_{g=1}^G [\kappa_g^i \pi_g(p_g) + r_g(p_g)]. \quad (6)$$

World prices and factor endowments define a bounded feasible set of domestic prices. Arbitrary price support cannot be sustained with the finite resources available in the economy. Moreover, every citizen needs to be able to pay the homogeneous levy that finances industry subsidies. This upper bound on feasible subsidies lacks both practical relevance and theoretical interest. Therefore the analysis is carried out under the maintained assumption that domestic prices are in the feasible set

$$\mathcal{F} = \left\{ \mathbf{p} > 0 : y(\mathbf{p}, \boldsymbol{\kappa}^i, l^i) > \sum_{g=1}^G p_g c_g(p_g) \text{ for all } i \right\}, \quad (7)$$

ensuring that every agent has sufficient income net of government transfers to consume a positive quantity of the numeraire.

Individual utility can be expressed as

$$U(\mathbf{p}, \boldsymbol{\kappa}^i, l^i) = l^i + \sum_{g=1}^G U_g(p_g, \kappa_g^i), \quad (8)$$

where the contribution of each sector  $g$  to agent  $i$ 's welfare is

$$U_g(p_g, \kappa_g^i) = \kappa_g^i \pi_g(p_g) + r_g(p_g) + s_g(p_g). \quad (9)$$

The welfare impact of a marginal policy change is then

$$\frac{\partial U}{\partial p_g} = \left( \kappa_g^i - \frac{1}{N} \right) x_g(p_g) + \frac{1}{N} (p_g - p^*) m'_g(p_g) \quad (10)$$

This expression highlights the two effects of any policy intervention: on distribution and on efficiency. The first term shows redistribution from consumers to producers, and thus from the general population to the owners of the sector-specific factor. It is positive if and only if  $\kappa_g^i > 1/N$ , namely for individuals with a greater than average ownership share in the sector. The second term captures the deadweight loss arising from a distortion of the price system. Since  $m'_g < 0$ , it is negative for  $p_g > p^*$  and positive for  $p_g < p^*$ , showing that efficiency always increases when the domestic price is brought into closer alignment with the world price.

The social optimum coincides with the preferred policy of a hypothetical average citizen owning a fraction  $1/N$  of every sector-specific factor, i.e. free trade. It is well known that in a small open economy whose domestic markets are free of distortions this is the first-best policy to maximize the aggregate real income in the economy. However, unequal factor ownership implies that efficiency-reducing policies are advantageous for some agents who benefit from the resulting redistribution of resources. Intuitively, the desired amount of protection for a sector is increasing in the individual's ownership stake of the sector-specific factor  $\kappa_g^i$ . Agents who own little or no sector-specific input conversely desire import subsidies that lower the price of the good for domestic consumption, thereby extracting the factor reward from the owners of the specific input.

Enacted trade policies depend on the aggregation of citizens' heterogeneous preferences. In a representative democracy, the fundamental mechanism driving policy formation is the electoral process. Consider an election contested by two parties, labelled  $L$  and  $R$ , whose only goal is to win office and which accordingly choose their policy proposals to maximize the probability of obtaining a majority of the votes cast. The electorate consists of a measure- $N$  continuum of voters  $i \in \mathcal{I}$ . Following the probabilistic-voting approach (Coughlin 1992), voters' preferences for the competing parties comprise two independent elements. Each voter  $i$  reaches the election with beliefs  $\hat{\mathbf{p}}^{L,i}$  and  $\hat{\mathbf{p}}^{R,i}$  about the policies endorsed by either politician, which correspond to individual utility respectively  $U(\hat{\mathbf{p}}^{L,i}, \boldsymbol{\kappa}^i, l^i)$  and  $U(\hat{\mathbf{p}}^{R,i}, \boldsymbol{\kappa}^i, l^i)$ . Moreover, the parties have fixed characteristics, such as ideology or the personal qualities of party leaders, that cannot be credibly altered with the choice of an electoral platform; and the voters have individual tastes, respectively  $\xi_L^i$  and  $\xi_R^i$ , for these characteristics. Thus voter  $i$  votes for party  $R$  if and only if

$$U(\hat{\mathbf{p}}^{L,i}, \boldsymbol{\kappa}^i, l^i) + \xi_L^i \leq U(\hat{\mathbf{p}}^{R,i}, \boldsymbol{\kappa}^i, l^i) + \xi_R^i. \quad (11)$$

An individual's relative assessment of the two parties can be disaggregated into a common

and an idiosyncratic component:  $\xi_L^i - \xi_R^i = \Psi + \psi^i$ . Both  $\Psi$  and  $\psi^i$  are unobservable to the parties, but independently drawn from common-knowledge probability distributions. The common shock  $\Psi$  accounts for the aggregate uncertainty in the electoral outcome. The idiosyncratic shock  $\psi^i$  provides the intensive margin of political support, and is assumed to be i.i.d. across agents with uniform distribution on a support  $[-\bar{\psi}, \bar{\psi}]$  sufficiently wide that each voter's ballot is not perfectly predictable on the basis of policy considerations only.

The voters form their beliefs  $\hat{\mathbf{p}}^{L,i}$  and  $\hat{\mathbf{p}}^{R,i}$  on the basis of imperfect information, according to the following timeline:

1. Citizens have initial beliefs  $\bar{\mathbf{p}}^L$  and  $\bar{\mathbf{p}}^R$  about the policy vector that either party will endorse.
2. The two parties simultaneously choose their platforms  $\mathbf{p}^L$  and  $\mathbf{p}^R$ .
3. Each voter  $i$  is informed of the proposal  $p_g^P$  of party  $P \in \{L, R\}$  for sector  $g$  with probability  $\theta_g^{P,i}$ . For every proposal he does not observe, he maintains the original belief  $\bar{p}_g^P$ . The arrival of information is independent across voters.
4. Each voter  $i$  observes the realization of  $\xi_L^i$  and  $\xi_R^i$ , independent of his information. The election is held.
5. The winning party  $W \in \{L, P\}$  implements its policy  $\mathbf{p}^W$ .

There are  $J$  types of citizens  $j = 1, \dots, J$  (with  $J$  a large number), such that all agents of type  $j$  have an identical endowment of specific factors  $\kappa^j$  and identical information-acquisition probabilities  $(\theta^{L,j}, \theta^{R,j})$ . Each type  $j$  comprises fraction  $\alpha^j$  of the population, with  $\sum_{j=1}^J \alpha^j = 1$ . Since there is a continuum of agents in every type and the arrival of information is independent across agents, when the election takes place each group is composed of a share  $\theta_g^{P,j}$  of agents who have observed the true proposal  $p_g^P$ , and a share  $1 - \theta_g^{P,j}$  who have not and rely instead on their prior  $\bar{p}_g^P$ . Given the independent realizations of the uniform idiosyncratic shock  $\psi^i$ , the fraction of citizens of type  $j$  who vote for party  $R$  equals

$$\phi_R^j = \frac{1}{2} + \frac{1}{2\bar{\psi}} \left\{ \sum_{g=1}^G \left[ \begin{array}{l} \theta_g^{R,j} U_g(p_g^R, \kappa_g^j) + (1 - \theta_g^{R,j}) U_g(\bar{p}_g^R, \kappa_g^j) \\ -\theta_g^{L,j} U_g(p_g^L, \kappa_g^j) - (1 - \theta_g^{L,j}) U_g(\bar{p}_g^L, \kappa_g^j) \end{array} \right] - \Psi \right\}, \quad (12)$$

as a function of the common shock  $\Psi$ . Thus the realization of  $\Psi$  fully determines the number of ballots cast for each politician: party  $R$  receives more votes than party  $L$  if and only if

$$\Psi < \sum_{j=1}^J \alpha^j \sum_{g=1}^G \left[ \begin{array}{l} \theta_g^{R,j} U_g(p_g^R, \kappa_g^j) + (1 - \theta_g^{R,j}) U_g(\bar{p}_g^R, \kappa_g^j) \\ -\theta_g^{L,j} U_g(p_g^L, \kappa_g^j) - (1 - \theta_g^{L,j}) U_g(\bar{p}_g^L, \kappa_g^j) \end{array} \right]. \quad (13)$$



Hence, for any distribution of the unobservable common shock  $\Psi$ , party  $R$  seeks to maximize the right-hand side, and party  $L$  to minimize it.

### III. The Structure of Trade Policy

When the information structure is common knowledge, rational expectations imply that the eventual policy choices can be predicted with perfect foresight. As a consequence, even voters who do not receive any information correctly anticipate the platforms of the two parties ( $\bar{\mathbf{p}}^P = \mathbf{p}^P$ ). Politicians' optimal strategies are driven by heterogeneous information off the equilibrium path: some voters are more likely than others to notice a deviation from the expected policy choice, and the party optimally caters to their preferences. Suppose that a candidate has a protectionist audience: the whole electorate rationally expects him to run on a protectionist platform. If unexpectedly he endorsed free trade, many of his protectionist listeners would be informed and disappointed, withdrawing their support. Instead, the rest of the electorate is less likely to be informed of the deviation, and thus few new supporters would be gained. Hence, deviating from the expected proposal is unprofitable for the politician.

The assumption of rational expectations is standard, and the structure of the ensuing equilibrium is intuitive. In any case, the equilibrium outcome is robust to alternative specifications of initial beliefs. The additive separability of equation 13 implies that each party's optimal policy is independent both of the opponent's platform and of voters' initial beliefs. Therefore, all that matters is that voters react to subsequently observed policy proposal in the manner specified by the model. The same results hold identically if voters ignore the precise values of  $(\theta^{L,j}, \theta^{R,j})$  and thus lack perfect foresight, or even if their initial expectation are not fully rational.

The parties' problem from equation 13 implies immediately that a purely office-seeking politician strategically behaves as if he were maximizing sector by sector a weighted average of citizens' sub-utility functions, with weights equal to the likelihood that each voter is informed of the party's proposal for the sector.

**Lemma 1** *The optimal policy proposal for party  $P \in \{L, R\}$  is*

$$p_g^P = \arg \max_{p_g} \sum_{j=1}^J \alpha^j \theta_g^{P,j} U_g(p_g, \kappa_g^j) \text{ for } g = 1, 2, \dots, G.$$

This result embodies formally the notion that policies are chosen to maximize a political support function that attaches different weights to the utility of different agents. Introduced by Stigler (1971) and Peltzman (1976) in the context of economic regulation, this approach was explicitly applied to tariff policy by Hillman (1982). Long and Volden (1991) assumed in reduced form that politicians maximize a weighted average of the

welfare of the average citizen and that of powerful special-interest groups. Grossman and Helpman (1994) derive a similar objective function from their model of protection for sale.

Here, political support does not come from organized lobbies, but rather—consistent with Becker’s (1976) insight—from looser groupings of voters, characterized less by a shared special interest than by their members’ privileged access to political information. This source of influence has long been recognized in the economic analysis of the political system (Downs 1957). In particular, it can explain the influence on government spending of the mass media, since these enable voters to judge whether their interests are being served (Besley and Burgess 2002; Strömberg 2004); and the divergence of party positions, since rival politicians are concerned with pleasing different audiences of partisan voters (Glaeser, Ponzetto and Shapiro 2005).<sup>2</sup>

The objective function depicted by Lemma 1 reflects the varying influence of the same agent across policy areas:  $\theta_g^{P,j}$  need not equal  $\theta_h^{P,j}$  for  $g \neq h$ . This is a distinctive feature of the model: it obtains because policy distortions derive from heterogeneous information, which can vary across issues for the same individual. Conversely, in Grossman and Helpman’s (1994) lobbying model, being represented by a lobby grants an agent identical power over all policy choices. Organized special-interest groups offer strategic contributions contingent on all policy choices. Hence, equilibrium policy under protection for sale maximizes a weighted social welfare function, with higher weight on lobby members’ welfare. Every agent also has the same influence over all policy choices in existing electoral models of tariff formation in which a voter’s political power depends on his likelihood of being pivotal (Mayer 1984; Yang 1995). In the textbook model of probabilistic voting (Persson and Tabellini 2000, ch. 3) equilibrium policy also maximizes a weighted social welfare function, with higher weight on swing voters’ welfare. Hence both protection for sale and electoral competition with homogeneous information predict Pareto efficient policies, and in particular free trade when all agents are equally active—respectively, equally represented by lobbies or equally likely to be pivotal.

On the contrary, in my model every individual wields political power only over the issues about which he is disproportionately knowledgeable. Heterogeneous information gives agents the power to demand policy favors for themselves, but not to oppose the granting of favors to others. As a consequence, equilibrium policy need not be Pareto efficient. It does not maximize an overall weighted social welfare function, but rather weighs agents’ preferences separately sector by sector, using different weights for the policy choice in each industry. A group can be extremely influential in the choice of trade policy in a particular sector which its members are especially informed about, while

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<sup>2</sup>Different strands of the literature have also considered forms of political knowledge other than information about policy decisions: the ability to estimate politicians’ quality from the observation of their actions (Lohmann 1998, 2003; Myerson 1999); or to assess the indirect effects of observed policies (Grossman and Helpman 2001, §3.2).

having marginal influence on other policy decisions. This can explain one of the most evident features of trade policy: deviations from free trade have a marked protectionist bias, and almost invariably aim at constraining imports rather than subsidizing them (Rodrik 1995). Such a pattern results from information asymmetries that systematically favor producers over consumers in all industries, as we are about to see.

Equation 10 and Lemma 1 characterize for each sector the trade policy proposal that each party makes in equilibrium. Assuming that the prices belong to the feasible set  $\mathcal{F}$ , the following characterizes equilibrium platforms (all proofs are provided in Appendix A).

**Proposition 1** *The optimal policy proposal for party  $P \in \{L, R\}$  satisfies*

$$\frac{p_g^P - p_g^*}{p_g^P} = \rho(\theta_g^P, \kappa_g) \frac{\sigma(\theta_g^P)}{\mu} \frac{\sigma(\kappa_g)}{\mu} \frac{x_g(p_g^P)}{|m_g(p_g^P)|} \frac{|m_g(p_g^P)|}{|m'_g(p_g^P)| p_g^P} \text{ for } g = 1, 2, \dots, G,$$

where  $\rho$  denotes the correlation coefficient and  $\sigma/\mu$  the coefficient of variation.

The structure of protection is determined by the joint distribution of factor ownership and access to information, which in turns determines political influence. An industry is protected if and only if there is positive correlation between a person's ownership share of the specific factor and her knowledge of policy proposals affecting prices in the sector ( $\rho(\theta_g^P, \kappa_g) > 0$ ). Therefore, a protectionist bias emerges across the board when each agent is very informed about his own sector of employment, but has less knowledge of policy proposal for other industries. Microfoundations of precisely such a distribution of information are given below. Evidence on the role of heterogeneous information as a determinant of trade policy is provided by Hall, Kao and Nelson's (1998) historical analysis. The introduction of women's suffrage throughout the United States in 1920 was associated with a decline in average tariff rates. This development was related to specialization within the American household in the early twentieth century. The husband was uniquely concerned with, and informed of, the effect of policy on factor rewards. It was instead the wife who was aware of consumer prices and the negative impact protectionism had on them. In the terms of the model, the enfranchisement of women then corresponds to the introduction of voters whose information is uncorrelated with household factor ownership. It follows that politicians would strategically endorse lower levels of protection for all sectors.

Furthermore, Proposition 1 shows that whenever trade policy is distorted away from free trade ( $\rho(\theta_g^P, \kappa_g) \neq 0$ ), the magnitude of the distortion is also proportional to the coefficient of variation of the population distributions both of specific-factor ownership and of information. While the correlation of the two variables dictates whether producers or consumers have the upper hand in the distributional conflict, the heterogeneity of knowledge determines the margin of victory and the dispersion of factor ownership

measures the height of the stakes. If information is almost homogeneous, agents with an informational advantage can obtain only minimal policy favors. At the opposite extreme, if there is a group of agents who receive information about a sector while all other voters do not, then the equilibrium tariff in that sector will be exactly the one preferred by the informed agents. If ownership of the specific factor is widely dispersed, the average citizen not only coincides with the average consumer, but is also close to being the average producer. The desire for redistribution is then muted. Nobody wishes to deviate much from free trade, because everyone internalizes the deadweight loss, while anticipating no more than a small change in profits. If instead factor ownership is very concentrated, the preferences of producers and consumers diverge. Changes in profits are large, and overshadow the deadweight loss. Each producer is very keen on protection to increase his profits, while every consumer desires a substantial import subsidy to extract producers' profits. Thus the model predicts that among protected sectors, those with greater industrial concentration will have higher tariffs, a pattern that has ample support in empirical evidence (Pincus 1975; Saunders 1980; Marvel and Ray 1983; Godek 1985; Treffer 1993; Bombardini 2008). Moreover, information asymmetry is naturally connected to the regional concentration of a sector, whose positive impact on the level of protection is also well documented (Pincus 1975; Caves 1983; Godek 1985).

Finally, any deviation from the first best is inversely proportional to the absolute elasticity of import demand or export supply ( $|p_g m'_g / m_g|$ ) and to the trade penetration ratio ( $|m_g| / x_g$ ). Higher-elasticity industries receive less distortive policies because they would incur greater deadweight losses, as in the Ramsey rule of commodity taxation. Similarly, trade penetration reflects the weighting of distributive and efficiency considerations. Redistribution is proportional to the size of domestic output ( $x_g$ ), while the deadweight loss is proportional to net international trade ( $|m_g|$ ). Every agent incorporates these considerations in his preferences, which follow the universal pattern  $p_g - p^* \propto x_g(p_g) / |m'_g(p_g)|$ , up to a proportionality coefficient varying with factor ownership. Hence enacted policy shares this pattern as a direct consequence of Lemma 1, and also in any model in which equilibrium policy maximizes a weighted sum of citizens' welfare, such as Grossman and Helpman's (1994).

To understand the endogenous distribution of information and give concrete content to the predictions of Proposition 1, we can begin by considering that political awareness is the product of a social process in which personal interactions have decisive influence (Granovetter 1973; Cialdini 1984; Zaller 1992; Beck et al. 2002). In particular, the workplace plays a crucial role in the formation of political opinion. People are more likely to discuss politics with their co-workers than in almost any other context (Finifter 1974; Beck 1991; Mutz and Mondak 2006). The work-based aggregation of information explains an occupational bias in agents' political knowledge, as conversations among colleagues focus on their shared concern for their industry of employment.

Formally, assume that each agent own at most one type of capital, corresponding to his occupation in a single sector. Each sector  $g$  employs a fraction  $\alpha_g > 0$  of the total population. Every individual exogenously receives information about each policy proposal  $p_g^P$  with homogeneous probability  $\underline{\theta}_g^P \in (0, 1)$ . Then the following result obtains.

**Proposition 2** *Let every member of sector  $g$  belong to a network of  $n_g > 1$  colleagues who share information  $(p_g^L, p_g^R)$  regarding their industry.*

*The equilibrium policy proposal  $p^P$  of either party  $P \in \{L, R\}$  satisfies*

$$\frac{p_g^P - p_g^*}{p_g^P} = \frac{1 - \alpha_g}{\alpha_g + \Theta_g^P(\underline{\theta}_g^P, n_g)} \frac{x_g(p_g^P)}{|m_g(p_g^P)|} \frac{|m_g(p_g^P)|}{|m'_g(p_g^P)| p_g^P}, \text{ for } \Theta_g^P(\underline{\theta}_g^P, n_g) > 0.$$

*Every industry is offered positive protection ( $p_g^P > p_g^*$ ) and the distortion is lower when information is more widespread ( $\partial p_g^P / \partial \underline{\theta}_g^P < 0$ ) and higher for industries whose members are fewer ( $\partial p_g^P / \partial \alpha_g < 0$ ) and more connected ( $\partial p_g^P / \partial n_g > 0$ ).*

Protectionism is a winning electoral platform because workers' social interactions and thus their knowledge are specialized along industry lines. Voters' awareness of economic policy is disproportionately acquired as producers. As a consequence, a protectionist policy proposal is more likely to be noticed by the factor owners whose income it supports than by the consumers who bear the burden of a price increase (Lohman 2003). Each agent is disproportionately aware of the elements of a protectionist platform that bring him private benefits, and not of those that merely affect him through their social costs. This asymmetry can explain why a majority of voters report protectionist sentiments in opinion polls (Mayda and Rodrik 2005). In the terms of Proposition 1, the diffusion of information through social networks centered in the workplace induces a perfect positive correlation between sector-specific knowledge and sector-specific factor ownership ( $\rho(\theta_g^P, \kappa_g) = 1$ ). Hence, strategic office-seekers offer a positive import tariff to every industry, generating an aggregate protectionist bias.

This bias can easily be Pareto inefficient. Suppose that the economy consists of  $G$  symmetric industries with identical functions  $x(p)$  and  $m(p)$ , and identical values  $p^*$ ,  $\underline{\theta}^P$  and  $n$ . Each sector employs  $1/G$  homogeneous producers with individual factor ownership  $\kappa_g^i = G/N$ . Then in equilibrium positive tariffs are offered instead of free trade:  $p_g^P = p^P > p^*$  for all  $g$ . Any reduction in tariffs by the same amount in all industries makes all agents strictly better off than the equilibrium policy: everyone experiences a welfare change  $dU = -G(p^P - p^*) |m'(p^P)| dp > 0$  for an across the board tariff cut  $dp < 0$ . Yet a free-trade platform would not garner electoral support because candidates cannot credibly signal commitment to imperfectly informed voters. Each agent would probably observe and dislike the proposal of low tariffs for his own sector. Failing to observe proposals for other sectors, he would rationally infer that they are being offered protection behind his back.

The higher the amount of information about a sector that reaches the entire population ( $\theta_g^P$ ), the lower the heterogeneity of information ( $\sigma/\mu(\theta_g^P)$ ) and the lower the induced equilibrium tariff. Given greater public awareness of a policy proposal, there is a correspondingly lower scope for asymmetric knowledge, so producers' informational advantage over consumers wanes. This entails a decline in protectionism, providing a microfoundation for the Dracula effect. Lower tariffs are accompanied by the convergence of competing political parties towards a free-trade stance. The long-run evolution of the policy debate has followed this pattern in the United States and other developed countries, which have witnessed both liberalization and a gradual decrease of partisan difference in trade policy (Mitra, Thomakos and Ulubaşoğlu 2002; McCalman 2004; Milner and Judkins 2004).

Protection is greater for sectors that have a smaller number of producers and thus more concentrated ownership of the specific factor (lower  $\alpha_g$  implying higher  $\sigma/\mu(\kappa_g)$ ). As we discussed above, this result derives from the preferences of insiders, whose ideal policy satisfies

$$\frac{p_g - p_g^*}{p_g} = \frac{1 - \alpha_g}{\alpha_g} \frac{x_g(p_g)}{|m_g(p_g)|} \frac{|m_g(p_g)|}{|m'_g(p_g)| p_g}. \quad (14)$$

The lower the fraction of the population employed in the sector, the lower the share of the deadweight loss they have to bear, and thus the more extreme their protectionist demands. The endogenous distribution of knowledge determines to what extent politicians are responsive to these requests. For a given information asymmetry in producers' favor, of which  $\Theta_g^P$  is an inverse measure, more concentrated sectors desire and obtain higher protection

Finally, Proposition 2 shows that trade policy is more distorted in favor of industries whose members are connected to a wider social network. A greater ability to share information increases the members' aggregate knowledge and therefore their political clout. This intuitive mechanism can be connected to two economic-policy biases that have prevailed historically in developing countries: an anti-trade bias (Edwards 1993) and an anti-rural bias (Lipton 1977). In terms of the model, both follow from the fact that urban manufacturing is the import-competing sector, and at the same time its workers are better placed than rural voters to obtain, share and aggregate political information.

## IV. Costly Information Acquisition and Protectionism

The previous section showed how producer bias emerges from the social diffusion of political information. The mechanism reflected the lack of incentives to exert any effort to acquire political knowledge. This is a facet of the paradox of the rational voter, which is

put into sharp relief by probabilistic-voting models with a continuum of agents. Every atomistic citizen has probability zero of influencing the outcome of the election, and therefore no instrumental reason to invest in making a more informed voting decision. Consistent with this theoretical perspective, Graber (1984) finds that for the vast majority of Americans being informed about politics is a consumption decision, and not an investment with economic payoffs.

On the other hand, producers routinely invest in acquiring information that helps them assess and forecast industry trends, including knowledge of policy decisions affecting their sector. Consumers, instead, do not typically need advance information about market conditions. These asymmetric incentives for early information acquisition constitute another channel leading to a protectionist bias in trade policy. To capture this mechanism analytically, suppose that international prices  $\mathbf{p}^*$  are volatile. Domestic prices  $\mathbf{p}$  generally reflect this volatility, and may incorporate additional uncertainty resulting from the policy-making process. We will focus precisely on price movements around an election, distinguishing an ex ante stage before the election and an ex post stage after the election. Ex post, all agents costlessly observe the domestic price vector  $\mathbf{p}$ , and can make their consumption decisions accordingly. Owners of the specific factors, however, cannot wait to make their production decisions ex post. Instead, they must hire labor ex ante, on the basis of their private expectation of future prices. When price information eventually becomes fully public, they are no longer able to adjust employment and output.

Producer  $i$ 's profit-maximization problem then implies that labor demand per unit of the specific factor is a function of his price expectation  $\mathbb{E}^i p_g$  alone:

$$l_g(\mathbb{E}^i p_g) = \mathbb{E}^i p_g \pi'_g(\mathbb{E}^i p_g) - \pi_g(\mathbb{E}^i p_g). \quad (15)$$

The output of the sector- $g$  good by agent  $i$  with a share  $\kappa_g^i > 0$  of its specific factor and an expectation  $\mathbb{E}^i p_g$  of its price is determined ex ante as

$$q_g(\kappa_g^i, \mathbb{E}^i p_g) = \kappa_g^i \pi'_g(\mathbb{E}^i p_g). \quad (16)$$

Aggregate domestic output in sector  $g$ , which will be denoted by  $x_g$ , thus depends on the expectations  $\mathbb{E}^i p_g$  of all agents with  $\kappa_g^i > 0$ . Conversely, it does not depend directly on the ex post realization of  $p_g$ , which determines individual income

$$\begin{aligned} y(\mathbf{p}, \mathbf{x}, \mathbb{E}^i \mathbf{p}, \boldsymbol{\kappa}^i, l^i) &= \\ &= l^i + \sum_{g=1}^G \left\{ \kappa_g^i \left[ \pi_g(\mathbb{E}^i p_g) + (p_g - \mathbb{E}^i p_g) \pi'_g(\mathbb{E}^i p_g) \right] + (p_g - p_g^*) \left[ c_g(p_g) - \frac{1}{N} x_g \right] \right\}, \quad (17) \end{aligned}$$

consumption, and therefore utility

$$U(\mathbf{p}, \mathbf{x}, \mathbb{E}^i \mathbf{p}, \boldsymbol{\kappa}^i, l^i) = l^i + \sum_{g=1}^G U_g(p_g, x_g, \mathbb{E}^i p_g, \kappa_g^i), \quad (18)$$

where the contribution of each sector  $g$  to agent  $i$ 's welfare is

$$\begin{aligned} U_g(p_g, x_g, \mathbb{E}^i p_g, \kappa_g^i) &= \\ &= \kappa_g^i \left[ \pi_g(\mathbb{E}^i p_g) + (p_g - \mathbb{E}^i p_g) \pi'_g(\mathbb{E}^i p_g) \right] + (p_g - p_g^*) \left[ c_g(p_g) - \frac{1}{N} x_g \right] + s_g(p_g). \end{aligned} \quad (19)$$

Ex post, the welfare impact of a marginal policy change is

$$\frac{\partial U}{\partial p_g} = \kappa_g^i \pi'_g(\mathbb{E}^i p_g) - \frac{1}{N} x_g + (p_g - p_g^*) c'_g(p_g). \quad (20)$$

Everyone suffers from deadweight losses when prices are distorted away from the efficient level  $p_g^*$ . This confirms the optimality of free trade. Artificially higher prices are an inefficient mechanism to redistribute towards producers. Since production is planned ex ante, each agent's stakes in the distributional game are given directly by his predetermined output ( $\kappa_g^i \pi'_g(\mathbb{E}^i p_g)$ ) compared to industry output per capita ( $x_g/N$ ), rather than indirectly by factor ownership as in the baseline model.

The timing of the policy-making game is modified to account for the hiring of labor ex ante, and for a preceding stage of costly information acquisition. This consists of an optional investment of effort that linearly reduces an agent's labor supply, and therefore his income and utility. The timeline is the following:

1. The ex ante distribution of  $\mathbf{p}^*$  is common knowledge. Its components are independently distributed, and none is deterministic. Voters have beliefs  $\bar{\mathbf{p}}^L(\mathbf{p}^*)$  and  $\bar{\mathbf{p}}^R(\mathbf{p}^*)$  about the strategies that the parties will follow to formulate their platforms conditional on the realization of  $\mathbf{p}^*$ .
2. The two parties privately observe the realization of  $\mathbf{p}^*$  and choose simultaneously their platforms  $\mathbf{p}^L(\mathbf{p}^*)$  and  $\mathbf{p}^R(\mathbf{p}^*)$ .
3. Each voter  $i$  makes a costly investment  $\iota_g^i \geq 0$  in learning about each sector  $g$ . This determines the probability  $\theta_g(\iota_g^i)$  that he is informed of  $(p_g^*, p_g^L, p_g^R)$ . The arrival of information is independent across voters and sectors.
4. Agents with specific capital  $\kappa_g^i > 0$  hire labor and thus predetermine individual output.
5. Each voter  $i$  privately observes the realization of  $\xi_L^i$  and  $\xi_R^i$ , independent of his information. The election is held.



6. The winning party  $W \in \{L, P\}$  implements its policy  $\mathbf{p}^W$ , which is publicly observed. Agents make their consumption decisions.

The problem faced by either party is identical. There are no economic linkages across sectors, as utility is quasilinear, there is a single mobile factor, and all random shocks are independently distributed. Thus we will focus on an equilibrium in which voters rationally expect the parties to follow symmetric strategies and the proposed price for each sector to depend only on the international market price for the sector itself:

$$\bar{p}_g^L(\mathbf{p}^*) = \bar{p}_g^R(\mathbf{p}^*) = \bar{p}_g(p_g^*). \quad (21)$$

In addition, both voters and politicians have rational expectations that agents invest in acquiring information about each sector depending on their ownership of the respective specific factor, according to a function  $\bar{t}_g(\kappa_g^i)$ . For ease of notation, let  $\bar{\theta}_g^j = \theta_g(\bar{t}_g(\kappa_g^j))$  and denote by

$$\bar{\omega}_g = 1 - N \sum_{j=1}^I \alpha^j \bar{\theta}_g^j \kappa_g^j \in [0, 1] \quad (22)$$

the fraction of the specific factor that is expected to belong to uninformed producers.

Denote by  $\tilde{m}'_g(p_g) = Nc'_g(p_g)$  the sensitivity of net imports to unexpected price changes, and recall that  $x_g(\mathbb{E}p_g) = \pi'_g(\mathbb{E}p_g)$  is aggregate domestic supply as a function of expected price. Given expectations about citizens' information acquisition, the optimal platform admits a characterization analogous to Proposition 1.

**Lemma 2** *The optimal policy proposal satisfies*

$$\frac{p_g - p_g^*}{p_g} = \left\{ \rho(\bar{\theta}_g, \kappa_g) \frac{\sigma}{\mu}(\bar{\theta}_g) \frac{\sigma}{\mu}(\kappa_g) + \bar{\omega}_g \left[ 1 - \frac{x_g(\mathbb{E}\bar{p}_g)}{x_g(p_g)} \right] \right\} \frac{x_g(p_g)}{|m_g(p_g)|} \frac{|m_g(p_g)|}{|\tilde{m}'_g(p_g)| p_g},$$

where  $\rho$  denotes the correlation coefficient and  $\sigma/\mu$  the coefficient of variation.

The only difference between this policy proposal and the equilibrium platform described by Proposition 1 for the baseline model consists in a desire to increase customs revenues by exploiting uninformed producers ( $\omega_g > 0$ ) who cannot adjust ex post to the eventual price realization. When prices are higher than expected, these producers cannot increase output, which implies greater net imports and higher tariff revenues than in the original model. For a given tariff rate, net imports and tariff revenues are conversely lower than the baseline when prices are below their expected value. As a consequence, it becomes more difficult in this setting for free trade to be politically feasible. It is no longer the politicians' preferred policy whenever information is uncorrelated with factor ownership ( $\rho(\bar{\theta}_g, \kappa_g) = 0$ ). For free trade to prevail almost surely in sector  $g$ , it is now necessary that all citizens are perfectly informed about the respective policy proposals ( $\bar{\theta}_g^j = 1$  for all  $j$ , which is the same as  $\rho(\bar{\theta}_g, \kappa_g) = 0 = \bar{\omega}_g$ ).

In equilibrium, for an agent with factor ownership  $\kappa_g^i$ , learning ex ante the true price  $p_g$  instead of retaining the rational expectation  $\mathbb{E}\bar{p}_g$  is worth an increase in income equal to

$$\Delta_g(p_g, \kappa_g^i) = \kappa_g^i [\pi_g(p_g) - \pi_g(\mathbb{E}\bar{p}_g) + (p_g - \mathbb{E}\bar{p}_g) \pi'_g(\mathbb{E}\bar{p}_g)]. \quad (23)$$

The expected value of acquiring information about a sector is proportional to an agent's ownership share of the respective factor. The gain per unit of ownership is

$$v_g = \mathbb{E}\pi_g(\bar{p}_g) - \pi_g(\mathbb{E}\bar{p}_g), \quad (24)$$

which is positive for every non-degenerate distribution of  $\bar{p}_g$  and every convex profit function  $\pi_g$ .

The emergence of an endogenous anti-trade bias can be seen most starkly when perfect political information can be acquired at a small but positive cost.

**Proposition 3** *Let all agents with a positive ownership share of the specific factor for sector  $g$  own at least a minimum  $\underline{\kappa}_g > 0$ : for all  $i \in \mathcal{I}$ ,  $\kappa_g^i > 0 \Rightarrow \kappa_g^i \geq \underline{\kappa}_g > 0$ . Let there be a level of investment  $\hat{\iota}_g > 0$  that yields perfect knowledge about sector  $g$  ( $\theta_g(\hat{\iota}_g) = 1$ ), while any lower investment  $\iota_g^i \in [0, \hat{\iota}_g)$  implies an exogenous probability of receiving information  $\underline{\theta}_g \in [0, 1)$ .*

*Then there exists a threshold  $\bar{\iota}_g > 0$  such that for all  $\hat{\iota}_g \in (0, \bar{\iota}_g)$ , in equilibrium all consumers with  $\kappa_g^i = 0$  invest  $\iota_g^i = 0$  and are informed with probability  $\underline{\theta}_g$ , while all producers with  $\kappa_g^i > 0$  invest  $\iota_g^i = \hat{\iota}_g > 0$  and are informed with certainty. Enacted policy satisfies*

$$\frac{p_g - p_g^*}{p_g} = \frac{1 - \alpha_g}{\alpha_g + \underline{\theta}_g / (1 - \underline{\theta}_g)} \frac{x_g(p_g)}{|m_g(p_g)|} \frac{|m_g(p_g)|}{|\tilde{m}'_g(p_g)| p_g}.$$

*The sector is offered positive protection with certainty ( $p_g > p_g^*$ ), and the distortion is higher for industries with fewer members ( $\partial p_g^P / \partial \alpha_g < 0$ ) and for which public information is scarcer ( $\partial p_g^P / \partial \underline{\theta}_g < 0$ ).*

Advance information about sector  $g$  provides consumers only with an opportunity to cast a more knowledgeable ballot. Their consumption decision is made ex post, when full information is publicly available at no cost. Thus consumers have no incentives to become informed ex ante. Any positive cost of early information acquisition suffices to hold them to their exogenous probability of information  $\underline{\theta}_g$ , which represents the likelihood of learning about trade policy for the sector via the non-directed consumption of general-interest news. Conversely, it is profitable for every producer to acquire information ex ante, when he must invest in production capacity. Thus producers are willing to pay a strictly positive cost to obtain a perfect price forecast. If the effort required to obtain such knowledge is sufficiently low, the unique equilibrium is for every owner of the specific

factor to become perfectly informed in advance. The ex-ante information asymmetry between producers and consumers is then endogenously maximized.

The structure of protection described by Proposition 3 shows how factor owners obtain political clout even without solving the collective-action problem and organizing as a lobby. Each producer is privately motivated to acquire information for his own hiring decision. As a by-product of these uncoordinated individual actions, the industry becomes politically influential. Again, the model endogenously generates the Dracula effect: producer capture of trade policy induces greater distortion, the less public information is available (the lower  $\underline{\theta}_g$ ). It is complete if consumers are wholly uninformed ( $\underline{\theta}_g = 0$ ): then the trade policy maximizes producer welfare, as described by equation 14. Finally, for the same reasons mentioned in the discussion of Proposition 2, tariffs are decreasing in the number of informed producers.

Qualitatively similar results obtain when acquiring information in advance is more expensive, so that even producers shy away from obtaining perfect information ex ante. For analytical convenience we adopt linear functional forms. The domestic supply function is

$$x_g(p_g) = \xi_g \left( p_g - \underline{p}_g \right) \text{ with } \xi_g > 0, \quad (25)$$

and every industry is always active domestically under free trade: the support of  $p_g^*$  has minimum  $\underline{p}_g^* > \underline{p}_g > 0$ . The aggregate demand function has slope

$$Nc'_g(p_g) = -\gamma_g \xi_g \text{ with } \gamma_g > 0. \quad (26)$$

For ease of notation, let

$$\bar{\rho}_g = \frac{Cov(\kappa_g, \bar{\theta}_g)}{\mathbb{E}\kappa_g \mathbb{E}\bar{\theta}_g}. \quad (27)$$

Then Lemma 2 implies that given beliefs  $(\bar{\rho}_g, \bar{\omega}_g)$  about voter information a party proposes

$$p_g = \frac{\gamma_g p_g^* - \bar{\rho}_g \underline{p}_g - \bar{\omega}_g \mathbb{E}\bar{p}_g}{\gamma_g - \bar{\rho}_g - \bar{\omega}_g}, \quad (28)$$

where  $\gamma_g > \bar{\rho}_g + \bar{\omega}_g$  ensures an interior equilibrium. In equilibrium, rational expectations imply that citizens have correct second-order beliefs about the politicians' expectation  $(\bar{\rho}_g, \bar{\omega}_g)$ , and they correctly anticipate  $\bar{p}_g(p_g^*) = p_g(p_g^*)$ . The expected domestic price is

$$\mathbb{E}\bar{p}_g = \mathbb{E}p_g^* + \frac{\bar{\rho}_g}{\gamma_g - \bar{\rho}_g} \left( \mathbb{E}p_g^* - \underline{p}_g \right), \quad (29)$$

and equilibrium policy is

$$p_g = p_g^* + \frac{\bar{\rho}_g + \bar{\omega}_g}{\gamma_g - \bar{\rho}_g - \bar{\omega}_g} \left( p_g^* - \mathbb{E}p_g^* \right) + \frac{\bar{\rho}_g}{\gamma_g - \bar{\rho}_g} \left( \mathbb{E}p_g^* - \underline{p}_g \right). \quad (30)$$

The profit function

$$\pi_g(p_g) = \frac{1}{2}\xi_g \left(p_g - \underline{p}_g\right)^2 \quad (31)$$

implies that the expected gain from information acquisition per unit of ownership is

$$v_g = \frac{1}{2}\xi_g \text{Var}(\bar{p}_g) = \frac{1}{2}\xi_g \left(\frac{\gamma_g}{\gamma_g - \bar{\rho}_g - \bar{\omega}_g}\right)^2 \text{Var}(p_g^*), \quad (32)$$

where  $\gamma_g \geq \bar{\rho}_g + \bar{\omega}_g \left(\mathbb{E}p_g^* - \underline{p}_g\right) / \left(\underline{p}_g^* - \underline{p}_g\right)$  ensures that no value  $p_g < \underline{p}_g$  is in the support of  $\bar{p}_g$ .

The problem is well-behaved as long as that the slope of the aggregate demand function is sufficiently large compared to that of the domestic supply function. Under this regularity condition, we can establish the following result.

**Proposition 4** *Let sector- $g$  producers represent a fraction  $\alpha_g > 0$  of the total population and have homogeneous factor ownership  $\kappa_g^i = 1/(\alpha_g N) > 0$ . Let an investment  $\iota_g^i \geq 0$  in information acquisition allow agent  $i$  to be informed about sector  $g$  with probability*

$$\theta_g(\iota_g^i) = \underline{\theta}_g + (1 - \underline{\theta}_g) \phi_g(\iota_g^i),$$

with  $\underline{\theta}_g \in [0, 1)$ ,  $\phi_g'(\iota_g) > 0$  and  $\phi_g''(\iota_g) < 0$  for all  $\iota_g \in \mathbb{R}^+$ ,  $\phi_g(0) = 0$ ,  $\lim_{\iota_g \rightarrow \infty} \phi_g(\iota_g) = 1$ , and the Inada conditions  $\lim_{\iota_g \rightarrow 0} \phi_g'(\iota_g) = \infty$  and  $\lim_{\iota_g \rightarrow \infty} \phi_g(\iota_g) = 0$ .

Then there exists a threshold  $\underline{\gamma}_g > 0$  such that for all  $\gamma_g > \underline{\gamma}_g$ , in equilibrium all consumers with  $\kappa_g^i = 0$  invest  $\iota_g^i = 0$  and are informed with probability  $\underline{\theta}_g \in [0, 1)$ , while all producers with  $\kappa_g^i > 0$  invest  $\hat{\iota}_g > 0$  and are informed with probability  $\hat{\theta}_g \in (\underline{\theta}_g, 1)$ . The average protectionist bias in enacted policy is

$$\mathbb{E}(p_g - p_g^*) = \frac{\rho_g}{\gamma_g - \rho_g} \left(\mathbb{E}p_g^* - \underline{p}_g\right), \text{ with } \rho_g = \frac{1 - \alpha_g}{\alpha_g + \underline{\theta}_g / (\hat{\theta}_g - \underline{\theta}_g)} \in \left(0, \underline{\gamma}_g\right].$$

Producers are more informed and the average protectionist bias is greater in sectors with more volatile world prices, greater price sensitivity, and fewer producers: the lowest and highest equilibrium values of  $\hat{\theta}_g$  and  $\mathbb{E}(p_g - p_g^*)$  are increasing in  $\text{Var}(p_g^*)$  and  $\xi_g$  and decreasing in  $\alpha_g$ . The average protectionist bias is greater in sectors for which public information is scarcer: the lowest and highest equilibrium values of  $\mathbb{E}(p_g - p_g^*)$  are decreasing in  $\underline{\theta}_g$ .

Investment in information acquisition with a smooth cost function has the potential for multiple equilibria, because the expected value of information to each producer depends ambiguously on his beliefs about other producers' information. A unique equilibrium is ensured if  $\alpha_g + \underline{\theta}_g \geq 1$ , which implies that price volatility decreases monotonically as politicians expect producers to be more informed ( $\partial(\bar{\rho}_g + \bar{\omega}_g) / \partial \hat{\theta}_g < 0$ ).

Proposition 4 establishes comparative statics that apply both locally to a unique equilibrium and globally for a set of multiple equilibria, following Milgrom and Roberts's (1994) approach to equilibrium comparisons. The endogenous asymmetry between producers and consumers always leads to an anti-trade bias in policy. The distortion is greater when the incentives for factor owners to acquire information are sharper. Stronger incentives emerge when prices are more variable on international markets, since this volatility is reflected in domestic prices as well. Equally intuitive is that producers are keener on accurate price forecasts when quantities supplied and demanded are more sensitive to price movements. As usual, industries with fewer insiders also receive greater protection. In this setting, this occurs not only because producers are keener on tariffs, but also because they correctly expect greater volatility in the prices that politicians set in response to their preferences. Finally, the proposition confirms again the finding that public information reduces protectionist distortions. Cross-industry evidence supporting this prediction is provided in the next section.

Costly learning generates asymmetric knowledge of policy proposals if and only if the expected policy choices influence ex ante private investments in production capacity. Both in Proposition 3 and in Proposition 4, producers choose to learn about platforms because parties propose trade policies that distort economic activity. If instead politicians offered redistribution through non-distortive lump-sum transfers targeted towards certain groups, there would be no differential incentives for the beneficiaries to learn about them in advance. The model thus provides a microfoundation for Magee, Brock, and Young's (1989) suggestion that trade policy is preferred to efficient transfers for reasons of "optimal obfuscation." More exactly, indirect transfers have the advantage of attracting their recipients' attention, rather than being more obscure than direct hand-outs for the voters who bear their cost. The emphasis on the beneficiaries' information instead of the victims' allows the theory to account for the political expediency of transfers that are unambiguously inefficient. This provides a more intuitive fit to trade policy than a model in which special interests can obtain disguised favors because taxpayers are unsure if an intervention is in fact efficient (Coate and Morris 1995).

Endogenous asymmetric information thus suggests an explanation to both the empirical regularities that Rodrik (1995) presents as the two main puzzles in the political economy of trade policy. First, deviations from free trade take the form of import tariffs and export subsidies, rather than import subsidies and export taxes, because information about a sector is acquired disproportionately by producers. Second, income is redistributed via inefficient policy instruments because the promised (or threatened) distortion itself is the source of the knowledge asymmetry that endows producers with political influence.

## V. The Dracula Effect across Industries

The theoretical analysis above yields a crucial, robust empirical implication. Protectionism results from endogenous information heterogeneity favoring producers over consumers, which induces politicians to support policies redistributing from the latter to the former. As a consequence, protection declines when knowledge about policy choices is more widespread, reducing the scope for asymmetry and empowering the average citizen relative to insiders with superior information. The theory thus explains the cross-country evidence of a Dracula effect presented in the Introduction, and yields two related predictions across sectors. First, the Dracula effect operates at the industry level too: heightened media scrutiny of an sector leads to lower barriers to trade. Second, trade policy follows a modified Ramsey rule: distortions respond to their social cost, so they are lower for sectors with higher import demand elasticity and higher import penetration. Using industry-level data, a simple linear specification can be used to test if the empirical evidence is consistent with my model, and in particular if the data support the prediction that greater media coverage induces more efficient trade policy. The relationship to be estimated is

$$\frac{p_g - p_g^*}{p_g} = \beta_0 + \beta_1 \frac{x_g}{m_g} \left| \frac{m_g}{p_g m'_g} \right| + \beta_2 \theta_g \frac{x_g}{m_g} \left| \frac{m_g}{p_g m'_g} \right| + \varepsilon_g, \quad (33)$$

where  $\varepsilon \sim N(0, \Sigma)$  is an additive error term. The testable predictions of the model are that  $\beta_0 = 0$  and most important that  $\beta_2 < 0$ .

Cross-sector data on protection in the United States are available for a sample of manufacturing industries in the year 1983. All empirical studies of U.S. trade policy inspired by Grossman and Helpman's (1994) lobbying model have used essentially the same sample (Goldberg and Maggi 1999; Gawande and Bandyopadhyay 2000; Eicher and Osang 2002; Matschke and Sherlund 2006; Mitra, Thomakos, and Ulubaşoğlu 2006; Bombardini 2008). The level of protection is measured by the coverage ratio for non-tariff barriers ( $\tau_g$ ), constructed by Gawande and Bandyopadhyay (2000) from the UNCTAD database on trade control measures, using the methodology detailed in Leamer (1990). The definition of non-tariff barriers includes price instruments such as anti-dumping duties, quantity instruments such as quotas and voluntary export restraints, and other instruments such as trade investigations. Gawande and Bandyopadhyay (2000) also provide estimates of the import demand elasticity ( $e_g \equiv |p_g m'_g / m_g|$ ) for each 3-digit SIC industry group, which are replicated for each component 4-digit industry. These derive from the original estimates by Shiells et al. (1986), purged of measurement error by means of the correction procedure described in Gawande (1997). Import penetration is computed as the ratio of the value of gross imports (c.i.f.) to the value of shipments (f.o.b.) from all domestic plants.<sup>3</sup> Net imports ( $m_g$ ) are provided in the NBER Trade Database (Feenstra

<sup>3</sup>In the regressions, the import penetration ratio is scaled by 10,000 for presentational convenience.

1996), and domestic output ( $x_g$ ) in the NBER-CES Manufacturing Industry Database (Bartelsman and Gray 1996).

In addition to existing industry data, I construct a measure of the level of public information based on coverage of a sector in the five major U.S. newspapers from 1980 to 1983. This approach is consistent with Graber's (1984) finding that at the time Americans predominantly acquired their knowledge of political news from reading the newspaper. Specifically, I exploit the ProQuest Historical Newspapers database, which archives the full text of the *Chicago Tribune*, *Los Angeles Times*, *New York Times*, *Wall Street Journal*, and *Washington Post*. From the articles published in these newspapers between 1980 and 1983, I select a sample of 10,246 documents containing keywords that denote coverage of trade policy in general. Then I use the official SIC title of each industry to generate another set of keywords that further restricts the search to articles covering the sector. With this procedure, described in greater detail in Appendix C, I derive an estimate of the number of newspaper articles providing information about each industry,  $a_g$ . Although these estimates are inevitably imprecise, it is reasonable to assume that when a search returns more articles conveying information about a sector the average reader is also more likely to receive such information from reading the newspaper. If for each document returned by the search there is probability  $\nu$  that the average reader is informed, the index of public information is

$$\underline{\theta}_g = 1 - (1 - \nu)^{a_g}. \quad (34)$$

In keeping with the simple linear formulation of equation 33, I do not attempt to treat  $\nu$  as a structural parameter to be estimated from the nonlinearities in the data. Instead, I assume a baseline value  $\nu = 0.01$ , and then confirm that the results are not sensitive to this parametrization.

Following the conventional usage in the literature, I take the coverage ratio as a linear proxy for the equivalent ad valorem tariff, and estimate equation 33 in the form

$$\frac{\tau_g}{1 + \tau_g} = \beta_0 + \beta_1 \frac{x_g}{e_g m_g} + \beta_2 \underline{\theta}_g \frac{x_g}{e_g m_g} + \varepsilon_g. \quad (35)$$

A negative sign of  $\beta_2$  constitutes evidence of the operation of the Dracula effect at the industry level.

I estimate a Tobit model with two-sided censoring. This is necessary because, by construction, a non-tariff barrier coverage ratio is an index  $\tau_g \in [0, 1]$ . In fact, only half of the sample has values of  $\tau_g$  interior to the unit interval. On the contrary, tariff rates and protection in the theoretical model are unbounded, and admit values above 100% and below zero.

A second concern is that the right-hand side variables are theoretically known to be

endogenous, because import penetration depends on domestic prices. Furthermore, newspaper coverage could intuitively be endogenous as well. In particular, a natural conjecture is that higher levels of protection may be more newsworthy, generating reverse causation whose sign counteracts that of the hypothesized direct effect from media attention to policy choices. As a consequence, each of the regressors is treated as endogenous, as in previous empirical studies of trade policy based on lobbying. The model is estimated with Newey’s (1987) efficient two-step IV Tobit estimator

Following the practice of existing tests of the protection for sale model, I use as instruments measures of factor composition, market structure, and unionization. Capital intensity is measured as the ratio of the total real capital stock to total employment in the industry, from the NBER Manufacturing Industry Database. The breakdown of the workforce by skill level is provided by Gawande and Bandyopadhyay (2000) who also report concentration indices for each industry and for the average downstream purchaser of its output. Unionization rates are from the NBER Trade and Immigration Database (Abowd 1991).

My sample is composed of 175 manufacturing industries, defined at the four-digit level of the 1972 SIC classification, for which trade-policy data are available and a reliable measure of newspaper coverage can be constructed. The descriptive statistics are given in Table 2, and Table 3 presents the estimation results.

The baseline equation in the first column finds evidence for the Dracula effect: the estimate of  $\beta_2$  is negative as predicted, and quite precisely estimated. Moreover, the Wald test forcefully rejects the null hypothesis that all coefficients are identically nil. The coefficient is also economically significant: at the sample mean of  $\tau_g$  and  $x_g/(e_g m_g)$ , as the probability  $\underline{\theta}_g$  that the average newspaper reader is informed rises by one percentage point, the non-tariff barrier coverage ratio  $\tau_g$  falls by 1.57 percentage points. Column 2 confirms the finding, and additionally provides support for the Ramsey-rule specification implied by the theory. The level of public information ( $\underline{\theta}_g$ ) is included as a separate (endogenous) second-stage variable, in addition to its interaction with the elasticity term ( $x_g/(e_g m_g)$ ). The additional regressor is not significant, and indeed in this specification the significance of the negative estimate of  $\beta_2$  rises above the 1% confidence level, while  $\beta_0$  becomes insignificant at the 10% level, according to the predictions of the model. Columns 3 and 4 assess the robustness of the specification to the inclusion of an indicator for political organization, which has been the focus of the literature on lobbying for protection.  $I_g$  is a dummy variable constructed by Gawande and Bandyopadhyay (2000) to classify which industries are politically organized to lobby for protection. Again the results are unchanged by the inclusion of the additional variable, which is not independently significant in this regression.<sup>4</sup>

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<sup>4</sup>Gawande and Bandyopadhyay (2000) not only use a different regression model, but can also exploit a larger sample of 242 industries for which data other than newspaper coverage are available.



Finally, Table 4 presents a sensitivity analysis that considers different definitions of  $\underline{\theta}_g$ . The results are qualitatively independent of the choice of a value of  $\nu$ : little change is induced by variation in the range from 0.125% to 8%. A parameter-free specification of the measure of public information also preserves the same results: the last column is based on the alternative definition  $\underline{\theta}_g = \log a_g$ . This highlights that empirical evidence is consistent with the Dracula effect as predicted by the model, subject only to the assumption that public information reacts to proportional, rather than absolute, increases in the amount of media coverage for a sector.

## VI. Extensions

### VI.A. Information Management by Lobbies

My model has shown that special interests can acquire political influence without organizing into lobbies, thanks to the power of individual agents' uncoordinated policy knowledge. This does not mean that organized interest groups are irrelevant for policy formation. On the contrary, the very mechanism of endogenous information heterogeneity presented above highlights a new strategy they can exploit to influence the political process. In addition to offering pecuniary contributions to politicians, lobbies can gain power by increasing the flow of information to their members. Empirically, both are major activities of organized lobbies (Schlozman and Tierney 1986, Grossman and Helpman 2001). Murphy and Shleifer (2004) suggest in particular that entrepreneurs purposefully construct social networks to derive political benefits from their operation. In the formal setting of Proposition 2, one of the most intuitive determinants of the size of workers' social networks is indeed the presence of organizations such as trade unions and industry associations.

Suppose that the exogenous arrival of information is homogeneous across parties ( $\theta_g^L = \theta_g^R = \underline{\theta}_g$ ) and that factor ownership among group members follows a Pareto distribution with shape parameter  $\eta_g > 1$  (i.e., Gini coefficient  $(2\eta_g - 1)^{-1}$ ). The operation of industry lobbies is then characterized by the following result.

**Proposition 5** *Let all sector- $g$  producers be represented by an organized interest group. The group controls access to a network that links a continuum of workers, and thus provides all available information about the sector  $(p_g^L, p_g^R)$ .*

*The group chooses to connect to the network all agents whose ownership share of sector- $g$  specific capital is more than  $\lambda_g$  times the population average. For  $\underline{\theta}_g < \alpha_g$  there exists a threshold  $\bar{\eta}_g(\underline{\theta}_g, \alpha_g) > 1$ , with  $\partial \bar{\eta}_g / \partial \underline{\theta}_g < 0$  and  $\partial \bar{\eta}_g / \partial \alpha_g > 0$ , such that for all  $\eta_g \leq \bar{\eta}_g(\underline{\theta}_g, \alpha_g)$  the interest group obtains its preferred level of protection. If*

$\eta_g > \bar{\eta}_g(\underline{\theta}_g, \alpha_g)$  or  $\underline{\theta}_g \geq \alpha_g$ , the group can obtain a maximum price described by

$$\frac{p_g - p_g^*}{p_g} = [\lambda_g(\underline{\theta}_g, \alpha_g, \eta_g) - 1] \frac{x_g(p_g)}{|m_g(p_g)|} \frac{|m_g(p_g)|}{|m'_g(p_g)| p_g},$$

for an optimal threshold  $\lambda_g(\underline{\theta}_g, \alpha_g, \eta_g) \geq [\underline{\theta}_g + (1 - \underline{\theta}_g) \alpha_g]^{-1} > 1$  such that  $\partial\lambda/\partial\underline{\theta}_g \leq 0$ ,  $\partial\lambda/\partial\alpha_g \leq 0$  and  $\partial\lambda_g/\partial\eta_g \leq 0$ .

By acting as the gatekeeper for a capillary social network, the interest group controls the flow of information about its sector. Its optimal strategy excludes from the network those group members who are not sufficiently keen on protection, due to their low level of factor ownership. This ensures that the political debate on protection for the sector is dominated by producer interests, so that politicians are going to support high tariffs. At a minimum, if all industry- $g$  producers are included in the network the equilibrium policy proposal is the same as in Proposition 3. When the distribution of factor ownership is sufficiently skewed, and precisely for  $\eta_g < 1 + \alpha_g / [\underline{\theta}_g (1 - \alpha_g)]$ , controlling the access to information gives the interest group even more political power than the members would obtain by independently acquiring complete information. The optimal network does not include all the owners of the specific factor. The comparative statics then hold with strict inequality: the optimal discrimination is more restrictive and more effective when public information is scarce (low  $\underline{\theta}_g$ ), factor ownership is heavily concentrated (low  $\eta_g$ ), and the interest group is small (low  $\alpha_g$ ). These results correspond to intuitive changes in the potential to leverage information asymmetry. When the opaqueness of the policy environment dominates the extremism of the group's preferences ( $\underline{\theta}_g < \alpha_g$ : group size is a measure of the alignment of consumers' and producers' preferences) a sufficiently high degree of concentration enables producer interests to succeed in controlling entirely the policy decisions affecting their industry, by exploiting the joint asymmetries in information availability and factor ownership. The interest group then induces its preferred protectionist policy, described by equation 14.

Proposition 5 shows that by managing information a special-interest group can obtain for its sector a structure of protection analogous to the one it could solicit by offering cash contributions to politicians. The simultaneous recourse to these two channels of lobbying helps explain why U.S. trade policy appears to provide large industry profits (and large deadweight losses) for remarkably small equilibrium contributions by industry lobbies (Gawande and Bandyopadhyay 2000; Gawande and Krishna 2003). Information management can be an especially powerful strategy for a special-interest group. If maintaining a social network is either inexpensive or independently useful for other purposes than gaining political influence, its obvious appeal is that it yields benefits that need not be shared with politicians.

These results fit within a broader literature that has highlighted the ability of interest

groups to influence policies by disseminating information. Previous studies have analyzed in particular the behavior of lobbyists strategically conveying to politicians their private knowledge about the welfare outcomes of policy decisions (Potters and van Windend 1992; Lohmann 1993, 1995; Austen-Smith 1995; Ball 1995; Krishna and Morgan 2001; Battaglini 2002). Proposition 5 highlights the additional role of communication within the group itself. Not only can an informed lobbyist benefit from transmitting information to the agents he represents (Grossman and Helpman 2001, ch. 6); group organization is beneficial even when knowledge is dispersed across members instead of concentrated among the leaders. Extending Murphy and Shleifer's (2004) insights on social entrepreneurship, the role of the lobby is to create and manage a network that allows rank-and-file members to share their individual information.

## VI.B. Party Divergence

My analysis has focused, both theoretically and empirically, on the cross-sector structure of trade policy. Another notable feature of the real-world political landscape is the presence of sharp partisan divisions. In American politics, the tariff defined party differences for more than a hundred years, from the early nineteenth century to the Smoot-Hawley Act of 1930. First the Whigs and then the Republicans were identified with support for protective tariffs, which the Democratic Party naturally came to oppose. These division resulted in sharp swings in tariff rates as parties alternated in power (Epstein and O'Halloran 1996). Although no longer as acute, partisan divisions over protectionism persist both in the United States and around the world. Dutt and Mitra (2005) document a significant influence of the partisan ideology of governments on the cross-national variation in protection. The differences in the rhetoric between right-wing and left-wing parties are even starker (Milner and Judkins 2004).

The most common explanation for divergence is that different parties represent owners of different factors: specifically, the left represents labor and the right capital. A Heckscher-Ohlin model then predicts that protectionism should be favoured by the party representing the domestically scarce factor, which in the United States was capital in the nineteenth century but labor in the second half of the twentieth (Rogowski 1987; Keech and Pak 1995; Milner and Judkins 2004; Dutt and Mitra 2005). However, Grossman and Helpman (1996) show that such an identification between one factor and one party should not occur if politicians are influenced only by the contributions offered by organized lobbies. Political action committees can and do support politicians of either party, targeting their contributions towards incumbents, and even towards winners who defeated a loser they previously supported (Magelby and Nelson 1990).

Instead, the present model of asymmetric information bears out the notion that party position reflect the different opinions of the respective partisan audiences (Glaeser,

Ponzetto and Shapiro 2005). It is consistent with the presence of rational partisanship (Alesina 1987; Alesina and Rosenthal 1995): changes in the identity of the ruling party have real economic consequences because political parties are not mere conduits used by special-interest groups to exercise their influence, but independent determinants of policy variation (O'Halloran 1994; Brady, Goldstein and Kessler 2002). Voters' ideological preferences may induce them to pay more attention to the proposals of one of the parties, and therefore to become more influential in the determination of its policy choices than in those of its opponent.

An investigation of the determinants of voters' partisanship is beyond the scope of this paper. Party affiliation may simply derive from ideological cleavages inherited from the past (Lipset and Rokkan 1967). However, Proposition 1 points to a suggestive explanation of the changes in the trade-policy stances of American political parties during the twentieth century. After 1970, Republicans and Democrats switched their historic roles, the former becoming the more explicit advocates of free trade (Keech and Pak 1995). Since the 1970s, right-wing identification in the United States has also become increasingly correlated with religious belief (Layman 1997, 1999, 2001). Today, individual religiosity is arguably a better predictor of Republican partisanship than income (Fiorina 2005). On the other hand, the Democratic party has retained its association with organized labour (Dark 2001), and union members remain more likely to affiliate with the Democrats (Freeman 2003). If social conservatism is uncorrelated with ownership of specific factors, the model implies that Republicans should present a free-trade platform, because the preferences of their partisan audience are representative of the whole electorate in so far as trade policy is concerned. On the other hand, Democratic candidates should veer towards protectionism to please workers with industry-specific human capital. This sketch is consistent with political platforms for the 2008 U.S. presidential election. The Republican ran as a free-trader, emphasizing the negative consequences of protection for consumers: "McCain will lower barriers to trade [...] to control the rising cost of living that hurts our families.". Instead the Democrat sounded a skeptical note on free-trade agreements, focusing on the negative effect of foreign competition on workers: "Obama will work [...] to fix NAFTA so that it works for American workers."

## VII. Conclusion

This paper has presented a model of trade policy as the outcome of an electoral competition in which office-seeking politicians seek the support of heterogeneously informed voters. I have found that in equilibrium each policy proposal maximizes a political support function weighing every person by her likelihood of being informed about the proposal itself. The power of special interests stems from individuals' superior knowledge. This microfoundation explains why welfare-reducing protectionist measures are popular with

voters, and why equilibrium policy can be Pareto inefficient, as the influence of each group is concentrated on a specific policy choice.

I have shown that the overall protectionist bias of trade distortions results from an endogenous distribution of information that favors producers over consumers, sector by sector. I have highlighted two sources of this systematic asymmetry. It arises from workplace interactions that provide agents with knowledge of the industry they work in. It also emerges from costly learning. Rational voters are unwilling to spend resources to gain political knowledge as such. Producers, however, need to anticipate prices to optimize their production decisions. In equilibrium, they acquire greater knowledge of proposed tariffs for their own industry than the average consumer. This mechanism can explain not only why trade policy redistributes from consumers to producers, but also why politicians redistribute through price distortion rather than via efficient transfers, which producers have no need to forecast.

Empirically, my theory predicts that protectionism should decline when more public information is available. I have found support for this prediction in cross-country data on tariff rates and television ownership, and I have tested the model with cross-industry data for the United States, constructing a measure of newspaper coverage of trade policy for each sector. The empirical evidence accords with the implications of the model: in particular, greater media scrutiny of a sector is associated with a lower level of protection.

The results obtained in this paper represent a first step in the study of voters' heterogeneous knowledge as a driving force of the political economy of protection. Many sources of asymmetry remain to be thoroughly explored. I have briefly shown how organized lobbies can exploit social networks to control the flow of political information and thus acquire political influence without offering politicians pecuniary contributions. In addition, I have suggested how the framework can explain the presence of partisan divisions over trade policy. Future research could focus on the mechanisms that underlie preferential information channels linking some interest groups to a political party.

# A Proofs

## A.1. Proof of Proposition 1

From Lemma 1, an optimal policy proposal  $p_g^P$  interior to the feasible set  $\mathcal{F}$  is characterized by the first-order condition

$$\sum_{j=1}^J \alpha^j \theta_g^{P,j} \frac{\partial U_g}{\partial p_g} (p_g^P, \kappa_g^j) = 0. \quad (\text{A1})$$

Substituting equation 10,

$$\sum_{j=1}^J \alpha^j \theta_g^{P,j} \left[ \left( \kappa_g^j - \frac{1}{N} \right) x_g(p_g^P) + \frac{1}{N} (p_g^P - p^*) m'_g(p_g^P) \right] = 0, \quad (\text{A2})$$

and rearranging,

$$p_g^P - p^* = - \left( N \frac{\sum_{j=1}^J \alpha^j \theta_g^{P,j} \kappa_g^j}{\sum_{j=1}^J \alpha^j \theta_g^{P,j}} - 1 \right) \frac{x_g(p_g^P)}{m'_g(p_g^P)}, \quad (\text{A3})$$

such that by the second-order condition for a maximum  $p_g - p^*$  is increasing with the term in brackets.

Recalling that net imports are monotone decreasing in the domestic price of the good ( $m'_g(p_g) < 0$ ) and that the shares of factor ownership add up to one over the whole population ( $N \sum_{j=1}^J \alpha^j \kappa_g^j = 1$ ), we can rewrite

$$\frac{p_g^P - p^*}{p_g^P} = \frac{\sum_{j=1}^J \alpha^j \theta_g^{P,j} \kappa_g^j - \sum_{j=1}^J \alpha^j \theta_g^{P,j} \sum_{j=1}^J \alpha^j \kappa_g^j}{\sum_{j=1}^J \alpha^j \theta_g^{P,j} \sum_{j=1}^J \alpha^j \kappa_g^j} \frac{x_g(p_g^P)}{|m'_g(p_g^P)|} \frac{|m_g(p_g^P)|}{|m'_g(p_g^P)| p_g^P}, \quad (\text{A4})$$

and denoting more compactly the moments of the population distribution of factor ownership and the probability of information acquisition,

$$\frac{p_g^P - p^*}{p_g^P} = \frac{\text{Cov}(\theta_g^P, \kappa_g)}{\mathbb{E}\theta_g^P \mathbb{E}\kappa_g} \frac{x_g(p_g^P)}{|m'_g(p_g^P)|} \frac{|m_g(p_g^P)|}{|m'_g(p_g^P)| p_g^P}. \quad (\text{A5})$$

## A.2. Proof of Proposition 2

The eventual information structure is  $\theta_g^{P,i} = \underline{\theta}_g^P$  for all agents who are not employed in sector  $g$ , and  $\theta_g^{P,i} = \hat{\theta}_g^P$  for sector- $g$  employees, with

$$\hat{\theta}_g^P = 1 - (1 - \underline{\theta}_g^P)^{n_g} \in (\underline{\theta}_g^P, 1), \quad (\text{A6})$$

such that

$$\frac{\partial \hat{\theta}_g^P}{\partial n_g} = - (1 - \underline{\theta}_g^P)^{n_g} \log(1 - \underline{\theta}_g^P) > 0 \quad (\text{A7})$$

and

$$\frac{\partial \hat{\theta}_g^P}{\partial \underline{\theta}_g^P} = n_g (1 - \underline{\theta}_g^P)^{n_g - 1} > 0. \quad (\text{A8})$$

Hence Proposition 2 implies an equilibrium structure of protection described by

$$p_g^P - p_g^* = \frac{1 - \alpha_g}{\alpha_g + \Theta_g} \frac{x_g(p_g^P)}{|m'_g(p_g^P)|} > 0, \quad (\text{A9})$$

with

$$\Theta_g^P = \frac{\underline{\theta}_g^P}{\hat{\theta}_g^P - \underline{\theta}_g^P} \quad (\text{A10})$$

such that

$$\frac{\partial \Theta_g^P}{\partial n_g} = - \frac{\underline{\theta}_g^P}{\left(\hat{\theta}_g^P - \underline{\theta}_g^P\right)^2} \frac{\partial \hat{\theta}_g^P}{\partial n_g} < 0 \quad (\text{A11})$$

and

$$\begin{aligned} \frac{\partial \Theta_g^P}{\partial \underline{\theta}_g^P} &= \frac{\hat{\theta}_g^P}{\left(\hat{\theta}_g^P - \underline{\theta}_g^P\right)^2} - \frac{\underline{\theta}_g^P}{\left(\hat{\theta}_g^P - \underline{\theta}_g^P\right)^2} \frac{\partial \hat{\theta}_g^P}{\partial \underline{\theta}_g^P} = \\ &= - \frac{1}{\left(\hat{\theta}_g^P - \underline{\theta}_g^P\right)^2} \left[ \left(1 + \frac{\underline{\theta}_g^P}{1 - \underline{\theta}_g^P} n_g\right) (1 - \underline{\theta}_g^P)^{n_g} - 1 \right] > 0 \end{aligned} \quad (\text{A12})$$

for all  $n_g > 1$ .

By the second-order condition for a maximum,  $p_g^P$  is increasing in  $(1 - \alpha_g) / (\alpha_g + \Theta_g)$ , and therefore  $\partial p_g^P / \partial n_g > 0$  and  $\partial p_g^P / \partial \underline{\theta}_g^P < 0$ .

### A.3. Proof of Lemma 2

Let  $\mathcal{G} = \{1, \dots, G\}$  be the set of all sectors, and  $2^{\mathcal{G}}$  its power set. Let  $\Gamma^i \in 2^{\mathcal{G}}$  be the set of sectors for which an agent  $i$  has received information, which fully describes the agent's information. Agent  $i$  with information  $\Gamma^i$  and factor ownership  $\kappa^i$  votes for party  $R$  if his idiosyncratic partisanship shock has a realization

$$\psi^i < \sum_g \left\{ \begin{aligned} &(\mathbb{E}_{\Gamma^i} p_g^R - \mathbb{E}_{\Gamma^i} p_g^L) \left[ \kappa_g^i \pi'_g(\mathbb{E}_{\Gamma^i} p_g) - \frac{1}{N} \mathbb{E}_{\Gamma^i} x_g \right] \\ &+ \mathbb{E}_{\Gamma^i} \left[ (p_g^R - p_g^*) c_g(p_g^R) + s_g(p_g^R) - (p_g^L - p_g^*) c_g(p_g^L) - s_g(p_g^L) \right] \end{aligned} \right\} - \Psi. \quad (\text{A13})$$

If agents of type  $j$  follow the information-acquisition strategy  $\bar{\tau}(\kappa^j)$ , the fraction having information  $\Gamma$  is

$$\bar{\theta}_\Gamma^j = \prod_{g \in \Gamma} \bar{\theta}_g^j \prod_{g \notin \Gamma} (1 - \bar{\theta}_g^j) \quad \text{for all } \Gamma \in 2^{\mathcal{G}}, \quad (\text{A14})$$

such that  $\sum_{\Gamma \in 2^{\mathcal{G}}} \bar{\theta}_\Gamma^j = 1$ . Given the independent realizations of the uniform idiosyncratic

shock  $\psi^i$ , the fraction of citizens of type  $j$  who vote for party  $R$  equals

$$\begin{aligned} \phi_R^j &= \frac{1}{2} - \frac{\Psi}{2\bar{\psi}} \\ &+ \frac{1}{2\bar{\psi}} \sum_{\Gamma \in 2^{\mathcal{G}}} \bar{\theta}_\Gamma^j \sum_g \left\{ \begin{aligned} &(\mathbb{E}_\Gamma p_g^R - \mathbb{E}_\Gamma p_g^L) \left[ \kappa_g^j \pi'_g(\mathbb{E}_\Gamma p_g) - \frac{1}{N} \mathbb{E}_\Gamma x_g \right] \\ &+ \mathbb{E}_\Gamma \left[ (p_g^R - p_g^*) c_g(p_g^R) + s_g(p_g^R) - (p_g^L - p_g^*) c_g(p_g^L) - s_g(p_g^L) \right] \end{aligned} \right\}, \end{aligned} \quad (\text{A15})$$

as a function of the common shock  $\Psi$ . For all sectors  $g \notin \Gamma$ , a voter retains the original belief that the two parties make identical proposals. Thus party  $R$  wins the election if the aggregate shock is

$$\Psi < \sum_{j=1}^I \alpha^j \sum_{\Gamma \in 2^{\mathcal{G}}} \bar{\theta}_\Gamma^j \sum_{g \in \Gamma} \left\{ \begin{aligned} &(p_g^R - p_g^L) \left[ \kappa_g^j \pi'_g(\mathbb{E}_\Gamma p_g) - \frac{1}{N} \mathbb{E}_\Gamma x_g \right] \\ &+ (p_g^R - p_g^*) c_g(p_g^R) + s_g(p_g^R) - (p_g^L - p_g^*) c_g(p_g^L) - s_g(p_g^L) \end{aligned} \right\}. \quad (\text{A16})$$

For each good  $g$ , the first-order condition for party  $R$ 's optimization problem is

$$\sum_{j=1}^I \alpha^j \sum_{\Gamma \in 2^{\mathcal{G}} | g \in \Gamma} \bar{\theta}_\Gamma^j \left\{ \begin{aligned} &\kappa_g^j \pi'_g(\mathbb{E}_\Gamma p_g) - \frac{1}{N} \mathbb{E}_\Gamma x_g + (p_g^R - p_g^*) c'_g(p_g^R) \\ &+ \sum_{h \in \Gamma} (p_h^R - p_h^L) \left[ \kappa_h^j \pi''_h(\mathbb{E}_\Gamma p_h) \frac{\partial \mathbb{E}_\Gamma p_h}{\partial p_g^R} - \frac{1}{N} \frac{\partial \mathbb{E}_\Gamma x_h}{\partial p_g^R} \right] \end{aligned} \right\} = 0, \quad (\text{A17})$$

while the one for party  $L$  is

$$\sum_{j=1}^I \alpha^j \sum_{\Gamma \in 2^{\mathcal{G}} | g \in \Gamma} \bar{\theta}_\Gamma^j \left\{ \begin{aligned} &\kappa_g^j \pi'_g(\mathbb{E}_\Gamma p_g) - \frac{1}{N} \mathbb{E}_\Gamma x_g + (p_g^L - p_g^*) c'_g(p_g^L) \\ &+ \sum_{h \in \Gamma} (p_h^R - p_h^L) \left[ \kappa_h^j \pi''_h(\mathbb{E}_\Gamma p_h) \frac{\partial \mathbb{E}_\Gamma p_h}{\partial p_g^L} - \frac{1}{N} \frac{\partial \mathbb{E}_\Gamma x_h}{\partial p_g^L} \right] \end{aligned} \right\} = 0. \quad (\text{A18})$$

In an interior, symmetric equilibrium, both parties propose  $p_g$  such that

$$\sum_{j=1}^I \alpha^j \bar{\theta}_g^j \left[ \kappa_g^j \pi'_g(p_g) - \frac{1}{N} \mathbb{E}_\Gamma x_g + (p_g - p_g^*) c'_g(p_g) \right] = 0. \quad (\text{A19})$$

Given shared beliefs  $\bar{\theta}^j$  about everyone's information acquisition,

$$\mathbb{E}_\Gamma x_g = N \sum_{j=1}^I \alpha^j \kappa^j \left[ \bar{\theta}_g^j \pi'_g(p_g) + \left(1 - \bar{\theta}_g^j\right) \pi'_g(\mathbb{E} \bar{p}_g) \right] \text{ for all } \Gamma \in 2^{\mathcal{G}} \text{ such that } g \in \Gamma. \quad (\text{A20})$$

Thus an interior and symmetric equilibrium is uniquely defined by

$$\frac{\left(1 - \sum_{j=1}^I \alpha^j \bar{\theta}_g^j\right) \sum_{j=1}^I \alpha^j \bar{\theta}_g^j \kappa_g^j}{\sum_{j=1}^I \alpha^j \bar{\theta}_g^j} \pi'_g(p_g) + \left( \sum_{j=1}^I \alpha^j \bar{\theta}_g^j \kappa_g^j - \frac{1}{N} \right) \pi'_g(\mathbb{E} \bar{p}_g) + (p_g - p_g^*) c'_g(p_g) = 0, \quad (\text{A21})$$

which can be rewritten

$$\left[ \frac{Cov(\kappa_g, \bar{\theta}_g)}{\mathbb{E} \kappa_g \mathbb{E} \bar{\theta}_g} + \bar{\omega}_g \right] \pi'_g(p_g) - \bar{\omega}_g \pi'_g(\mathbb{E} \bar{p}_g) + (p_g - p_g^*) N c'_g(p_g) = 0, \quad (\text{A22})$$



and also

$$\frac{p_g - p_g^*}{p_g} = \left\{ \frac{Cov(\kappa_g, \bar{\theta}_g)}{\mathbb{E}\kappa_g \mathbb{E}\bar{\theta}_g} + \bar{\omega}_g \left[ 1 - \frac{x_g(\mathbb{E}\bar{p}_g)}{x_g(p_g)} \right] \right\} \frac{x_g(p_g)}{|m_g(p_g)|} \frac{|m_g(p_g)|}{|\tilde{m}'_g(p_g)| p_g}. \quad (\text{A23})$$

#### A.4. Proof of Proposition 3

For any  $\hat{l}_g > 0$ , agents with  $\kappa_g^i = 0$  choose  $l_g^i = 0$  and are informed with exogenous probability  $\underline{\theta}_g$ , since they derive no utility from acquiring information.

All agents with  $\kappa_g^i > 0$  strictly prefer to acquire perfect knowledge if

$$\hat{l}_g < (1 - \underline{\theta}_g) \underline{\kappa}_g [\mathbb{E}\pi_g(\bar{p}_g) - \pi_g(\mathbb{E}\bar{p}_g)]. \quad (\text{A24})$$

Rational expectations  $\bar{p}_g$  cannot be deterministic: lemma 2 establishes that  $p_g$  varies with  $p_g^*$  regardless of the politicians' beliefs about voters' information. Thus every candidate equilibrium is associated with a positive value of  $v_g = \mathbb{E}\pi_g(\bar{p}_g) - \pi_g(\mathbb{E}\bar{p}_g)$ . For sufficiently low but strictly positive values of  $\hat{l}_g$ , the unique equilibrium has  $\kappa_g^i > 0 \Leftrightarrow \bar{\theta}_g^i = 1$ . Then

$$\frac{Cov(\kappa_g, \bar{\theta}_g)}{\mathbb{E}\kappa_g \mathbb{E}\bar{\theta}_g} = \frac{1 - \alpha_g}{\alpha_g + \underline{\theta}_g / (1 - \underline{\theta}_g)} \text{ and } \bar{\omega}_g = 0. \quad (\text{A25})$$

#### A.5. Proof of Proposition 4

All agents with  $\kappa_g^i = 0$  make no investment and have exogenous information  $\theta_g^i = \underline{\theta}_g$ . All agents with  $\kappa_g^i = 1/(\alpha_g N)$  make an identical investment

$$l_g^i = \phi_g'^{-1} \left( \frac{\alpha_g N}{(1 - \underline{\theta}_g) v_g} \right) \quad (\text{A26})$$

and thus acquire information with probability

$$\theta_g^i = \underline{\theta}_g + (1 - \underline{\theta}_g) \phi_g \left( \phi_g'^{-1} \left( \frac{2\alpha_g N}{(1 - \underline{\theta}_g) \xi_g Var(p_g^*)} \left( 1 - \frac{\bar{p}_g + \bar{\omega}_g}{\gamma_g} \right)^2 \right) \right), \quad (\text{A27})$$

provided that  $\gamma_g \geq \bar{p}_g + \bar{\omega}_g (\mathbb{E}p_g^* - \underline{p}_g) / (\underline{p}_g^* - \underline{p}_g)$ .

If producers are expected to acquire information with probability  $\hat{\theta}_g$  and consumers with probability  $\underline{\theta}_g$ , then

$$\bar{p}_g = \frac{1 - \alpha_g}{\alpha_g + \underline{\theta}_g / (\hat{\theta}_g - \underline{\theta}_g)} \text{ and } \bar{\omega}_g = 1 - \hat{\theta}_g. \quad (\text{A28})$$

For ease of notation, define

$$\Sigma_g = \frac{1}{2} \xi_g \mathbb{E}\kappa_g^i Var(p_g^*) > 0 \quad (\text{A29})$$

and

$$V_g \left( \hat{\theta}_g, \underline{\theta}_g, \alpha_g \right) = \frac{1 - \alpha_g}{\alpha_g + \underline{\theta}_g / \left( \hat{\theta}_g - \underline{\theta}_g \right)} + 1 - \hat{\theta}_g, \quad (\text{A30})$$

such that

$$\frac{\partial V_g}{\partial \alpha_g} = \frac{\partial \bar{\rho}_g}{\partial \alpha_g} = - \frac{\hat{\theta}_g \left( \hat{\theta}_g - \underline{\theta}_g \right)}{\left[ \alpha_g \hat{\theta}_g + (1 - \alpha_g) \underline{\theta}_g \right]^2} < 0, \quad (\text{A31})$$

$$\frac{\partial V_g}{\partial \underline{\theta}_g} = \frac{\partial \bar{\rho}_g}{\partial \underline{\theta}_g} = - \frac{\hat{\theta}_g (1 - \alpha_g)}{\left[ \alpha_g \hat{\theta}_g + (1 - \alpha_g) \underline{\theta}_g \right]^2} < 0, \quad (\text{A32})$$

and

$$\frac{\partial V_g}{\partial \hat{\theta}_g} = \frac{\partial \bar{\rho}_g}{\partial \hat{\theta}_g} - 1 = \frac{(1 - \alpha_g) \underline{\theta}_g}{\left[ \alpha_g \hat{\theta}_g + (1 - \alpha_g) \underline{\theta}_g \right]^2} - 1. \quad (\text{A33})$$

Given second-order beliefs that politicians expect  $\hat{\theta}_g$  and  $\underline{\theta}_g$ , producers' expected gain from information acquisition per unit of ownership equals

$$v_g = N \Sigma_g \left[ \frac{\gamma_g}{\gamma_g - V_g \left( \hat{\theta}_g, \underline{\theta}_g, \alpha_g \right)} \right]^2, \quad (\text{A34})$$

and their optimal probability of information acquisition is

$$\Phi_g \left( \hat{\theta}_g \right) = \underline{\theta}_g + (1 - \underline{\theta}_g) \phi_g \left( \phi_g'^{-1} \left( \frac{\alpha_g}{\Sigma_g (1 - \underline{\theta}_g)} \left[ 1 - \frac{V_g \left( \hat{\theta}_g, \underline{\theta}_g, \alpha_g \right)}{\gamma_g} \right]^2 \right) \right), \quad (\text{A35})$$

provided that

$$\gamma_g > V_g \left( \hat{\theta}_g, \underline{\theta}_g, \alpha_g \right) + (1 - \hat{\theta}_g) \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g}. \quad (\text{A36})$$

This condition is satisfied for all  $\hat{\theta}_g \in [\underline{\theta}_g, 1]$  if  $\gamma_g$  is greater than

$$\underline{\gamma}_g = \begin{cases} \frac{1 - \alpha_g}{\alpha_g + \underline{\theta}_g / (1 - \underline{\theta}_g)} & \text{if } \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g} \leq \frac{(1 - \alpha_g) \underline{\theta}_g}{\left[ \alpha_g (1 - \underline{\theta}_g) + \underline{\theta}_g \right]^2} \\ \frac{1}{\alpha_g} \left[ 1 - \sqrt{(1 - \alpha_g) \frac{\underline{\theta}_g}{\underline{p}_g^* - \underline{p}_g} \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g}} \right]^2 + \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g} & \text{if } \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g} \in \left[ \frac{(1 - \alpha_g) \underline{\theta}_g}{\left[ \alpha_g (1 - \underline{\theta}_g) + \underline{\theta}_g \right]^2}, \frac{1 - \alpha_g}{\underline{\theta}_g} \right] \\ (1 - \underline{\theta}_g) \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g} & \text{if } \frac{\mathbb{E} p_g^* - \underline{p}_g^*}{\underline{p}_g^* - \underline{p}_g} \geq \frac{1 - \alpha_g}{\underline{\theta}_g} \end{cases}. \quad (\text{A37})$$

A rational-expectations equilibrium is then given by a fixed point of  $\Phi_g \left( \hat{\theta}_g \right)$ . Its existence is guaranteed by Brouwer's fixed-point theorem, since  $\Phi_g$  is a continuous function of  $\hat{\theta}_g$  that maps  $[\underline{\theta}_g, 1]$  into itself. The derivative

$$\frac{\partial \Phi_g}{\partial \hat{\theta}_g} = - \frac{2 \alpha_g (1 - V_g / \gamma_g) \phi_g'}{\gamma_g \Sigma_g} \frac{\phi_g'}{\phi_g''} \frac{\partial V_g}{\partial \hat{\theta}_g} \quad (\text{A38})$$

need not be always smaller than unity, so there can be multiple equilibria.

Milgrom and Roberts's (1994) Corollary 1 implies that:

1. The lowest and highest equilibrium values of  $\hat{\theta}_g$ , and a fortiori  $\rho_g$ , are increasing in  $\Sigma_g$  because

$$\frac{\partial \Phi_g}{\partial \Sigma_g} = -\alpha_g \left[ \frac{1 - V_g/\gamma_g}{\Sigma_g} \right]^2 \frac{\phi'_g}{\phi''_g} > 0. \quad (\text{A39})$$

2. The lowest and highest equilibrium values of  $\hat{\theta}_g$ , and a fortiori  $\rho_g$ , are decreasing in  $\alpha_g$  because

$$\frac{\partial \Phi_g}{\partial \alpha_g} = \frac{1 - V_g/\gamma_g}{\Sigma_g} \left( 1 - \frac{V_g}{\gamma_g} + 2\alpha_g - \frac{1}{\gamma_g} \frac{\partial V_g}{\partial \alpha_g} \right) \frac{\phi'_g}{\phi''_g} < 0. \quad (\text{A40})$$

Inverting the definition of  $\rho_g$ , we can express  $\hat{\theta}_g$  as a function

$$\hat{\theta}_g(\rho_g, \underline{\theta}_g) = \frac{(1 - \alpha_g)(1 + \rho_g)\underline{\theta}_g}{1 - \alpha_g - \alpha_g \rho_g} \text{ for } \rho_g \in \left[ 0, \frac{(1 - \alpha_g)(1 - \underline{\theta}_g)}{\alpha_g + (1 - \alpha_g)\underline{\theta}_g} \right], \quad (\text{A41})$$

such that

$$\frac{\partial \hat{\theta}_g}{\partial \rho_g} = \frac{(1 - \alpha_g)\underline{\theta}_g}{(1 - \alpha_g - \alpha_g \rho_g)^2} > 0 \quad (\text{A42})$$

and

$$\frac{\partial \hat{\theta}_g}{\partial \underline{\theta}_g} = \frac{\hat{\theta}_g}{\underline{\theta}_g} > 1. \quad (\text{A43})$$

An equilibrium of the information-acquisition game is then given by a root of

$$\Omega_g(\rho_g) = \Phi_g(\hat{\theta}_g(\rho_g, \underline{\theta}_g), \underline{\theta}_g) - \hat{\theta}_g(\rho_g, \underline{\theta}_g), \quad (\text{A44})$$

such that

$$\frac{\partial \Omega_g}{\partial \underline{\theta}_g} = \left( \frac{\partial \Phi_g}{\partial \hat{\theta}_g} - 1 \right) \frac{\partial \hat{\theta}_g}{\partial \underline{\theta}_g} + \frac{\partial \Phi_g}{\partial \underline{\theta}_g}, \quad (\text{A45})$$

and since

$$\frac{\partial \Phi_g}{\partial \underline{\theta}_g} = \frac{1 - \Phi_g}{1 - \underline{\theta}_g} + \frac{\alpha_g(1 - V_g/\gamma_g)}{\Sigma_g} \left( \frac{1 - V_g/\gamma_g}{1 - \underline{\theta}_g} - \frac{2}{\gamma_g} \frac{\partial V_g}{\partial \underline{\theta}_g} \right) \frac{\phi'_g}{\phi''_g} < \frac{1 - \Phi_g}{1 - \underline{\theta}_g}, \quad (\text{A46})$$

the sign is unambiguously negative:

$$\frac{\partial \Omega_g}{\partial \underline{\theta}_g} = \frac{1 - \Phi_g}{1 - \underline{\theta}_g} - \frac{\partial \hat{\theta}_g}{\partial \underline{\theta}_g} - \frac{2\alpha_g(1 - V_g/\gamma_g)}{\gamma_g \Sigma_g} \frac{\phi'_g}{\phi''_g} \left[ \frac{\partial V_g}{\partial \hat{\theta}_g} \frac{\partial \hat{\theta}_g}{\partial \underline{\theta}_g} + \frac{\partial V_g}{\partial \underline{\theta}_g} - \frac{\gamma_g - V_g}{2(1 - \underline{\theta}_g)} \right] < 0, \quad (\text{A47})$$

because

$$\frac{\partial \hat{\theta}_g}{\partial \underline{\theta}_g} = \frac{\hat{\theta}_g}{\underline{\theta}_g} > 1 > \frac{1 - \Phi_g}{1 - \underline{\theta}_g} \quad (\text{A48})$$

and simultaneously

$$\frac{\partial V_g}{\partial \hat{\theta}_g} \frac{\partial \hat{\theta}_g}{\partial \underline{\theta}_g} + \frac{\partial V_g}{\partial \underline{\theta}_g} = -\frac{\hat{\theta}_g}{\underline{\theta}_g} < 0 < \frac{\gamma_g - V_g}{2(1 - \underline{\theta}_g)}. \quad (\text{A49})$$

Milgrom and Roberts's (1994) Theorem 1 establishes that the lowest and highest roots of  $\Omega_g(\rho_g)$  are decreasing in  $\underline{\theta}_g$ , for a fixed domain of potential values for  $\rho_g$ . Here the maximum of that range varies with  $\underline{\theta}_g$  according to:

$$\frac{\partial}{\partial \underline{\theta}_g} \frac{(1 - \alpha_g)(1 - \underline{\theta}_g)}{\alpha_g + (1 - \alpha_g)\underline{\theta}_g} = -\frac{1 - \alpha_g}{[\alpha_g + (1 - \alpha_g)\underline{\theta}_g]^2} < 0. \quad (\text{A50})$$

Since the domain shrinks as  $\underline{\theta}_g$  increases, the decline in the minimum and maximum equilibrium values of  $\rho_g$  can at most be reinforced.

## A.6. Proof of Proposition 5

The aggregate welfare of the sector- $g$  lobby depends on the industry price according to the function

$$W_g^g(p_g) = \pi_g(p_g) + \alpha_g N [r_g(p_g) + s_g(p_g)] \quad (\text{A51})$$

such that

$$\frac{\partial W_g^g}{\partial p_g}(p_g) = (1 - \alpha_g) x_g(p_g) + \alpha_g (p_g - p_g^*) m'_g(p_g) \quad (\text{A52})$$

and the preferred policy satisfies

$$\hat{p}_g - p_g^* = \frac{1 - \alpha_g}{\alpha_g} \frac{x_g(\hat{p}_g)}{|m'_g(\hat{p}_g)|}. \quad (\text{A53})$$

A network with a continuum of agents has perfect information about the policy proposal. If its members represent a fraction  $\alpha$  of the population and  $\kappa$  of sector-specific capital, the equilibrium choice of both parties is

$$p_g^P = \max_{p_g} \{ [\underline{\theta}_g + (1 - \underline{\theta}_g) \kappa] \pi_g(p_g) + [\underline{\theta}_g + (1 - \underline{\theta}_g) \alpha] N [r_g(p_g) + s_g(p_g)] \}, \quad (\text{A54})$$

which satisfies

$$p_g^P - p_g^* = \frac{\kappa - \alpha}{\frac{\underline{\theta}_g}{1 - \underline{\theta}_g} + \alpha} \frac{x_g(p_g^P)}{|m'_g(p_g^P)|}, \quad (\text{A55})$$

so that naturally  $\partial p_g^P / \partial \kappa > 0$  and  $\partial p_g^P / \partial \alpha < 0$ .

By controlling access to the network, the lobby can manipulate  $\kappa$  and  $\alpha$  to induce a protectionist policy proposal. Its only constraint is given by the distribution of specific capital. Let capital ownership among the members of the sector- $g$  lobby have cumulative distribution function  $F_g(\kappa_g)$ , such that  $F_g(\underline{\kappa}_g) = 0$  and  $\int_{\underline{\kappa}_g}^{\infty} \kappa_g dF_g(\kappa_g) = (\alpha_g N)^{-1}$ . If it admits all individuals with a share of at least  $k$ , it obtains

$$\kappa = 1 - \alpha_g N \int_{\underline{\kappa}_g}^k \kappa_g dF_g(\kappa_g) \quad (\text{A56})$$

and

$$\alpha = \alpha_g [1 - F_g(k)]. \quad (\text{A57})$$

Thus if and only if

$$\int_{\underline{\kappa}_g}^{\frac{1}{\alpha_g N}} (1 - \alpha_g N \kappa_g) dF_g(\kappa_g) \geq \frac{1 - \alpha_g}{\alpha_g} \frac{\underline{\theta}_g}{1 - \underline{\theta}_g} \quad (\text{A58})$$

the lobby can obtain its preferred price  $\hat{p}_g$  by setting a cut-off  $\hat{k}_g$  such that

$$\int_{\underline{\kappa}_g}^{\hat{k}_g} (1 - \alpha_g N \kappa_g) dF_g(\kappa_g) = \frac{1 - \alpha_g}{\alpha_g} \frac{\underline{\theta}_g}{1 - \underline{\theta}_g}. \quad (\text{A59})$$

Otherwise, the maximum price achievable in the sector corresponds to

$$\hat{k}_g = \arg \max_{k > 0} \frac{1 - \alpha_g N \int_{\underline{\kappa}_g}^k \kappa_g dF_g(\kappa_g) - \alpha_g [1 - F_g(k)]}{\frac{\underline{\theta}_g}{1 - \underline{\theta}_g} + \alpha_g [1 - F_g(k)]}. \quad (\text{A60})$$

The maximand is increasing in  $k$  if and only if

$$\frac{1}{1 - \underline{\theta}_g} - \left( \frac{\underline{\theta}_g}{1 - \underline{\theta}_g} + \alpha_g \right) Nk + \alpha_g N \int_{\underline{\kappa}_g}^k (k - \kappa_g) dF_g(\kappa_g) > 0 \quad (\text{A61})$$

and the left-hand side of this expression is monotone decreasing in  $k$ .

Hence

$$\underline{\kappa}_g \geq \frac{1}{N [\underline{\theta}_g + (1 - \underline{\theta}_g) \alpha_g]} \Rightarrow \hat{k} = \underline{\kappa}_g, \quad (\text{A62})$$

and in this case the optimal policy for the lobby is to include all its members in the network and obtain

$$p_g^P - p_g^* = \frac{1 - \alpha_g}{\frac{\underline{\theta}_g}{1 - \underline{\theta}_g} + \alpha_g} \frac{x_g(p_g^P)}{|m'_g(p_g^P)|}. \quad (\text{A63})$$

If instead  $\underline{\kappa}_g < \{N [\underline{\theta}_g + (1 - \underline{\theta}_g) \alpha_g]\}^{-1}$ , then  $\hat{k} > \{N [\underline{\theta}_g + (1 - \underline{\theta}_g) \alpha_g]\}^{-1}$  is defined by

$$\frac{1}{1 - \underline{\theta}_g} - \left( \frac{\underline{\theta}_g}{1 - \underline{\theta}_g} + \alpha_g \right) N\hat{k} + \alpha_g N \int_{\underline{\kappa}_g}^{\hat{k}} (\hat{k} - \kappa_g) dF_g(\kappa_g) = 0, \quad (\text{A64})$$

which implies a maximum

$$\max_{k > 0} \frac{1 - \alpha_g N \int_{\underline{\kappa}_g}^k \kappa_g dF_g(\kappa_g) - \alpha_g [1 - F_g(k)]}{\frac{\underline{\theta}_g}{1 - \underline{\theta}_g} + \alpha_g [1 - F_g(k)]} = N\hat{k} - 1. \quad (\text{A65})$$

For a Pareto distribution with dispersion coefficient  $\eta_g > 1$  the cumulative distribution function

$$F_g(\kappa_g) = 1 - \left( \frac{\kappa_g}{\underline{\kappa}_g} \right)^{\eta_g} \quad (\text{A66})$$

implies mean

$$\int_{\underline{\kappa}_g}^{\infty} \kappa_g dF_g(\kappa_g) = \frac{1}{\alpha_g N} = \frac{\eta_g \underline{\kappa}_g}{\eta_g - 1}. \quad (\text{A67})$$

Thus the optimal network includes all factor owners if and only if

$$\eta_g \geq 1 + \frac{\alpha_g}{\underline{\theta}_g (1 - \alpha_g)}, \quad (\text{A68})$$

and the lobby can achieve its preferred price if and only if

$$\frac{(\eta_g - 1)^{\eta_g - 1}}{\eta_g^{\eta_g}} \geq \frac{\underline{\theta}_g}{1 - \underline{\theta}_g} \frac{1 - \alpha_g}{\alpha_g}, \quad (\text{A69})$$

which requires  $\alpha_g > \underline{\theta}_g$  and can be written  $\eta_g \leq \bar{\eta}_g(\underline{\theta}_g, \alpha_g)$  for a threshold

$$\bar{\eta}_g(\underline{\theta}_g, \alpha_g) \in \left( 1, 1 + \frac{\alpha_g}{\underline{\theta}_g (1 - \alpha_g)} \right) \quad (\text{A70})$$

such that  $\partial \bar{\eta}_g / \partial \underline{\theta}_g < 0$  and  $\partial \bar{\eta}_g / \partial \alpha_g > 0$ .

When neither condition is satisfied, the maximum price is obtained by including in the network only individuals whose capital ownership is at least  $\lambda_g$  times the population average  $1/N$ ; the optimal threshold

$$\lambda_g(\underline{\theta}_g, \alpha_g, \eta_g) \in \left( \frac{1}{\underline{\theta}_g + (1 - \underline{\theta}_g) \alpha_g}, \frac{1}{\alpha_g} \right) \quad (\text{A71})$$

is defined by

$$\frac{\underline{\theta}_g}{1 - \underline{\theta}_g} (1 - \lambda_g) + \frac{(\eta_g - 1)^{\eta_g - 1}}{\eta_g^{\eta_g}} (\alpha_g \lambda_g)^{-(\eta_g - 1)} = 0, \quad (\text{A72})$$

so  $\partial \lambda / \partial \underline{\theta}_g < 0$ ,  $\partial \lambda / \partial \alpha_g < 0$  and  $\partial \lambda_g / \partial \eta_g < 0$ .

## B Cross-Country Data

Cross-country measures of tariff rates and media access are included among the World Development Indicators (WDI) provided by the World Bank. The construction of a panel with a significant time dimension is made possible by the use of several editions of the dataset. Average tariff rates can be computed as the ratio of customs and other import duties to the total value of imports. Both indicators are available in the WDI database, but due to the change from the 1986 to the 2001 IMF Government Finance Statistics manual, there are two series for duties. The 2004 WDI reported data from 1970 to 2002 using the older cash-based accounting method. The 2010 WDI report data from 1990 to 2009 using the current method of accrual accounting. The difference in the reporting methods has a negligible impact on this indicator: for the 613 country-years in which the two series overlap their correlation is 99.5%, and 304 of those observations differ by less than one basis point. Hence I construct and use an indicator composed of the most recent data available from either series, controlling in unreported robustness checks that all results are preserved if I use only the original series from the 2004 WDI. As a measure

of media access, the 2005 WDI reported the number of television sets in use per 1,000 people going back to 1975, as reported by the International Telecommunication Union. In addition to the variables of direct interest, I include as controls the logarithm of real GDP per capita from the 2010 WDI, and the Freedom House index of political rights. In unreported robustness checks, I confirm that all results are preserved if the quality of institutions is measured instead by the combined Polity score. Table B1 presents the descriptive statistics for the unbalanced panel of 162 countries and 29 years (1975 to 2003), which is used in Figure 1 and Table 1.

Kee, Nicita, and Olarreaga (2009) construct a theoretically superior measure of tariff barriers at the country level. Using bilateral trade flows and the import demand elasticities derived in Kee, Nicita, and Olarreaga (2008), they compute the equivalent tariff rate that, if applied uniformly to all items, would yield the same import levels as a country’s actual tariff schedule. This value is called the Tariff Trade Restrictiveness Index in the World Trade Indicators, which report data for applied tariffs in 2006 and 2007; updated values for 2008 are available on the authors’ World Bank web page.<sup>5</sup> Although this more accurate measure of protection lacks a significant panel dimension, a pure cross-section analysis confirms the finding of a Dracula effect. I construct the average of each variable for each country over the ten years up to the most recent available observation. In this sample, television ownership can also be measured by the fraction of households with a television set, reported by the 2010 WDI with data from the International Telecommunication Union for 1990-2007. The descriptive statistics are presented in Table B2. Figure B1 illustrates that the raw correlation of the Tariff Trade Restrictiveness Index and either measure of television ownership is strongly negative. Table B3 shows that the correlation is robust to controlling for income per capita and for the quality of a country’s institutions. The control variables themselves have the expected signs—higher income and stronger political rights are associated with lower tariffs—and are independently significant, although the coefficient on GDP per capita loses significance when all regressors are included simultaneously, due to their collinearity.<sup>6</sup>

## C Estimates of Media Coverage

My search is limited to documents that the ProQuest Historical Newspapers database classifies as “articles”, “editorial articles” or “front pages”. First, I identify articles that discuss international trade by searching for

(“international trade” OR export\* OR (import\* AND NOT important\*)),

which returns 94,306 documents. Then I select those articles that discuss trade policy, by adding the restriction

AND (“trade pol\*” OR protectionis\* OR tariff\* OR quota OR anti-dump\*  
OR (trade W/3 barrier\*) OR (import\* W/3 dut\* AND NOT duty-free)  
OR ((import\* OR export\*) W/3 (restrain\* OR subsid\*)));

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<sup>5</sup><http://go.worldbank.org/FG1KHXSP30>.

<sup>6</sup>The same results could be derived by using the TTRI for Most Favored Nation tariffs instead of the applied tariff structure including preferences. This series has observations for marginally more countries, and for the years 2001 and 2005 as well as 2006-2008.

“Duty-free” is excluded because, predictably, it identifies articles about leisure travel rather than trade policy. The resulting 10,246 documents constitute the starting universe for all my sector-specific searches.

For each of the 242 industries included in Gawande and Bandyopadhyay’s (2000) dataset, I refer to the 1972 *Standard Industrial Classification Manual* and record both the short title and the official SIC title. I search documents that mention in the same paragraph all the words describing at least one of the products composing the SIC title. I use minimal word stemming, meant to include both the singular and the plural of nouns (which the ProQuest search interface should include automatically in any case), and both the *-ing* and the *-ed* form of verbal adjectives, while complying with the limitations on query length imposed by the ProQuest interface. E.g., industry 2033 – Canned Fruit and Vegetables corresponds to the search restriction:

AND ((canning OR canned) W/PARA (fruit OR fruits OR vegetable\*))

and its full official title Canned Fruits, Vegetables, Preserves, Jams and Jellies to:

AND ((canning OR canned) W/PARA (fruit OR vegetable\*)  
OR preserve OR jam OR jelly)

For every sector, the average number of documents retrieved by the two searches—for the short and the official title—constitutes my baseline estimate of the number of articles providing newspaper coverage of the industry. The results are robust to using either of the searches alone, as shown in the last two columns of Table C1.

The SIC titles do not allow the recovery of information about 46 sectors that are defined as remainders, including products “Not Elsewhere Classified” (or in the case of industry 3079, “Miscellaneous” products). These industries must be dropped from the sample. An additional problem is imprecision induced by words with multiple meanings. Word-sense ambiguity is a well-known source of difficulty in computational linguistics (Stevenson and Wilks 2005). In the present application, 21 industries include in their titles some words that have competing meanings that are overwhelmingly more common than the names of the products of the industry. The affected sectors are: 2077 – Animal and Marine Fats and Oils; 2291 – Felt Goods, Exc. Woven Felts and Hats; 2311 – Men’s and Boys’ Suits and Coats and 2337 – Women’s and Misses’ Suits and Coats; 2391 – Curtains and Draperies; 2842 – Polishes and Sanitation Goods; 2844 – Perfumes, Cosmetics, and Other Toilet Preparations; 3011 – Tires and Inner Tubes; 3275 – Lime; 3466 – Crowns and Closures; 3493 – Steel Springs, Except Wire; 3561 – Pumps and Pumping Equipment; 3564 – Blowers and Fans; 3565 – Industrial Patterns; 3566 – Speed Changers, Drives, and Gears; 3576 – Scales and Balances, Except Laboratory; 3621 – Motors and Generators; 3624 – Carbon and Graphite Products; 3944 – Games, Toys, and Children’s Vehicles; 3991 – Brooms and Brushes; and 3993 – Signs and Advertising Displays. In the baseline specification, these searches are also dropped from the sample. The results are robust to the use of the full sample, including searches affected by lexical ambiguity, as shown by the second column of Table C1.



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**Table 1 – Tariffs and TV Ownership across Countries**

Dependent variable: Customs and Other Import Duties, % of Imports

	(1)	(2)	(3)	(4)
TV sets per 100 people	−.247615*** (.037175)	−.133691*** (.036953)	−.218472*** (.030766)	−.141856*** (.036074)
Log real GDP per capita		−1.66521* (.902046)		−1.58010* (.895816)
Freedom House index			.399603 (.356611)	−.109163 (.310954)
Constant	13.8203*** (1.47685)	24.3362*** (7.06912)	11.8872*** (1.46052)	24.1497*** (7.28800)
Country fixed effects	No	No	No	No
Clusters (countries)	149	147	148	146
R <sup>2</sup>	0.1080	0.1132	0.1093	0.1098
Observations	2585	2510	2456	2384
	(5)	(6)	(7)	(8)
TV sets per 100 people	−.143737*** (.043171)	−.108086** (.048970)	−.156114*** (.0518672)	−.119811** (.057595)
Log real GDP per capita		−2.82617** (1.09942)		−2.94854*** (1.11337)
Freedom House index			.340488 (.411771)	−.385726 (.418445)
Constant	11.7254*** (.870616)	32.8742*** (8.03119)	13.0709*** (2.30049)	35.2744*** (8.08281)
Country fixed effects	Yes	Yes	Yes	Yes
Clusters (countries)	149	147	148	146
R <sup>2</sup>	0.7709	0.7723	0.7560	0.7565
Observations	2585	2510	2456	2384

*Notes:* Clustered standard errors in parentheses; asterisks denote significance at the 10%\*, 5%\*\* , and 1%\*\*\* confidence level.

**Table 2 – Cross-Industry Data on Protection and Media Coverage**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
Non-tariff barrier coverage ratio, $\tau_g$	.132588	.248483	0	1
$\tau_g / (1 + \tau_g)$	.086757	.141136	0	0.5
Absolute import demand elasticity, $e_g$	1.49885	.363134	.54911	2.13790
Value of imports, $m_g$ (\$ bil.)	.676656	2.71767	.000157	29.7426
Value of shipments, $x_g$ (\$ mil.)	5.82367	16.3166	.0731	182.592
Import penetration, $x_g/m_g$	.193117	.376893	.000143	3.74600
$(x_g/m_g) / e_g$ (scaled by 10,000)	.007819	.046860	.000019	.608384
Newspaper coverage, $a_g$	14.6886	45.4631	0	354
Public information, $\underline{\theta}_g$	.087055	.182896	0	.971499
$\underline{\theta}_g (x_g/m_g) / e_g$ (scaled by 10,000)	.000315	.001090	0	.009204
Capital intensity (\$ thou. / employee)	87.0872	94.3330	5.38346	607.416
Share of employees classified as scientists	.039195	.041016	0	.16667
Share of employees classified as managers	.097648	.041064	0	.18072
Share of employees classified as unskilled	.065827	.051212	0	.33333
Share of shipments used as intermediates	.541505	.299893	.012176	.964062
Intermediate-output buyer concentration	.264732	.192795	.044780	.706502
Herfindahl index of firm concentration	.086294	.071151	.0014	.297007
Four-firm concentration ratio	.432789	.209606	.0598	.9375
Share of employees unionized	.276228	.127228	.069083	.649705
Share of production workers unionized	.363760	.155784	.092592	.790125

*Sources:* NBER-CES Manufacturing Industry Database; NBER Trade Database; NBER Trade and Immigration Database; Gawande and Bandyopadhyay (2000); and author's estimates based on the ProQuest Historical Newspapers database.



**Table 3 – Protection and Newspaper Coverage Across Industries**IV Tobit model – dependent variable:  $\tau_g / (1 + \tau_g)$ 

	(1)	(2)	(3)	(4)
Constant	.051318* (.029236)	.002784 (.045361)	.047039 (.029787)	.002921 (.045349)
$(x_g/m_g)/e_g$	-1.01741 (2.77909)	2.50655 (2.66083)	.841086 (14.0304)	2.81642 (16.0936)
$\underline{\theta}_g(x_g/m_g)/e_g$	-156.915** (63.9527)	-280.030*** (103.859)	-169.667** (79.1384)	-282.1599*** (115.217)
$\underline{\theta}_g$		.748045 (.478143)		.7309962 (.474771)
$I_g(x_g/m_g)/e_g$			-.630807 (14.6568)	-.547577 (16.8263)
Wald $\chi^2$	8.41	8.38	8.16	8.71
Wald exogeneity	2.79	1.84	1.03	0.93
Observations	175	175	175	175

*Notes:* Newey's (1987) efficient two-step estimator; standard errors in parentheses; asterisks denote significance at the 10%\*, 5%\*\* , and 1%\*\*\* confidence level.

**Table 4 – Sensitivity Analysis**IV Tobit model – dependent variable:  $\tau_g / (1 + \tau_g)$ 

	$\nu = 0.125\%$	$\nu = 0.25\%$	$\nu = 0.5\%$	$\nu = 1\%$
Constant	.047953* (.027759)	.048978* (.027909)	.050360* (.028310)	.051318* (.029236)
$(x_g/m_g) / e_g$	–2.45631 (2.47364)	–2.24684 (2.51401)	–1.81046 (2.60398)	–1.01741 (2.77909)
$\underline{\theta}_g (x_g/m_g) / e_g$	–574.373** (273.178)	–339.955** (154.856)	–222.179** (95.3585)	–156.915** (63.9527)
Wald $\chi^2$	6.84	7.28	7.92	8.41
Wald exogeneity	2.19	2.34	2.57	2.79
Observations	175	175	175	175

	$\nu = 2\%$	$\nu = 4\%$	$\nu = 8\%$	$\log a_g$
Constant	.051190* (.030674)	.051244 (.032226)	.052497 (.033867)	.054825 (.033478)
$(x_g/m_g) / e_g$	.021405 (3.02557)	1.07610 (3.27682)	2.14767 (2.94402)	1.89433 (2.77538)
$\underline{\theta}_g (x_g/m_g) / e_g$	–112.06** (44.9804)	–80.6591** (32.8249)	–61.2561** (25.7970)	–12.4238** (5.54534)
Wald $\chi^2$	8.29	7.72	6.92	6.31
Wald exogeneity	2.88	2.79	2.50	2.00
Observations	175	175	175	175

*Notes:* Newey’s (1987) efficient two-step estimator; standard errors in parentheses; asterisks denote significance at the 10%\*, 5%\*\* , and 1%\*\*\* confidence level.

**Table B1 – Panel Data on Tariffs and TV Ownership**

Variable	Mean	Std. Dev.	Min	Max
Import duties, % of imports	8.66255	14.3198	–.058937	343.402
Television sets per 100 people	17.8732	18.6917	0	96.5208
Real GDP per capita, log	7.51425	1.54312	4.13095	10.7922
Freedom House index	3.71254	2.19544	1	7

*Sources:* World Development Indicators and Freedom House.

**Table B2 – Cross-Country Data on Tariffs and TV Ownership**

Variable	Mean	Std. Dev.	Min	Max
TTRI, avg. 2006-2008	5.71080	4.53863	0	21.8
% Households with a TV, avg. 1998-2007	68.8652	34.2336	2.35	99.8333
TV sets per 100 people, avg. 1994-2003	26.3668	21.2442	0.0088	84.4612
Real GDP per capita, log of avg. 1999-2008	7.88527	1.64321	4.69761	10.8245
Freedom House index, avg. 1999-2008	3.14706	1.98229	1	7

*Sources:* World Trade Indicators, World Development Indicators, and Freedom House.

**Table B3 – Cross-Country Correlation of Tariffs and TV Ownership**

Dependent variable: Tariff Trade Restrictiveness Index

	(1)	(2)	(3)	(4)
% Households with a TV	-.084157*** (.009986)	-.051395*** (.016729)	-.059964*** (.010641)	-.051157*** (.015829)
Log real GDP per capita		-.825260** (.342102)		-.267100 (.354796)
Freedom House index			.831170*** (.187021)	.770191*** (.204164)
Constant	11.5362*** (.770661)	15.7625*** (1.9073)	7.42577*** (1.1625)	9.09585*** (2.50568)
R <sup>2</sup>	0.3990	0.4303	0.4906	0.4933
Observations	109	109	108	108
	(5)	(6)	(7)	(8)
TV sets per 100 people	-.121865*** (.015191)	-.069300*** (.028675)	-.093937*** (.016748)	-.067931** (.029040)
Log real GDP per capita		-.795431** (.370599)		-.425155 (.388001)
Freedom House index			.596275*** (.179969)	.553731*** (.183975)
Constant	8.95988*** (.515482)	13.8499*** (2.33442)	6.41658*** (.927991)	9.20236*** (2.70616)
R <sup>2</sup>	0.3228	0.3453	0.3756	0.3813
Observations	137	137	134	134

*Notes:* Standard errors in parentheses; asterisks denote significance at the 10%\*, 5%\*\* , and 1%\*\*\* confidence level.

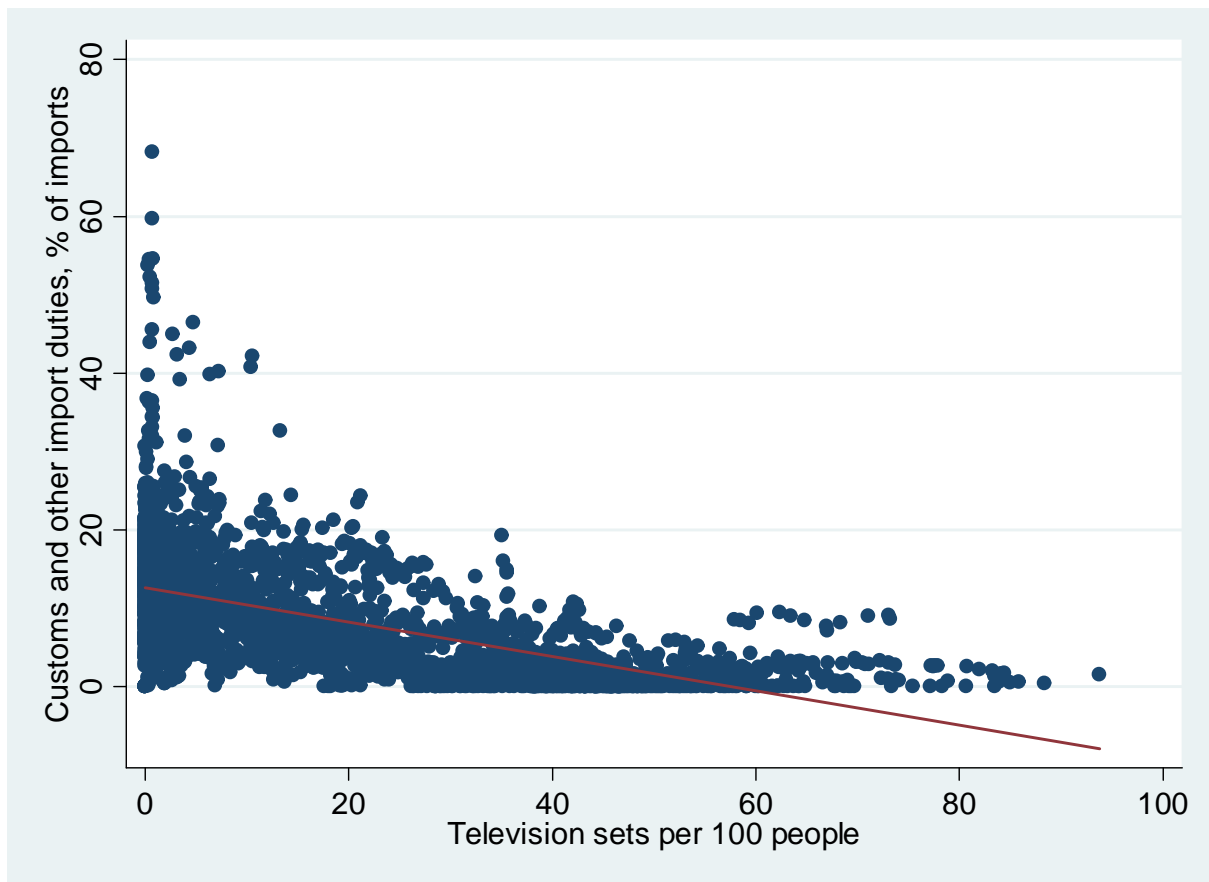
**Table C1 – *Alternative Measures of Newspaper Coverage***

IV Tobit model – dependent variable:  $\tau_g / (1 + \tau_g)$

	<b>Baseline</b>	<b>Full Sample</b>	<b>Short Title</b>	<b>Full Title</b>
Constant	.051318* (.029236)	.056835* (.030396)	.051009* (.029124)	.051537* (.029410)
$(x_g/m_g)/e_g$	-1.01741 (2.77909)	-.627944 (2.53341)	-.867167 (2.7784)	-1.18711 (2.77950)
$\underline{\theta}_g(x_g/m_g)/e_g$	-156.915** (63.9527)	-117.487*** (41.8184)	-155.284** (62.4760)	-158.625** (65.7555)
Wald $\chi^2$	8.41	9.87	8.49	8.28
Wald exogeneity	2.79	2.96	2.78	2.79
Observations	175	196	175	175

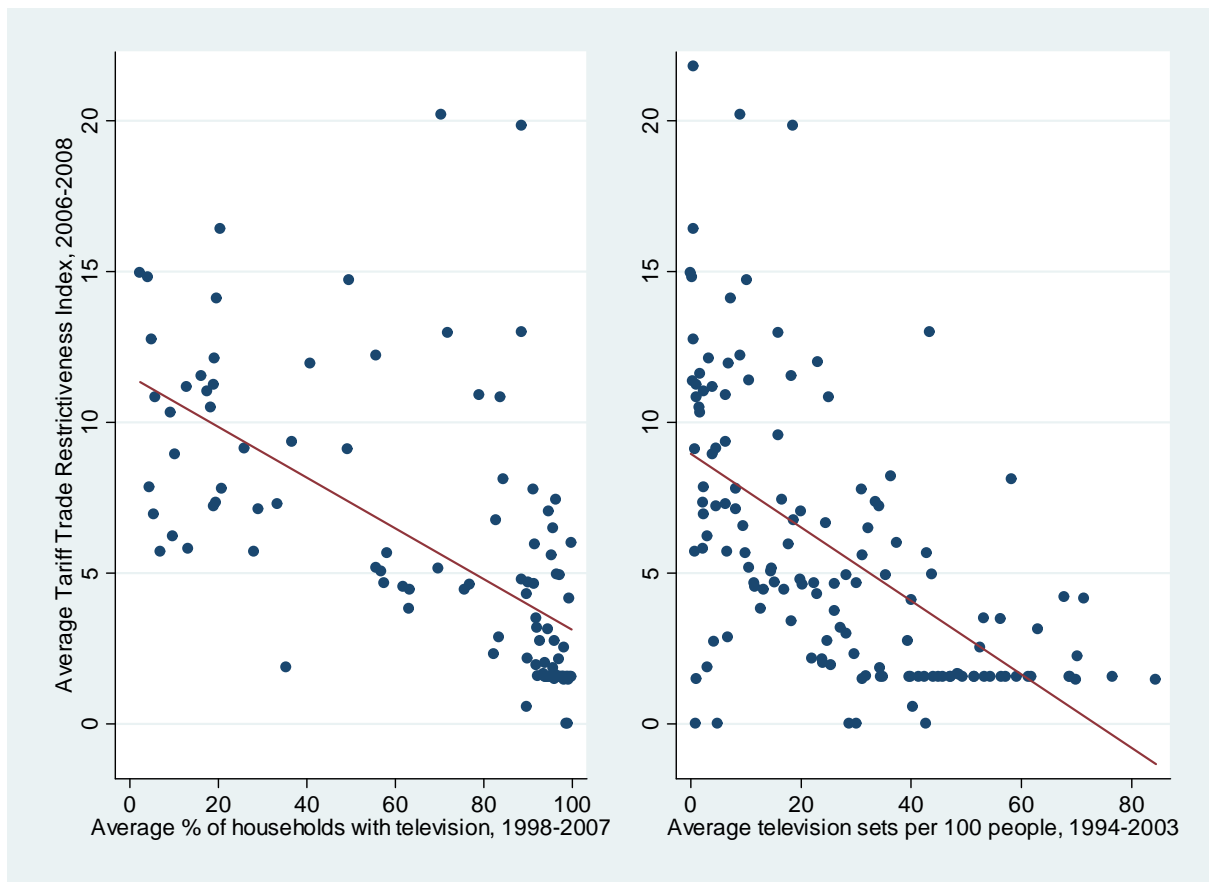
*Notes:* Newey's (1987) efficient two-step estimator; standard errors in parentheses; asterisks denote significance at the 10%\*, 5%\*\* , and 1%\*\*\* confidence level.

Figure 1 – *Tariffs and TV Ownership across Countries*



Source: World Development Indicators.

Figure B1 – *Tariffs and TV Ownership in a Cross-Section of Countries*



Sources: World Trade Indicators and World Development Indicators.