Protection for Free? The Political Economy of U.S. Tariff Suspensions*

Rodney D. Ludema, Georgetown University†
Anna Maria Mayda, Georgetown University and CEPR‡
Prachi Mishra, International Monetary Fund§

March 2011

Abstract

This paper studies the political influence of individual firms on Congressional decisions to suspend tariffs on U.S. imports of intermediate goods. We develop a model in which firms influence the government by transmitting information about the value of protection, using verbal messages and lobbying expenditures. We estimate our model using firm-level data on tariff suspension bills and lobbying expenditures from 1999-2006 and find that indeed verbal opposition by import-competing firms, even without lobbying expenditures, significantly reduces the probability of a suspension being granted. We further find that lobbying expenditures by proponent and opponent firms sway this probability in opposite directions. The effect of verbal opposition is substantially larger than that of both opponent and proponent spending, which implies that either verbal opposition conveys more information or that the government is biased in favor of opponents. Under reasonable assumptions, we find government preferences to be biased in favor of opponents.

1 Introduction

With the success of the WTO in binding and reducing tariffs over the recent decades, it is tempting to believe that the tariff schedules of WTO members are largely static between negotiating rounds. In fact, tariff schedules are constantly being modified. In the United States, Congress regularly passes Miscellaneous Tariff Bills (MTBs), each containing hundreds of modifications to the harmonized tariff schedule. The European Union modifies its tariff schedule in a similar fashion every six months.[1] The modifications made under such schemes are primarily in the form of tariff "suspensions," which eliminate MFN tariffs on specific

*We are grateful for the excellent research assistance of Anastasiya Denisova, Manzoor Gill, Melina Papadopoulos, Jose Romero, Natalie Tiernan, and especially Kendall Dollive, whose undergraduate thesis on tariff suspensions proved invaluable. We thank Andy Berg, Mitali Das, Luca Flabbi, Gene Grossman, Giovanni Maggi, David Romer, Francesco Trebbi, and Frank Vella for invaluable advice and seminar participants at the European University Institute, EIIT, the Midwest International Economics meetings, the World Bank, IMF, USITC, IFPRI, Georgetown, William and Mary, Stanford, Yale, University of Virginia, and University of Chicago for many insightful comments.

†Department of Economics and School of Foreign Service, Georgetown University, Washington, DC, 20057, USA. Email: ludemar@georgetown.edu.

‡Department of Economics and School of Foreign Service, Georgetown University, Washington, DC, 20057, USA. Email: amm223@georgetown.edu.

§Research Department, International Monetary Fund, Washington DC, 20431, USA. Email: pmishra@imf.org.

[1]See European Union (1998).

products for a renewable period of two to three years. Over 1400 individual suspension requests were introduced in the U.S. Congress between 1999 and 2006, covering about 600 unique tariff lines and worth an estimated $1.6 billion in tariff revenue, making tariff suspensions one of the nation's largest unilateral trade policy programs.[2] Furthermore, the process by which tariff suspensions become law – a labyrinth of administrative and political interaction, driven primarily by domestic firms seeking to avoid paying duties on imported intermediates – is a unique laboratory for exploring some basic questions about the political economy of trade policy.

Several features of tariff suspensions make them ideal for studying how firms influence trade policy. First, they are completely discretionary. Unlike practically all other trade policies, there are no international constraints on tariff suspensions. While WTO rules tightly regulate the ability of countries to raise tariffs above their bound rates, they do not deter countries from reducing them. This means we can reasonably expect domestic political considerations to dominate.[3] Second, they are precisely measured. Unlike coverage ratios of non-tariff barriers, suspensions involve no measurement error. Third, we directly observe the firms involved. Each request originates from a single importing firm (called the "proponent") and covers a product narrowly defined to benefit that firm. Usually, no more than a few firms produce a product similar to the one being imported and thus might oppose the suspension. This enables us to investigate the political economy of protection at the firm level, free from aggregation issues.[4] Finally, we observe different instruments that firms use to influence the government, specifically firm-level political spending (i.e., lobbying expenditures and campaign contributions) and verbal messages that firms send to the government concerning each tariff suspension. This enables us to determine which of these instruments is decisive in trade policy, and in particular, whether information supplied by firms, independent of their political spending, has an effect.

One of the foremost questions in the broader political economy literature is whether special interest groups influence policy by offering money to politicians as quid pro quo or by strategically informing politicians about policy consequences, with money serving merely as a vehicle of information. Grossman and Helpman (2001) discuss both of these strategies in depth, offering evidence for both; however, the literature remains divided. The trade literature has focused almost exclusively on the quid pro quo approach, following Grossman and Helpman (1994), while outside of trade, especially in the political science literature, the information approach has gained acceptance (see inter alia Wright, 1996).

Existing empirical work on the role of money in politics has done little to resolve this question. Many papers have found evidence of an effect of campaign contributions by political action committees (PACs) on government policy and have interpreted this as evidence of a quid pro quo effect (see Snyder, 1990, Goldberg and Maggi, 1999, Gawande and Bandyopadhyay, 2000, to name a few). Some have found a similar effect of lobbying expenditures on policy-related outcomes and have interpreted this as evidence of information

[2]For example, U.S. antidumping petitions from 1999 to 2006 covered only 457 separate tariff lines. In 2007, revenue from antidumping duties was $284 million compared to $328 million lost to tariff suspensions. Gallway, Blonigen and Flynn (1999), however, argue that administrative reviews tend to suppress antidumping revenue, and after correcting for this, put the domestic welfare impact of US antidumping duties in the range of $2-4 billion annually. Szamosszegi (2009) estimates the domestic welfare impact of tariff suspensions passed in 2009 at $3.5 billion.

[3]Previous work on the domestic political determinants of trade policy (e.g., Trefler, 1993; Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000) has used nontariff barrier (NTB) coverage ratios to measure import protection on the grounds that NTBs are more likely to be determined unilaterally than tariffs. Gawande, Krishna and Robbins (2006) dispute this rationale, arguing, "there is no convincing evidence that all or even most NTBs are determined in a purely unilateral fashion."

[4]Most previous studies, *ibid*, have used data at the sector level on campaign contributions by political action committees (PACs). At this level of aggregation, all sectors appear to be politically organized, in the sense of making positive political contributions. This has been a major source of criticism of this line of research (see, Ederington and Minier, 2008, and Imai, Katayama and Krishna, 2009). At the firm level, this problem does not arise, and as will become evident, our empirical strategy relies on this fact.

transmission (e.g., de Figueiredo and Silverman, 2008, Gawande, Maloney and Montes-Rojas, 2009). Survey studies documenting the various advocacy activities of lobbyists and legal restrictions on the use of lobbying expenditures for campaign purposes have also been cited as evidence of lobbying's informational role (see Grossman and Helpman, 2001, and de Figueiredo and Cameron, 2008). However, these distinctions ignore that PAC contributions may also convey policy-relevant information (as in Lohmann, 1995) and that lobbying expenditures may be fungible – there are numerous ways in which lobbyists indirectly pay off politicians, such as by promising future employment (the "revolving door") or facilitating fundraising.[5] In our view, one cannot adequately disentangle a quid pro quo effect from an information effect based solely on different types of political spending.[6] The novelty of our paper is the examination of messages: we argue that if messages are effective in influencing policy, even in the absence of political spending, then we have solid evidence for an information effect.

Our dataset covers all tariff suspensions introduced in the 106th through 109th Congresses (1999-2006). Each tariff suspension originates with a member of Congress sponsoring an individual suspension bill, covering a single product, at the request of the proponent firm. Proponents are firms operating in the U.S. that import products (typically intermediate inputs) subject to tariffs. After introduction, the bill is referred either to the House Ways and Means Subcommittee on Trade or the Senate Finance Committee, depending on where the bill was introduced, and also to the U.S. International Trade Commission (USITC). The role of the Committees is to decide which of the suspension bills to include in the final MTB (the MTB must then pass the full Congress by unanimous consent, but this is largely a formality). Of the over 1400 suspension bills in our sample, about four out of five were finally included in an MTB and thus implemented. Our dependent variable is thus an indicator of whether or not the tariff suspension was ultimately implemented.[7] The role of the USITC is to report technical information to Congress on each individual suspension bill, including the applicable tariff rate, dutiable imports, and estimated tariff revenue loss, and to conduct a survey of domestic producers of similar products to determine if there is any opposition to the measure.[8] About 20 percent of the bills in our sample drew opposition via this mechanism.

We link the data from the USITC bill reports to a novel firm-level lobbying dataset we compiled using information from the Center for Responsive Politics and the Senate Office of Public Records (SOPR), which allows us to identify lobbying expenditures at the firm level by targeted policy area. We are thus able to use information on lobbying expenditures that are specifically channeled towards shaping policies related to the tariff suspension bill. This represents a significant improvement in the quality of the data relative to PAC contributions, which are only a small fraction (10%) of total political spending and cannot be disaggregated by issue or linked to any particular policy.

[5]Gawande, Krishna and Robbins (2006) discuss the fungibility of lobbying expenditures and rely on it to estimate the effect of foreign lobbying on trade policy in a quid pro quo model. Bombardini and Trebbi (2009) assume that lobbying conveys services to politicians in a manner equivalent to contributions.

[6]Facchini, Mayda and Mishra (2009), Igan, Mishra and Tressel (2010), and Chin, Parsley, and Wang (2010) all reach the same conclusion and thus examine the impact of lobbying expenditure on outcomes in reduced form, without explicitly addressing the channels by which the impact occurs.

[7]More accurately, it is whether or not the item appears in Chapter 99 of the Harmonized Tariff Schedule in the year following the passage of the MTB. Chapter 99 contains the official list of all tariff suspensions applied by U.S. Customs.

[8]The reason for this investigation is ostensibly to determine if the tariff suspension meets the criteria for inclusion in an MTB. According to the House Ways and Means Committee a suspension "must (1) raise no objection, (2) cost under $500,000 per year [in lost tariff revenue], and (3) be administrable [by U.S. Customs]" (http://waysandmeans.house.gov/media/pdf/110/mtb/MTB Process.pdf). The no objection criterion appears to be due to the requirement of unanimous consent (http://finance.senate.gov/press/Gpress/2005/prg042506.pdf). The rationale for the revenue criterion appears to be that $500,000 is the threshold above which the Congressional Budget Office makes public the revenue implications of an individual tax provision. Provisions below this threshold are grouped together and only the sum total is reported. Our data show, however, these criteria are more guidelines than rules. About 10% of suspensions satisfying these criteria fail, while nearly half the suspensions violating them succeed.

From the descriptive statistics, it is immediately apparent that proponent lobbying is associated with an increase, and opponent lobbying, a decrease, in the probability that a suspension request is successful. Moreover, verbal opposition, with no political spending, is associated with a sizable reduction in the probability of a successful suspension, suggesting that information does indeed matter for trade policy.

To make sense of these observations, we develop a model of the tariff suspensions process that incorporates information as a means of firm influence, building on Grossman and Helpman (2001). We assume, first, that the government's desired trade policy–whether to grant a tariff suspension or not–depends on information possessed by firms,[9] and, second, that firms have two instruments for transmitting this information: messages and lobbying expenditures. In particular, an import-competing firm can send a message to the government, signaling its opposition, or it can spend money to actively lobby against it. We find that, in equilibrium, both instruments are employed and are effective. Messages are effective because they tell government that the firm is harmed by the suspension sufficiently to justify voicing opposition, but not so harmed as to justify lobbying, whereas lobbying expenditure, though more costly, enables the firm to signal its degree of harm (or benefit, in the case of proponent lobbying).[10] Thus, verbal opposition separates the least-harmed from the more-harmed opponents, while lobbying is preferred by firms facing the greatest harm (or benefit). We show that the probability of a successful suspension increases with the lobbying expenditure of the proponent firm, decreases with the lobbying expenditure of opponent firms, and also decreases with the number of firms that voice opposition. We further show that adding a quid pro quo element to the model (i.e., allowing lobbying expenditures to flow directly to the government, contingent on the policy outcome) does not change the basic results. The main difference between our model and the quid pro quo model, therefore, is that messages are effective. In a pure quid pro quo model, this could not be. Rather, in Grossman and Helpman (1994), a firm that produces a competing product (and thus would be opposed to suspension) but does not lobby would actually receive less protection than would a firm with no domestic production at all.

We then take this model to the data both to confirm our preliminary findings and to obtain estimates of the structural parameters. We show that our preliminary findings are robust to a host of controls suggested by the model and indeed are strengthened by the introduction of instrumental variables designed to tackle the potential endogeneity of lobbying expenditures and verbal opposition. They are also robust to broader measures of political spending (e.g., including PAC contributions). The structural parameter estimates are quite plausible, though there are a few surprises. For instance, we find that the effect of verbal opposition alone is large compared to the additional effect of opponent lobbying, which implies that the former has much greater informational content. We also find that the effect of verbal opposition is substantially larger than that of proponent lobbying, which implies that either verbal opposition conveys more information or that the government is biased in favor of opponents. Under reasonable assumptions on government prior beliefs and proponent selection, we find government preferences to be strongly biased in favor of opponents.

This paper is the first to empirically identify the policy impact of information and is thus of general interest. The paper also makes important contributions to the trade literature. To our knowledge, it is the first to develop an informational lobbying theory of import protection, the first to empirically investigate how political competition between individual firms, for and against protection, shapes trade policy outcomes, and the first to consider the policy impact of multiple political instruments, including messages and targeted

[9]This by itself is a significant departure from Grossman and Helpman (1994), because in that model the government's optimal trade policy depends on producer characteristics only in so far as they affect contributions. The other element in the government's objective function is welfare, which in a perfectly competitive, small open economy with no domestic distortions reaches a maximum at free trade, regardless of any information producers might possess.

[10]Messages may also contain statements about the degree of harm; however, in equilibrium, these will not be persuasive, unless accompanied by lobbying expenditure.

lobbying expenditures in addition to PAC contributions.

The outline of the remainder of this paper is as follows. Section 2 contains a short review of the literature. Section 3 describes the data construction and descriptive statistics. Section 4 presents our model and derives the theoretical determinants of the probability of a successful suspension. Section 5 presents the estimation of the model, robustness checks, and quantification. Section 6 concludes.

2 Literature Review

Beginning with Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000), numerous empirical studies have established that, other things equal, "politically organized" sectors receive greater import protection than unorganized ones, but what exactly the firms within a sector do to obtain protection remains an open question. The theoretical basis for these studies is the Grossman and Helpman (1994) model, which posits that firms in organized sectors offer contributions to politicians as a quid pro quo for tariffs. Accordingly, most studies, drawing on U.S. data from the 1980s, have defined a politically organized sector to be one that makes campaign contributions (e.g., Goldberg and Maggi, 1999, Gawande and Bandyopadhyay, 2000, Eicher and Osang, 2002, Gawande, Krishna and Robbins, 2006, Bombardini, 2008). Unfortunately, all sectors make positive PAC contributions in the data, which has led to the use of ad hoc rules to classify sectors as politically organized or not, and, given the resulting classification, unorganized sectors are found to receive positive protection, contrary to the prediction of the model (Ederington and Minier, 2008). Moreover, as we show below, firm level contributions are highly correlated with lobbying expenditures, and thus it is unclear whether contributions or lobbying expenditures are responsible for the greater protection of organized sectors. Further complicating the picture are several empirical studies that have used alternative measures of political organization and found similar results. For example, Mitra, Thomakos, and Ulubasoglu (2002) use trade association membership in the case of Turkey, while McCallman (2004) and Beloc (2007), use communications with government agencies in Australia and the EU, respectively. These papers interpret these measures as proxies for contributions data, which are generally not available outside the U.S., but do not consider that such activities might have an effect independent of contributions.

Beyond quid pro quo, there are many reasons why a government might provide import protection. Traditional economic reasons include terms of trade effects and domestic distortions, such as imperfect competition and labor market rigidities. For example, there is considerable evidence of the connection between unemployment and protection (e.g., Bohara and Kaempfer, 1991, Trefler, 1993, Mansfield and Busch, 1993), which Costinot (2009) convincingly links to labor market rigidities.[11] There are also political reasons for protection, apart from quid pro quo. For example, democratic institutions can give rise to protection, as in Mayer (1984), Dutt and Mitra (2002), Grossman and Helpman (2004). In all of these explanations, the suitability of a particular sector or product for import protection may well depend on details of the market about which firms are better informed than the government. If so, then information transmission becomes a plausible (possibly complementary) explanation for the effectiveness of lobbying in obtaining protection. However, this has yet to be modeled.

Outside of international trade, there is a well-developed theoretical literature on the role of strategic information transmission in special interest politics, beginning with Austen-Smith (1992) and Potters and Van Winden (1992). Grossman and Helpman (2001) summarize and extend this literature, distinguishing

[11] There is also support for the terms of trade hypothesis; however, it is complicated by the presence of international trade agreements, such as the WTO. See, Broda, Limão, and Weinstein (2008), Bagwell and Staiger (2009) and Ludema and Mayda (2008, 2010).

between three types of models: cheap-talk models, in which informed but biased special interest groups (SIGs) transmit information costlessly to an uninformed government; exogenous cost lobbying, in which a SIG must pay a fixed fee to transmit or acquire information; and endogenous cost lobbying, in which a SIG chooses a variable expenditure level to convey its private information. In practice, all three of these elements may be present. In the case of tariff suspensions, individual firms can respond to the USITC survey as a low-cost means of conveying information, or they can hire a lobbyist to convey more precise information, which likely involves both fixed (e.g., minimum access cost) and variable costs. The model we present in the next section combines these elements.

The empirical literature on strategic information transmission is fairly small. Austen-Smith and Wright (1994) test some implications of a cheap-talk model using data on messages conveyed for and against the 1987 Supreme Court nomination of Robert Bork. To our knowledge, it is the only other paper to use messages to examine informational lobbying. De Figueiredo and Cameron (2008) test an endogenous-cost lobbying model using data on lobbying expenditures at the state-level. While both of these papers produce findings supportive of information theory, their scope is limited to explaining interest group behavior itself. They do not address whether the information conveyed by interest groups is effective in influencing policy.

Several recent papers have examined the impact of lobbying expenditures on policy or policy-related economic outcomes. Facchini, Mayda and Mishra (2008) find that immigration-related lobbying expenditures by firms in a sector positively affect the number of temporary work visas in that sector. Igan, Mishra and Tressel (2010) find that lenders lobbying on issues related to mortgage lending took more risks during 2000-07 and had worse outcomes during the crisis in 2008. Chin, Parsley, and Wang (2010) find that corporations increase their market returns through lobbying. De Figueiredo and Silverman (2008) find that for universities with representation in the House or Senate appropriations committees, lobbying expenditure increases the earmark grants they obtained. Gawande, Maloney, Montes-Rojas (2009) find that foreign agents that lobby the U.S. on the subject of tourism significantly increase U.S. tourism flows to their countries. These last two papers offer an information transmission explanation for their results.

Bombardini (2008) and Bombardini and Trebbi (2009) are perhaps closest to our work in drawing on firm-level data to study trade policy. These papers use the quid pro quo framework but allow for the degree of organization of a sector (or mode of organization, in the latter paper) to depend on firm-level decisions. They use firm-level data (PAC contributions in Bombardini, 2008; targeted lobbying expenditures in Bombardini and Trebbi, 2009) to determine the degree (mode) of organization, and then collapse the data at the sector level to examine the effect of organization on trade policy. Some of their results are similar to our findings. For example Bombardini (2008) finds that the larger the share of firms in an organized sector that contribute, the more protection the sector receives. We too find that the more firms that lobby against a tariff suspension, the lower the probability the suspension will succeed. There are significant differences, however. For one, tariff suspensions are sufficiently disaggregated that there is no need to collapse the data at the sector level. For another, our model emphasizes informational lobbying, which among other things allows us to estimate the effect of the level of lobbying expenditures, not just the number of firms that lobby. Above all, we use messages to distinguish the opposed from the unopposed among the unorganized firms, and our findings concerning these messages cannot be explained with a pure quid pro quo model.[12]

Finally, two other papers share our focus on U.S. tariff suspensions. Pinsky and Tower (1995) provide a detailed account of the legislative process, arguing that the program is biased in favor of large firms and

[12]Bombardini and Trebbi (2009) recognize that lobbying conveys information to politicians but acknowledge that they lack the data to test such a model. This is why they limit themselves to "a reduced form that links the amount of lobbying activity to the utility of politicians" (p. 14), i.e., a quid pro quo model.

encourages rent-seeking by proponents. They also propose that the U.S. adopt a regime similar to New Zealand's, which grants suspensions automatically if there is no opposition. Gokcekus and Barth (2007) empirically examine the effect of campaign contributions by suspension proponents on the duration and revenue loss of the suspensions they request. They find that more contributions lead to more aggressive suspension requests. They do not consider whether the suspensions are granted or the effectiveness of opponent actions.

3 Data

In this section we first provide background information on tariff suspensions. Next, we describe the dataset on lobbying expenditures and compare it with PAC contributions. Finally, we present descriptive statistics for the main variables used in the empirical analysis.

3.1 Tariff suspensions

The data on tariff suspensions is collected from two sources: the USITC bill reports on each proposed tariff suspension and the U.S. Harmonized Tariff Schedule maintained by the USITC. In each Congress, representatives and senators propose tariff suspension bills on behalf of various proponent firms. The bills address very specific products. For example, in the 109th Congress, Senator DeMint sponsored a bill on behalf of proponent firm Michelin to eliminate the tariff on "sector mold press machines to be used in production of radial tires designed for off-the-highway use with a rim measuring 63.5 cm or more in diameter" (S. 2219). Once the tariff bills are referred by formal memorandum to the House Ways and Means Committee or the Senate Finance Committee, the USITC compiles a report on the bill. This study focuses on the 106th (1999-2000), 107th (2001-2002), 108th (2003-2004), and 109th (2005-2006) Congresses.

USITC produces a separate report for every suspension bill introduced in each Congress.[13] The reports include information about the proponent firm, estimates of expected tariff revenue loss, dutiable imports, and current tariff rates.[14] To gain information about firm opposition, the USITC conducts a survey of possible producers and purchasers of the good in question. The results of these surveys are reported in two different formats during our sample period. For the 106th and 107th Congresses, the reports include whether or not respondents claimed to produce the good domestically or had plans to do so in the future. For the 108th and 109th Congresses (which account for 75% of our total sample), the reports also include whether or not the firms opposed the tariff suspension. Consistent with economic intuition, firms surveyed in 108th and 109th Congresses that claimed to produce the product domestically almost invariably also opposed the bill, though in a handful of cases, firms that opposed did not claim production (these appear to have been competitors of the proponent in the downstream market that source domestically). Therefore, for the 106th and 107th Congresses, we assume that all firms indicating current/future domestic production oppose the suspension, whereas for the 108th and the 109th Congress, we use the direct information on whether firms noted opposition to the measure. Finally, the information in the reports about domestic production of the good or domestic opposition to the bill is dependent upon the responses provided by surveyed firms, many of which do not respond. Non-response suggests that the firms are not sufficiently opposed to the legislation to expend the resources necessary to reply to the USITC. Thus we classify non-response as equivalent to a

[13]The bill reports are posted on the ITC website http://www.usitc.gov/tariff_affairs/congress_reports/.
[14]See Figure B1 for an example of a USITC bill report prepared for the 109th Congress.

response of no opposition.[15]

To ascertain whether the tariff suspension bills have been enacted into law, we use the U.S. Harmonized Tariff Schedule (HTS). Each product on which a suspension is granted is removed from its normal eight-digit HTS product category and assigned a temporary eight-digit number, beginning with 99, and listed in Chapter 99 ("Temporary Legislation") of the HTS. This chapter is updated annually. We therefore search Chapter 99 in the years following the passage of a Miscellaneous TariffB ill (MTB) to determine which suspension bills were successful. If the product specified in a suspension bill is not found, we assume the bill failed.

Congress generally passes the trade bills in the form of a single MTB for each congress. The 106th Congress enacted two bills into law, the Miscellaneous Trade and Technical Corrections Act of 1999 (H.R. 435) and the Trade Suspensions Act of 2000 (H.R. 4868). Therefore, we use the HTS for 2001 and 2002 to check which bills passed. The 107th Congress did not successfully pass an MTB. Instead, the bills from that Congress were rolled into the Miscellaneous Trade and Technical Correction Act of 2004 (H.R. 1047) and passed by the 108th Congress. All of the bills in the 107th Congress addressed different products from the ones introduced in the 108th Congress. Therefore, we did not have to worry about duplicative bills spanning the two Congresses. We use the HTS of 2006 for these two Congresses. Finally, we use the HTS of 2008 for the 109th Congress. Although the Miscellaneous Trade and Technical Act of 2006 never became law, most of the duty suspensions can be found at the end of the Tax Relief and Health Care Act of 2006 (H.R. 6111), which did become law.

3.2 Lobbying expenditures

We use a novel dataset on lobbying expenditures at the firm level in order to construct a measure of the payments firms make to influence tariff suspensions. We compile the dataset using the websites of the Center for Responsive Politics (CRP) and the Senate's Office of Public Records (SOPR), which provide information on semi-annual lobbying disclosure reports. We use data from the reports covering lobbying activity that took place from 1999 through 2006.

With the introduction of the Lobbying Disclosure Act of 1995, individuals and organizations have been required to provide a substantial amount of information on their lobbying activities at the Federal level.[16] Starting from 1996, all lobbyists have to file semi-annual reports to the Secretary of the SOPR, listing the name of each client (firm) and the total income they have received from each of them. At the same time, all firms with in-house lobbying departments are required to file similar reports stating the total dollar amount (i.e., both for in-house and outside lobbying) they have spent. Importantly, legislation requires the disclosure not only of the total dollar amounts actually received/spent, but also of the issues for which lobbying is carried out. Table B1 shows a list of 76 general issues at least one of which has to be entered by the filer. The report filed by a firm producing chemicals, 3M Company, for the period January-June 2006, is shown in Figure B2. The firm spent $985,000 over the specified period in lobbying activities. The federal agencies contacted by the firm include the Department of Commerce and the Office of the US Trade Representative. It lists "trade" as an issue it lobbies for. Importantly, it also lists "duty suspension" as a specific issue with which the lobbying activities are associated.[17]

[15] Note that our results are the same when we restrict our sample to bills in the 108-109th Congresses, where firms explicitly note opposition.

[16] According to the Lobbying Disclosure Act of 1995, the term lobbying activities refers to lobbying contacts and efforts in support of such contacts, including preparation and planning activities, research and other background work that is intended, at the time it is performed, for use in contacts, and coordination with the lobbying activities of others.

[17] Unfortunately the reports do not give information on how the total dollar amount spent by a firm (or received by a lobbying company) is split across different general issues. Therefore, we will assume that issues receive equal weight.

We calculate the lobbying expenditures of a firm associated with issues relevant to the tariff suspension bills, using a two-step procedure. First, we consider those firms that list trade or any other issue pertaining to the bills in their lobbying report.[18] In particular, the list of 76 general issues specified by the SOPR, which a firm has to choose from when it files its lobbying report (see Table B1), includes some of the industries affected by the tariff suspensions (for example, chemical and textiles).[19] Therefore, a firm lobbying policymakers in favor or against the tariff suspension might write down "trade" in its lobbying report or, alternatively, "chemical", "textile", etc. Second, we split the total expenditure of each firm equally between the issues they lobbied for and consider the fraction accounted for by trade or any other issue pertaining to the bills. So for example, if the firm lobbies on six issues, which include, among others, trade and chemical – then we use one third of the firm's total lobbying expenditure. [20]

Finally, we merge information on each tariff suspension bill's proponent and opponent firms with the firm-level dataset on lobbying expenditures. We sum each firm-level lobbying expenditure over the two years that Congress was in session. We assume that, if a (proponent or opponent) firm is not in the lobbying dataset, then the firm did not make any lobbying expenditures. Thus, merging the tariff suspension and lobbying datasets allows us to clearly distinguish firms that spend money to lobby on issues related to tariff suspensions from those that do not. Henceforth, we shall refer to a firm that makes positive lobbying expenditures specifically on trade or other issues related to the bill as politically "organized", while those that do not are "unorganized."[21]

3.3 Comparison between lobbying expenditures and PAC contributions

In addition to carrying out lobbying activities, special interest groups in the United States can legally influence the policy formation process by offering campaign contributions. However, PAC contributions are limited in size.[22] Perhaps for this reason, they are nowhere near the largest form of political spending. Milyo, Primo, and Groseclose (2000) point out that lobbying expenditures are of "... an order of magnitude greater than total PAC expenditure." Between 1999 and 2006, interest groups spent on average about 4.2 billion U.S. dollars per political cycle on targeted political activity, which includes lobbying expenditures and PAC campaign contributions.[23] Close to ninety percent of these expenditures were on lobbying. Furthermore, unlike lobbying expenditures, PAC contributions cannot be disaggregated by issue.

Figure 1 shows the relationship between lobbying expenditures for trade and related issues and PAC contributions by firm. It is based on averages over the four election cycles. We see that while some firms

[18]The lobbying dataset from 1999-2006 comprises an unbalanced panel of a total of 15,310 firms/associations of firms, out of which close to 30% list trade or any other issue pertaining to the bills.

[19]The majority of the bills (close to 70%) address chemical products. Beyond chemicals, bills address a wide spectrum of intermediate goods, including but not limited to fabrics and fibers, shoes, airplane parts, bicycle parts, camcorders, foodstuff, and sports equipment. The list of lobbying issues other than trade which we classify as pertaining to the bills are (i) chemicals (ii) mining (iii) food (iv) manufacturing (v) textiles and (vi) transport.

[20]Our results are very similar when we use lobbying expenditures on trade only, excluding any other issues pertaining to the bill.

[21]In the Grossman-Helpman model, the term "organized" refers to a sector represented by a lobby that makes contributions on behalf of all firms in the sector, thus implying collective action among firms. Our definition of organized differs in that it refers to an individual firm that spends money on lobbying, with no presumption of collective action. As an empirical matter, organization is always measured on the basis of spending. Thus, our definition is operationally equivalent to that of previous sector-level studies; only the unit of observation is different.

[22]PACs can give $5,000 to a candidate committee per election (primary, general or special). They can also give up to $15,000 annually to any national party committee, and $5,000 annually to any other PAC (source: http://www.opensecrets.org/pacs/pacfaq.php).

[23]We follow the literature that excludes from targeted political activity all soft money contributions, which went to parties for general party-building activities not directly related to federal campaigns; in addition, soft money contributions cannot be associated with any particular interest or issue (see Milyo, Primo, and Groseclose 2000 and Tripathi, Ansolabehere, and Snyder 2002). Soft money contributions were banned by the 2002 Bipartisan Campaign Reform Act.

that make PAC contributions do not lobby, it is far more common that lobbying firms do not make PAC contributions. For those firms doing both, we find a very high and positive correlation between levels of the two modes of political spending.[24]

Although our empirical work relies mainly on lobbying expenditures, for robustness, we also create a broader measure of each firm's political organization, which includes both lobbying expenditures (on trade and other issues related to the bill) and PAC campaign contributions. Each PAC is sponsored by a firm (or a group of firms) so we can identify campaign contributions for each firm. Data on PAC contributions at the firm level comes from the website of the Center of Responsive Politics (http://www.opensecrets.org/pacs/list.php).

3.4 Descriptive statistics

Summary statistics of the main variables used in the empirical analysis are presented in Table 1. The data shows that Congress passes tariff suspensions more often than not: 79% of the tariff suspension bills are passed. Therefore, the proponents have a fairly high success rate on bill passage. The fraction of bills with at least one opponent firm is quite low (17%). However, among bills with opponents, multiple opponents are fairly common. Roughly half of the bills have more than one opponent.[25] In addition, 23% of the bills seek to extend previously passed tariff suspensions, and 14% of the bills are submitted more than once during a given Congress, i.e. the same proponent firm submits the bill to both the House and the Senate. Finally, the average tariff rate applied to products for which suspension is requested is 7%, which is near the average applied MFN tariff rate for all dutiable U.S. imports.[26]

Most of the bills, 68%, have organized proponents, while only 6% of the bills have organized opponent firms. It is not surprising that opponent firms make lobbying expenditures less often than the proponent firms. Many proponent firms probably use lobbying in order to convince a member of Congress to sponsor the bill. On the other hand, opposing firms have the option to simply submit the USITC questionnaire as way to express their opposition to the legislation.

Table 2a shows how the success rates of bills depending on the actions of the firms. If a bill is unopposed the success rate is 90% on average. The success rate drops to 29% if the bill is opposed by an unorganized domestic firm, where organization is defined as making positive lobbying expenditures. The success rate of bills facing unorganized opposition is 27% if this definition is expanded to include positive PAC contributions in addition to lobbying. Turning to organized opponents, we see that political spending by opponents is associated with the lowest success rate: 11% for lobbying, 16% if PAC is included. While the presence of a political organization effect is in line with expectations, this effect appears to be much smaller than the effect of verbal opposition. On proponent side, the story is similar. Unorganized proponents enjoy a 75% success rate on average (72% using the PAC definition) while organized opponents raise the success rate to 80% (81% with PAC). The rest of the paper will examine these correlations more rigorously, bringing the theoretical model presented above to the data.

Table 2b shows simple bivariate correlations between the probability of suspension and indicators for whether the bill has an opponent, an organized opponent and an organized proponent. The regression coefficients suggest that (i) bills with an opponent (whether organized or unorganized) have significantly lower

[24] This is in contrast to Facchini, Mayda and Mishra (2008) who find zero correlation between PAC contributions and lobbying expenditures on immigration at the sector level.

[25] By contrast, only 3% of the bills have more than one proponent. Therefore, in the theoretical model, we assume a single proponent and multiple opponents at the bill level.

[26] In 2006, the final year of our data, the simple average applied MFN tariff rate on all items (using tariff-line averaging with HS 2002 base) was 4.5%, while on dutiable imports it was 7.6%. The difference is caused by the fact that over a third of U.S. tariff lines were duty free. Source: WTO Integrated Data Base.

probability of the suspension being granted relative to bills with no opposition (ii) an opponent which lobbies, is also effective in defeating suspensions, though it seems that there is little added effect beyond simply noting opposition,[27] and (iii) proponent lobbying increases the chances of the suspension being granted. The rest of the paper will develop a theoretical model and examine these correlations more rigorously.

4 The Model

Our model involves political competition between upstream and downstream firms over the tariff on an imported product.[28] Consider an imported good X that is used as an intermediate input into the production of a domestically produced final good Y. Imports of X are subject to an ad valorem tariff $t > 0$; however, the government has the power to suspend this tariff at the request of the producer of the final good.

There are $N + 1$ domestic firms involved in the tariff suspension process. The proponent firm (P) produces the final good. This firm benefits from the tariff suspension, as the suspension lowers the cost of its intermediate input. Let $\pi \in [\underline{\pi}, \bar{\pi}]$ denote the proponent's gain from the suspension. The other N firms are the potential opponents. While these firms operate in the intermediate sector, they vary in their exposure to competition from imports and thus their opposition to the tariff suspension. Let $\lambda_i \in \left[0, \bar{\lambda}\right]$ denote the (possibly zero) loss from the tariff suspension for potential opponent i, for $i = 1, 2, \ldots N$.

A key feature of the model is that the government is uninformed about the gains and losses the firms face from the tariff suspension. Thus, we assume that the government has prior beliefs about π, given by the distribution F_π, while the realization of π is the private information of the proponent. Likewise, priors concerning each λ_i are given by the distribution F_λ, where the realization of λ_i is known only to firm i. In the context of suspension bills, because of the specificity of the products in question, it is quite reasonable to assume that the government lacks information about π and λ_i. Moreover, the fact that the government, in practice, conducts a survey of potential opponents to reveal their opposition suggests that our assumption is reasonable.[29]

4.1 Government Objective

We assume that the government's gain from granting the tariff suspension depends on the gain to the proponent and the losses to the opponents as follows:

$$G = \gamma + \alpha\pi - \beta\sum_{i=1}^{N} \lambda_i - \varepsilon \tag{1}$$

where α and β are positive constants, measuring the degree of importance the government attaches to proponent and opponent profits, respecitvely. The terms γ and ε capture exogenous political and economic factors that may influence the government's suspension decision. Firms are able to observe γ but do not observe ε. We assume ε is a mean-zero random variable drawn from a uniform distribution on the interval $[-\delta,\delta\,]$.

[27] However, in the regression analysis below, lobbying expenditures by the opponents do have a significant impact beyond verbal opposition.

[28] In this respect, it is similar to the quid pro quo model of Gawande, Krishna and Olarreaga (2005). However, besides the obvious difference that we focus on information transmission, our model involves firms rather than sectors.

[29] Note that we also assume that the firms are uninformed about each other's types. While it may seem that firms should know more about each other than the government does, the level of confidentiality with which the government treats firm-level data suggests otherwise. In any case, none of our results hinge critically on this assumption.

There are three aspects of the government's objective function (1) worth clarifying. First, although we do not require that G be related to social welfare, it is straightforward to construct a model in which $\gamma + \alpha\pi - \beta\sum_{i=1}^{N}\lambda_i$ corresponds exactly to the welfare gain from the tariff suspension. Such a model is described in detail in Appendix B. In that model, γ depends on the deadweight loss of the tariff, which is an increasing function of the tariff rate and the number of domestic suppliers. Second, we interpret ε as a political shock that alters the relative attractiveness of granting a suspension. The political shock can either be thought of as private information of the government or simply something that occurs after the decisions of the firms have been made. The important point is that the firms are uncertain about the government's actual position at the time they make their decisions. We regard this as a realistic feature of the model. Moreover, it has the added benefit that the model predictions will be in the form of conditional probabilities of suspension, which are testable.[30] Third, note that we have not included political contributions as an argument in the government's objective function, and thus we are leaving out the quid pro quo element of political spending. We do this to focus on the informational aspect of lobbying; however, we show in Appendix A that all of our theoretical results are robust to including political contributions.

4.2 Actions

In reality, the proponent has two decisions to make. It must decide whether or not to request a suspension and how much to lobby for its passage. As we have no information in our data concerning bills not requested, we cannot investigate the determinants of this first decision, and thus our model shall treat $\underline{\pi}$ as exogenous. Nevertheless, it is reasonable to assume there are costs associated with submitting a request, which would imply $\underline{\pi} > 0$. We discuss ways of estimating this parameter in Section 6. For the lobbying decision, let l_P denote the level of proponent lobbying. Following Grossman and Helpman (2001), we assume there exists a minimum fixed cost to lobbying $l_{Pf} > 0$. The proponent can spend more than this, but cannot spend less, if it wishes to lobby.

Each opponent also faces two decisions. It must decide whether or not to voice opposition to the suspension and how much to lobby against it. If firm i chooses to voice opposition, it sends the message $m_i = 1$ to the government and incurs a cost $\omega \geq 0$. Otherwise, it chooses $m_i = 0$. This restriction to binary messages is without loss of generality, so long as the content of messages is unverifiable, which we assume it is. We discuss this point further below. The cost of opposition ω may take a variety of forms, including an administrative cost of responding to the government survey or the cost of breaching a tacit agreement with the proponent,[31]but it does not involve political spending. Note that if $\omega = 0$, then the message is pure cheap talk. For the lobbying decision, let l_i denote the lobbying expenditure of opponent i, and let l_{Of} denote the fixed lobbying cost, which is common for all opponents. In lobbying against the suspension, the opponent incurs both the lobbying cost and ω.

The timing of the game is as follows. First, each firm learns its type (i.e., the level of its gain or loss). Second, firms choose their messages and lobbying expenditures. Finally, after observing the messages and lobbying expenditures, the government learns ε and makes a binary decision to suspend or not suspend the

[30]In effect we incorporate political randomness directly in the model rather than treating it as part of the regression error term to be tacked after the model has been solved.

[31]For example, consider an infinitely repeated game, in which the roles of proponent and opponent get reversed from bill to bill. In this case ω would be the expected value of an implicit agreement to not oppose each others' bills. Alternatively, one might suppose the proponent has the ability to secretely offer a side payment to each potential opponent in exchange for its silence. We could interpret ω as the value of such an offer. Alternatively, there could be dealings between the proponent and opponent that are outside of the model entirely. We do not to take a stand as to the exact source of ω. We include it so as to have a flexible model that allows for the possibility of agreements but includes cheap talk as a special case.

tariff.

From (1), the government will suspend the tariff whenever, $\varepsilon < \gamma + \alpha\tilde{\pi} - \beta\sum_{i=1}^{N}\tilde{\lambda}_i$, where $\tilde{\pi}$ and $\tilde{\lambda}_i$ measure the government's posterior expectations of π and λ_i, respectively, conditional on observing the messages and lobbying expenditures. Prior to the realization of ε, therefore, the probability the government suspends the tariff is,

$$\Pr[suspension] = \frac{1}{2} + \frac{\gamma}{2\delta} + \frac{\alpha}{2\delta}\tilde{\pi} - \frac{\beta}{2\delta}\sum_{i=1}^{N}\tilde{\lambda}_i \tag{2}$$

Working backwards, we can calculate the expected payoffs of the firms at the information stage. The proponent's expected gain from the suspension net of lobbying expenses is,

$$u_P(\pi, \tilde{\pi}, l_P) = \frac{\pi}{2\delta}\left[\delta + \gamma + \alpha\tilde{\pi} - \beta N E(\tilde{\lambda})\right] - l_P \tag{3}$$

while potential opponent i's expected gain net of lobbying expenses is,

$$u_i(\lambda_i, \tilde{\lambda}_i, \omega m_i + l_i) = -\frac{\lambda_i}{2\delta}\left[\delta + \gamma - \beta\tilde{\lambda}_i + \alpha E(\tilde{\pi}) - \beta(N-1)E(\tilde{\lambda})\right] - \omega m_i - l_i \tag{4}$$

That is, each firm's expected gain depends on its type, its message and/or lobbying expenditure, the government's belief about its type conditional on its actions, and the unconditional expectation $E(.)$ of the government's belief about the other firms' types.[32] Note that since all potential opponents are ex ante identical, we replace the sum in (2) with the number of potential opponents in (3) and (4).

4.3 Equilibrium

The Perfect Bayesian Equilibrium (PBE) we consider has the following properties:
(a) Each potential opponent voices opposition if and only if its loss exceeds a certain threshold $\lambda^O > 0$. Thus:

$$m_i(\lambda_i) = \begin{cases} 1 & if \lambda_i \geq \lambda^O \\ 0 & if \lambda_i < \lambda^O \end{cases}$$

(b) Each firm chooses a lobbying expenditure function of the form:

$$l_P(\pi) = \begin{cases} r_P(\pi) & if \pi \geq \pi^L \\ 0 & if\ \pi < \pi^L \end{cases}$$

$$l_i(\lambda_i) = \begin{cases} r_i(\lambda_i) & if \lambda_i \geq \lambda^L \\ 0 & if \lambda_i < \lambda^L \end{cases}$$

where all r are strictly increasing, $r_P(\pi^L) = l_{Pf}$, $r_i(\lambda^L) = l_{Of}$, $\pi^L > 0$, and $\lambda^L > \lambda^O$.
(c) The government's conditional expectations are:

$$\tilde{\pi} = \begin{cases} \pi & if\ l_P = r_P(\pi) \\ \Pi & if\ l_P = 0 \end{cases}$$

[32]Since each firm is informed only about its own type, its actions determine the government's posterior belief about its type but not the other firm's type. This explains why each firm knows the belief about its own type but must form expectations about the government's belief about the other types. If we were to assume that the firms could observe each other's types, we would drop the expectations operator in these equations.

$$\tilde{\lambda}_i = \begin{cases} \lambda_i & if\ l_i = r_i(\lambda_i) \\ \Lambda & if\ m_i = 1, l_i = 0 \\ \Omega & if\ m_i = 0, l_i = 0 \end{cases}$$

where $\Pi \equiv \int_{\underline{\pi}}^{\pi^L} z f_\pi(z)/[F_\pi(\pi^L) - F_\pi(\underline{\pi})]dz$, $\Lambda \equiv \int_{\lambda^O}^{\lambda^L} z f_\lambda(z)/[F_\lambda(\lambda^L) - F_\lambda(\lambda^O)]dz$ and $\Omega \equiv \int_0^{\lambda^O} z f_\lambda(z)/F_\lambda(\lambda^O)dz$.

The equilibrium described above is semi-separating, in that some types can be uniquely identified by their actions, while other types cannot. In particuar, each firm chooses a level of lobbying expenditure, which *if strictly positive*, uniquely reveals its type. Positive lobbying expenditure, however, only occurs when a firm's stake in the suspension outcome is sufficiently large. Otherwise, the firm prefers not to incur the fixed cost, and the government must rely on information implicit in the proponent's decision to request and the opponents' messages. Without spending, the actions of the firms cannot be fully revealing. Absent proponent lobbying expenditure, the government knows only that the proponent's type lies in the interval $\left[\underline{\pi}, \pi^L\right)$. Thus, the government sets $\tilde{\pi} = \Pi$, which is the expected value of π over this interval. Absent opponent lobbying expenditure, the only information an opponent's message conveys is whether or not $\lambda_i \geq \lambda^O$.[33] If an opponent signals $m_i = 0$, the government sets $\tilde{\lambda}_i = \Omega$, which is the expected value of λ over the interval [0,λ^O). If opponent i signals $m_i = 1$, the government infers that $\lambda_i \in \left[\lambda^O, \lambda^L\right)$ and sets $\tilde{\lambda}_i = \Lambda$, which is the expected value of λ_i over this interval.

The above equilibrium is not unique among PBEs. It is possible, for example, to contruct

equilibria in which the government ignores the actions of the firms, and as a result, the firms do not bother incurring the costs of taking actions. Such equilibria can normally be ruled out with suitable refinements (see, Fudenberg and Tirole, 1991); however, this is beyond our scope. We focus on this equilibrium for two main reasons. First, it is the most revealing (i.e., results in the greatest information transmission) of any PBE, and second, it gives rise to behavior broadly consistent with what we observe.

What remains to show is that the message and lobbying expenditure functions above constitute equilibrium behavior of the firms. In the process, we shall solve for lobbying expenditure levels and the critical values, π^L, λ^L, and λ^O. There are three equilibirum conditions. The first determines the threshold for opposition:

$$u_i(\lambda^O, \Omega, 0) = u_i(\lambda^O, \Lambda, \omega) \tag{5}$$

for all i = 1, 2, ..., N. This condition states that an opponent of type λ^O should be indifferent between voicing opposition and not. The second equilibrium condition is that the critical values for lobbying satisfy:

$$u_P(\pi^L, \Pi, 0) = u_P(\pi^L, \pi^L, l_{Pf}) \ , \quad u_i(\lambda^L, \Lambda, \omega) = u_i(\lambda^L, \lambda^L, \omega + l_{Of}) \tag{6}$$

for all i = 1, 2, ..., N. These conditions state that a proponent of type π^L and opponent of type λ^L should be indifferent between spending the minimum level and not lobbying (and in the case of the opponent, relying solely on messages). Simplifying, (5) and (6) can be written as,

$$\frac{\alpha}{2\delta}\left(\pi^L - \Pi\right)\pi^L = l_{Pf} \ , \quad \frac{\beta}{2\delta}\left(\lambda^L - \Lambda\right)\lambda^L = l_{Of} \ , \quad \frac{\beta}{2\delta}\left(\Lambda - \Omega\right)\lambda^O = \omega \tag{7}$$

[33] This statement would be true even if we were to allow abritrarily complex messages, rather than just binary ones. To see this, note that once the firm has paid the cost of sending a message, the exact content of the message it sends cannot affect the government's beliefs. If it did, the firm would always choose a message that produces lowest probability of suspension, so long is the type is positive (which it must be or it wouldn't pay the cost), and thus, the government could draw no inference about the firm's type from the message. This same logic might explain why the government does not solicit a message from the proponent. The government already knows that the proponent's type is positive, as this is implied by the suspension request. Thus, the proponent can convey no further information via a costless message.

The third condition is that any firm that spends at least the minimum must prefer its chosen spending level to any alternative amount. Locally, this condition can be expressed as,

$$\frac{\partial u_P}{\partial \tilde{\pi}}\frac{d\tilde{\pi}}{dl_P}+\frac{\partial u_P}{\partial l_P}=0\ , \quad \frac{\partial u_i}{\partial \tilde{\lambda_i}}\frac{d\tilde{\lambda_i}}{dl_i}+\frac{\partial u_i}{\partial l_i}=0 \tag{8}$$

That is, the marginal benefit from increasing the government's belief about a firm's type (and thus influencing the probability of suspension in the firm's favor) is equal to the marginal increase in lobbying cost necessary to affect this change of belief. Using equations (3) and (4), along with equilibrium properties (b) and (c), (8) implies,

$$\frac{\alpha\pi}{2\delta}=\frac{dr_P}{d\pi}\ , \quad \frac{\beta\lambda_i}{2\delta}=\frac{dr_i}{d\lambda_i} \tag{9}$$

Thus, the lobbying functions are strictly increasing in π and λ_i, respectively. Taking integrals of (9) and using the boundary conditions $r_P(\pi^L)=l_{Pf}$ and $r_i(\lambda^L)=l_{Of}$, we find the equilibrium lobbying functions, for spending above the minimum,

$$r_P(\pi)=\left(\pi^2-\left(\pi^L\right)^2\right)\frac{\alpha}{4\delta}+l_{Pf}\ , \quad r_i(\lambda_i)=\left(\lambda_i^2-\left(\lambda^L\right)^2\right)\frac{\beta}{4\delta}+l_{Of} \tag{10}$$

By inverting equilibrium lobbying functions and substituting the results into equation (2), it is possible to obtain a closed form, albeit nonlinear, expression for the probability of suspension. We obtain a more workable form by inverting (10) and taking a log-linear approximation, which for the proponent gives,

$$\pi=\sqrt{\left(\pi^L\right)^2+\left(r_P-l_{Pf}\right)\frac{4\delta}{\alpha}}\approx\pi^L+\left(\pi^L-\Pi\right)\left[\ln(r_P)-\ln(l_{Pf})\right]$$

This and the analogous approximation for the opponents are used to obtain an approximation for the probability of suspension, conditional on a suspension request, suitable for estimation,

$$\Pr(\textit{suspension})\approx\Gamma-\frac{\beta\left(\Lambda-\Omega\right)}{2\delta}\sum_{i=1}^{N}I_{[\lambda_i>\lambda^O]}-\frac{\beta\left(\lambda^L-\Lambda\right)}{2\delta}\sum_{i=1}^{N}L_i+\frac{\alpha\left(\pi^L-\Pi\right)}{2\delta}L_P \tag{11}$$

where $\Gamma=\frac{1}{2}+\frac{\gamma}{2\delta}+\frac{\alpha\Pi}{2\delta}-\frac{\beta N\Omega}{2\delta}$, $L_i\equiv\left[1+\ln(l_i)-\ln(l_{Of})\right]I_{[\lambda_i>\lambda^L]}$ and $L_P\equiv\left[1+\ln(l_P)-\ln(l_{Pf})\right]I_{[\pi>\pi^L]}$.

Equation (11) shows the determinants of the equilibrium suspension probability. The first term captures the baseline suspension probability, independent of the firms' lobbying and messages. It is increasing in the government's bias in favor of trade liberalization γ, decreasing in the variance of the government's political shock δ, and increasing in the government's relative valuation of non-lobbying, non-opposing firms $\alpha\Pi-\beta N\Omega$. Note that while N enters negatively into Γ, we cannot rule out that it enters positively through γ, as in the model of Appendix B, and thus the effect of N on Γ is ambiguous. The second term captures the effect of verbal opposition, which enters negatively and depends linearly on the number of firms that express opposition. This includes all firms expressing opposition, whether they lobby or not. The third term captures the effect of opponent lobbying. We refer to L_i as an opponent's *effective* lobbying expenditure and note that the suspension probability is decreasing in its sum. The last term measures the impact of the proponent's effective lobbying L_P.

Equations (10) and (11) are illustrated in figures 2 and 3, which show the lobbying functions and corresponding suspension probabilities as functions of the firms' payoffs. In figure 2, we show (in grey) proponent lobbying, which equals zero for $\pi<\pi^L$, jumps to l_{Pf} at $\pi=\pi^L$, and increases quadratically thereafter. The

black line shows the probability of suspension, which jumps at $\pi = \pi^L$ as the government revises upwards its expectation of π based on the jump in lobbying, and increases linearly in π thereafter. Figure 3 shows similar patterns for each opponent. The difference is that at $\lambda_i < \lambda^O$ the opponent does not verbally oppose the suspension, while for $\lambda_i \geq \lambda^O$ it does. This causes a downward jump in the probability of suspension at $\lambda_i = \lambda^O$, followed by a second downward jump at $\lambda_i = \lambda^L$ as the opponent starts to lobby.

5 Empirical Analysis

In this section, we investigate the implications of our model and estimate empirical specifications derived from the model. The model has three sharp predictions. The first is that, all else equal, effective lobbying expenditure by the proponent raises the probability of securing a tariff suspension. Second, verbal opposition itself, without opponent lobbying expenditures, reduces the probability of a suspension; the higher the number of opponents, the larger is the reduction in the probability of suspension. Third, effective lobbying expenditures by the opponents decrease the probability of the suspension.

5.1 Empirical strategy

Our estimation is based on equation (11). To begin, we abstract from the lobbying expenditure levels and consider only the effects of political organization. This simplification allows for comparison with the quid pro quo literature, which takes this approach. The regression equation is specified as follows:

$$\Pr(suspension)_{i,t} = a + \beta_0 N_{i,t}^{opp} + \beta_1 N_{i,t}^{org,opp} + \beta_2 D_{i,t}^{org,prop} + \beta_3 Z_{i,t} + \eta_s + \nu_t + \epsilon_{i,t} \tag{12}$$

where i and t denote the bill and Congress, respectively, and s denotes the HTS section.[34] $\Pr(suspension)$ is the probability that the suspension requested in the bill is granted; $N_{i,t}^{opp}$ is the number firms that voice oppostion; $N_{i,t}^{org,opp}$ is the number of politically organized opponents, i.e. the number of opponent firms which lobby on trade or any other issue pertaining to the bill; $D_{i,t}^{org,prop}$ is a dummy which is equal to 1 if the proponent firm of the bill is politically organized, i.e. it lobbies on trade or any other issue pertaining to the bill. $Z_{i,t}$ denotes the vector of additional controls at the bill-congress level. The control variables include the pre-suspension tariff rate, the (logs of the) number of contacted firms, the number of bills sponsored by the same member of Congress, and estimated tariff revenue loss; a dummy which is equal to 1 if the bill is an extension of a previous bill, and a dummy which is equal to 1 if the bill is presented both in the House and Senate. In addition, we also include political variables: a dummy which is equal to 1 if the sponsor belongs to the House Ways and Means or Senate Finance Committees in the current or past three Congresses and a dummy equal to 1 if the sponsor belongs to the Democratic Party. All regressions include HTS section and Congress fixed effects (denoted, respectively, by η_s and ν_t). Finally, we also include interactions between party of the sponsor and Congress fixed effects to control for additional political variables, e.g. whether the sponsor belongs to the same party as the chairman of Senate Finance and House Ways and Means committees, whether the sponsor belongs to the majority party in the Congress. Consistent with theoretical model, equation (12) is estimated using a linear probability model.[35]

[34] There are 22 different HTS sections, which group products into broad categories such as mineral products, chemical or allied industries, textiles, base metals, machinery and mechanical appliances, etc. See: http://hts.usitc.gov/

[35] Our results are robust to estimation by probit. However, there is a danger with fixed-effects estimation of a probit model that it may lead to inconsistent estimates, due to the incidential parameter problem (Chamberlain, 1984).

The parameters of interest are β_0, β_1 and β_2. In terms of equation (11), we can interpret these parameters as $\beta_0 = -\beta(\Lambda - \Omega)/2\delta < 0$, $\beta_1 = -\beta(\lambda^L - \Lambda)L_O/2\delta < 0$ and $\beta_2 = \alpha(\pi^L - \Pi)L_P/2\delta > 0$, where L_O is the average effective lobbying expenditure of organized opponents. In this specification, we treat the level of effective lobbying expenditures of opponents and proponent as part of the parameter to be estimated. Variation in effective lobbying expenditures, both across observations and across individual opponents for the same observation, is ignored.

In our second specification, we estimate Equation (11), explicitly accounting for variation in the levels of lobbying expenditures of the proponents and opponents. The regression equation is specified as follows:

$$\Pr(suspension)_{i,t} = a + \theta_0 N_{i,t}^{opp} + \theta_1 SL_{i,t}^{opp} + \theta_2 L_{i,t}^{prop} + \theta_3 Z_{i,t} + \eta_s + \nu_t + \epsilon_{i,t} \tag{13}$$

where $L_{i,t}^{prop}$ denotes the effective lobbying expenditures by the proponent for trade or other issues related to the bill, and $SL_{i,t}^{opp}$ denotes the sum of effective lobbying expenditures for organized opponents. Recall from equation (11) that the effective lobbying expenditures depend on (logs of) the minimum feasible lobbying expenditures l_{Pf} and l_{Of}. Note that these values are assumed to be constant across bills and firms of the same type. Thus, as proxies for l_{Pf} and l_{Of}, we choose the minimum lobbying expenditures in the data, over all firms and bills, for the proponents and opponents, respectively. In this specification, the coefficients correspond to the theory according to: $\theta_0 = -\beta(\Lambda - \Omega)/2\delta < 0$, $\theta_1 = -\beta(\lambda^L - \Lambda)/2\delta < 0$ and $\theta_2 = \alpha(\pi^L - \Pi)/2\delta > 0$.

5.2 OLS benchmark results

We first estimate the model using ordinary least squares. Table 3 presents our main results. We find a strong, negative and significant (at the 1% level) impact of opposition on the probability of passage of the tariff suspension bill. This result is robust across specifications; in particular it is not affected by whether we measure political organization using a discrete or a continuous variable (compare columns (1)-(2) to columns (3)-(4)).

Note that the estimate of the coefficient of $N_{i,t}^{opp}$ (i.e., β_0) captures the impact of firms that oppose suspension but do not lobby, since the regression equation controls for $N_{i,t}^{org,opp}$. More precisely, all else equal, each unorganized opponent firm decreases the probability of suspension by $-\beta_0$. The fact that β_0 is negative and significant is not consistent with the model of Grossman and Helpman (1994). That model predicts that a product with unorganized domestic producers should actually receive less protection than products with no domestic producers at all. In fact they should receive a negative tariff, or an import subsidy. In the case of tariff suspension bills, a zero tariffi s the lower bound. So, if we interpret firms that express opposition without spending to be unorganized producers and those that do not express opposition to be nonproducers, Grossman and Helpman (1994) would predict that the effect of opposition sans lobbying increases the likelihood of a suspension being granted. In contrast, according to our estimates in columns (1) and (2), each unorganized opponent reduces the probability of suspension by 18 percentage points. Therefore, tariff suspensions do not fit well into a pure quid pro quo model. Rather, they are consistent with our model of informational lobbying. The coefficient of $N_{i,t}^{opp}$ can be interpreted as a measure of the impact of the message alone. The fact that it is negative and significant tells us that simply noting opposition does impact the passage of a bill.

Our results also show that $N_{i,t}^{org,opp}$, the political organization of the opponent firm(s), is effective at reducing the likelihood that the tariff suspension passes. This estimates in columns (1) and (2) are significant

at the 1% level. The coefficient β_1 on organized opposition (-24.6 percentage points in column (1)) captures the additional effect (beyond the impact of unorganized opposition) of opponent lobbying on the probability of the legislation's passage. Therefore, a bill with one firm noting opposition, that also lobbies, is 42.5 percentage points less likely to pass. The coefficient of $N_{i,t}^{org,opp}$ can be interpreted as a measure of the impact of lobbying. The finding that it is negative and statistically significant suggests that lobbying by opponents is effective in reducing the bill's passage. The findings are similar if we use effective lobbying expenditures by opponents instead of the discrete variable (columns (3) and (4)). As predicted by the theoretical model, higher effective lobbying expenditure by opponents reduces the probability of the suspension being passed. The estimated effect is statistically significant at the 5 percent level.[36] As argued above, it is difficult to disentangle the motives for lobbying based on political spending. Hence either (both) the information channel, which is the focus of this paper, or (and) the quid pro quo channel could be driving this result.

On the proponent side, columns (1) and (2) show no significant impact of political organization by the proponent firm. However, when we use the continuous lobbying variable (which is more consistent with the estimating equation derived from the theory), we do find that higher proponent lobbying increases the chances of the suspension being passed (statistically significant at least at the 10% level, columns (3) and (4)).

Finally, note that the indicator variable of whether the bill is an extension is positive and significant. Surprisingly, none of the other economic and political controls, except Congress dummies, have a significant effect on the probability of suspension.

5.3 IV results

Endogeneity is an issue for both regressions (12) and (13). All three of our main variables, $N_{i,t}^{opp}$, $N_{i,t}^{org,opp}$, $D_{i,t}^{org,prop}$ in regression (12) and $N_{i,t}^{opp}$, $SL_{i,t}^{opp}$, $L_{i,t}^{prop}$ in regression (13), could be endogenous due to reverse causality. For example, if the ex-ante expected probability of suspension is high – for some reason we do not account for in the right-hand-side of the equation – potential opponent firms may decide not to come forward and oppose the bill, expecting a small impact of their opposition and, at the same time, not wanting to incur the cost of opposition (for instance, a potential opponent might wish to avoid provoking retaliation from the proponent, in the event that their roles are reversed on another bill). Similarly, if the probability of success of a bill is high, opponent firms may decide it is not worthwhile to invest in lobbying expenditures to try to block it. These reverse-causality effects would imply a negative correlation between the unobserved component of the probability of suspension and $N_{i,t}^{opp}$, $SL_{i,t}^{opp}$; hence, they would exaggerate the magnitude of the (negative) estimated effects.[37] Finally, the decision of a proponent firm to invest (and how much) in lobbying expenditures could also be related to expectations regarding its probability of suspension, and bias the estimated coefficients on $D_{i,t}^{org,prop}$ and $L_{i,t}^{prop}$.

To address the endogeneity problems described above, we use an instrumental variables strategy. We use three different instruments for the number of opponents $N_{i,t}^{opp}$. First, we construct a variable intended to capture the possibility that potential opponents are proponents themselves on other bills. Specifically, we measure the number of potential opponent firms contacted for the bill in question that are also currently

[36] Note that the effective lobbying expenditures=constant+[Log (lobbying expenditures)]. Therefore, the estimates in column (3) and (4) suggest that a one percent rise in actual lobbying expenditures by opponents reduces the chances of passage of bill by about 3.7 percentage points.

[37] However, the same type of argument may work in the opposite direction, i.e. upstream firms may be more inclined to come forward and oppose the bill and invest in lobbying expenditures when they fear that the suspension is more likely to be granted. This case is not problematic for us since our estimates of opponent effects would be biased towards zero, i.e. they would be a lower bound of the true negative effects.

proponents on other bills. The idea underlying the instrument is that these opponents are not likely to voice opposition if they fear retaliation. Hence, when the value of this instrument is higher, we expect a smaller number of opponents (first stage). The second instrument is the number of potential opponent firms that have expressed opposition in past (or current) Congresses. We expect that, the higher is this number, the higher should be the number of opponents (first stage). In other words, we assume that certain firms have expertise or are more accustomed to expressing opposition; thus, if a bill has a larger number of potential opponents that have expressed opposition in the past, it is likely to have a larger number of opponents in the current period. Finally, the third instrument is the number of potential opponents contacted in the past.[38] The higher is this number, the lower the number of actual opponents is likely to be, becuase after controlling for the firms that have voiced opposition in the past, this number captures the effect those contacted in the past that did not oppose.

The three instruments are unlikely to be correlated with the unobserved component of the probability of suspension, i.e. they are unlikely to have a direct effect on the latter probability. What is relevant from the point of view of decision makers is whether the bill negatively impacts upstream domestic firms, which is the case only if the latter ones say so by voicing their opposition. It is unlikely that the success of the bill depends on the instruments independently from whether the tariff suspension is opposed (exclusion restriction). For example, the our instrument based on exposure to retaliation is likely to have an effect on the passage of the bill only through its effect on opposition. To conclude, the three instruments plausibly allow us to address the endogeneity of $N_{i,t}^{opp}$.

To construct instruments for the number of politically organized opponent firms $N_{i,t}^{org,opp}$ and whether the proponent firm is politically organized $D_{i,t}^{org,prop}$, we use firm-level data on lobbying activity. In particular, for each firm which spends lobbying money on trade or other issues related to the bill, we consider whether or not it lobbies for other issues, i.e., issues unrelated to the bill, like, defense.[39] We use as instruments the number of opponents who lobby on unrelated issues and a dummy equal to 1 if the proponent lobbies on unrelated issues. A firm which lobbies for unrelated issues is likely to have overcome many of the fixed costs associated with lobbying, and thus it would be easier for the firm to channel lobbying money to influence decisions regarding the tariff suspension bill. Thus, we expect to find strong first-stage relationships. At the same time, there is no reason why the lobbying activity of the firm on unrelated issues should have a direct impact on the probability of passage of the tariff suspension (exclusion restriction). Thus, the number (indicator) of opponent (proponent) firm lobbying on unrelated issues plausibly allows us to address endogeneity. Finally, for the measure of effective lobbying expenditures $(L_{i,t}^{prop}, SL_{i,t}^{opp})$, we use as instruments the number of unrelated issues the opponent firms and the proponent firm lobby for, respectively.[40]

Table 4 presents the results of the IV estimation. Table 5 shows the first-stage estimates, which suggests that the instruments are very strong. According to regression (1a), Table 5, the number of opponents is strongly correlated with the three instruments (at the 1% level) with the expected signs. First, the number of opponents is decreasing in the exposure of opponents to retaliation, increasing in the number of potential opponents that have expressed opposition in current or past Congresses, and decreasing in the number of

[38] Note that the lists of contacted firms are compiled by ITC staff who are not close to the top of the hierarchy, hence are not likely to be related to decisions made by the Congress regarding the passage of the bills. In discussing how potential opponents are selected, Pinsky and Tower (1995, p. 20) note, "the ITC generally relies on the expertise of an industry analyist for these assessments (interview)."

[39] To be precise, "issues unrelated to the bill" include all issues in Table B1, except trade, chemicals, mining, food, manufacturing, textiles and transport.

[40] Recall that the lobbying reports do not provide the split of total lobbying expenditures among various issues and we derive lobbying expenditures on unrelated issues also from the total expenditures. In order to avoid a mechanical correlation between the instrument and the regressor, we do not use the expenditures on unrelated issues as instrument.

potential opponents contacted in the past. Similarly, column (1b) shows that the number of organized opponent firms is positively and significantly correlated (at the 1% level) with the number of opponent firms that lobby on unrelated issues. Regression (1c) shows a similar result for the instrument of political organization of the proponent firm, which is positively and significantly correlated (at the 1% level) with whether the proponent firm lobbies on other issues. All these results are unchanged (in terms of sign and significance level) when we add the control variables in regressions (2a)-(2c). According to regressions (3b) and (4b), the number of unrelated issues for which the opponent firm lobbies is a positive and significant determinant (at the 1% level) of (log) lobbying expenditures by the opponent firm on trade and other issues. A similar relationship holds for the proponent firm (see regressions (3c) and (4c)). To conclude, the first-stage results are very strong, as also confirmed by the first-stage F statistics for the excluded instruments reported at the end of Table 4. The high values of the Kleibergen-Paap rk Wald F statistic (between 15.6 and 16.9, 5% Stock-Yogo critical value of 9.53) also suggest that we reject the null of weak correlation between the excluded instruments and the endogenous regressors.[41]

The second-stage results confirm most of the OLS results. The test of overidentifying restrictions passes by a large margin (the p-value for the Hansen's J-statistic ranges between 0.88 and 0.96).[42] Both unorganized and organized opposition have a negative and significant impact on the likelihood of passage of the tariff suspension bill. In addition, proponent firm's political organization now has a positive and significant impact, as predicted by the theoretical model. All these findings are confirmed when we use the level of effective lobbying expenditures to measure the extent of political organization of opponent and proponent firms.

The magnitude of the estimated coefficients on organized proponents is much higher in the IV regressions compared to the OLS. For example, in regression (1) of Table 4, a bill with an organized proponent is more than twice as likely to pass (compared to Table 3). The direction of the bias suggests a negative correlation between the unexplained probability of suspension and proponent lobbying in the OLS regressions. In other words, bills with a higher ex-ante expected probability of suspension are likely to be associated with a lower degree of proponent political organization. Finally, note that the pre-suspension tariff rate has a positive impact on the likelihood of suspension, which suggests that the higher the initial level of distortion and the loss to the proponents, the less likely the government is to yield to pressure from opponents.[43]

Besides endogeneity, another possible source of concern is that we observe only suspension bills that are introduced into Congress. We cannot speak to the determinants of introduction, because it is not possible to observe bills not introduced. Economic intuition, however, would suggest that proponents refrain from introducing bills that are doomed to failure, and thus the 79% raw success rate in our sample is not representative of all conceivable bills. How problematic this is depends in large measure on the scope of the question being addressed. Both our theory and empirical strategy are designed to capture the effect of lobbying and verbal opposition on the success rate of bills that have been, and, under the current regime, are likely to be, introduced into Congress. We believe this to be the most relevant question, and our estimates are valid in this context.[44]

[41] Note that both first and second stage IV results are robust to dropping one instrument (for the number of opponents) at a time. The Hansen's test of overidentifying restrictions is satisfied when we use any two of the three instruments.

[42] In addition, all the instruments are statistically insignificant when we introduce them in the OLS specification together with the endogenous regressors.

[43] This is consistent with the finding from trade reforms in many countries, where industries with higher initial tariff rates had larger reductions in tariffs (see Goldberg and Pavcnik, 2007, for a survey).

[44] If we were interested in the wider population of all potential bills (i.e., those introduced and those not introduced), additional complications could arise. If the proponent's decision to introduce a bill is a function of exogenous observables, such as the tariff rate or the number of potential opponents, selection does not give rise to a bias in the estimates of the coefficients (Wooldridge, 2002). If the introduction of bills is systematically correlated with unobservables that affect the probability of the suspension being granted, then selection bias could occur. As we do not have any information on the bills that are not introduced, it

To summarize the results, both the OLS and the instrumental variable regressions confirm the key predictions of the theoretical model: (i) verbal opposition itself, without lobbying, reduces the probability of suspension, (ii) greater political organization or higher lobbying expenditures by the proponent is associated with a higher probability of suspension and (iii) greater political organization or higher lobbying expenditures by the opponent, though relatively rare, is effective at defeating the suspension.

5.4 Robustness checks: broader measures of political organization

As mentioned in Section 4.1, lobbying expenditures represent the bulk of total targeted political activity (accounting for up to 90% of it) with the remaining portion (only approximately 10%) being made up by PAC campaign contributions. In addition, as shown in Figure 3, at the firm level, lobbying expenditures (on trade and other issues related to the bill) and PAC contributions are positively and significantly correlated. Thus, we believe that by using lobbying expenditures data we are accounting for most of the variation in lobbying activity. However, to check the robustness of our results, we also use firm-level data on PAC campaign contributions, which allows us to fully control for the impact of lobbying activity. We create a broader measure of political organization where a bill is defined to have a politically organized opponent (proponent) if the opponent (proponent) makes either lobbying expenditures on trade or related issues or PAC contributions, or both.[45] In other words, the key difference between this table and Tables 3 and 4 is that verbal opposition is defined more strictly as a situation in which the opponents voice their verbal opposition without spending on lobbying expenditures nor on PAC contributions. The estimates are shown in Table 6. The main result – that verbal opposition reduces the probability of suspension – continues to hold strongly in most specifications. As in Tables 3 and 4, political organization of opponents (proponents) reduces (increases) significantly the probability of suspension.

Another concern is that although firms note opposition without spending money in the current period, they could be making promises about spending money in future periods; alternatively, they could have already made the expenditures in previous Congresses. Hence noting verbal opposition in the current period without spending may not be an accurate measure of information tranmission. In order to address this concern, we define political organization more broadly to include lobbying expenditure in the past, current and future Congresses. The results are reported in Table 7. Again, noting opposition without spending money in the past, current or future, reduces significantly the probability of suspension. Political organization of the opponent is effective in reducing the probability of suspension, whereas political organization of the proponent increases the probability of suspension.

To conclude, the main results in the paper continue to hold strongly if we include broader measures of political organization to include (i) PAC contributions and (ii) lobbying expenditures in the past and future Congresses.[46,47]

is impossible to implement any of the usual corrections for sample selection. Therefore, we focus our attention only to the subpopulation of bills that are introduced and will refrain from drawing any conclusions for the wider population.

[45] According to the broader definition of political organization, 106 and 21 additional bills have politically organized proponents and opponents, respectively.

[46] We also check the robustness of our results to dropping bills that are extensions to previous bills. The results are unaffected.

[47] Another possible concern is that firms that oppose without spending money might be able to convince policymakers to do what is best for them because these firms receive the support of a large number of voters (and not because these firms credibly convey information about what is good for the policymakers). In other words, policymakers do not want to penalize firms that, for example, employ many workers or are very visible in the local economy. In order to address this concern, we control for the number of employees in each opponent firm by merging our dataset with data from Compustat. Since Compustat includes only publicly listed firms, our sample size reduces drastically by half. Controlling for the number of employees of the opponent firm, we still find that conveying information without spending money continues to reduce significantly the probability of suspension (in the OLS specifications). In order to avoid losing observations, we also estimate a regression including instead of the number

5.5 Backing out the structural parameters

Having established that firms influence the tariff suspensions with both money and messages, we now return to the theoretical model to clarify how exactly this influence works. While the coefficient estimates quantify the effects of the firms' actions on the probability of suspension, the model enables us to link these effects to the costs of opposing and lobbying, the distributions of gains and losses, and government preference parameters. Our purpose is to quantify the contribution of each factor and to see if the implied parameters are reasonable.

We begin by examining the relative magnitudes of the point estimates from our preferred specification (Table 4, Column 4). Using the definitions $\theta_0 = -\beta(\Lambda - \Omega)/2\delta$, $\theta_1 = -\beta(\lambda^L - \Lambda)/2\delta$ and $\theta_2 = \alpha(\pi^L - \Pi)/2\delta$, we find,

$$\frac{\Lambda - \Omega}{\lambda^L - \Lambda} = \frac{\theta_0}{\theta_1} = 5.65 \tag{14}$$

$$\frac{\beta(\Lambda - \Omega)}{\alpha(\pi^L - \Pi)} = \frac{-\theta_0}{\theta_2} = 7.3 \tag{15}$$

According to (14), there is a fivefold difference between the effect of voicing opposition (θ_0) and the effect of opponent organization (θ_1), which is due to the difference in the information content of these two actions. That is, the government's belief concerning the expected loss to a contacted firm increases by a factor of five upon that firm voicing opposition as compared to the increase in belief that occurs when that firm begins to lobby. From (15), there is a sevenfold difference between the effect of voicing opposition and the effect of proponent organization. This ratio depends on both the relative amount of information conveyed and the relative valuation β/α in the government's objective function.

In what follows, we will attempt to decompose the information component from the government bias component in (15). To do this, we begin by combining (14) and (15) with equilibrium conditions (7) to solve for the implied lobbying thresholds,

$$\pi^L = \frac{l_{Pf}}{\theta_2} = \$416,700 \tag{16}$$

$$\lambda^L = \frac{l_{Of}}{-\theta_1} = \$215,100 \tag{17}$$

Thus, the gain required to induce a proponent to lobby is larger than the loss required to induce an opponent to lobby. This difference is due in part to the fact that the minimum lobbying expenditure in the data is lower for opponents than proponents ($l_{Pf} = \$10,000$, $l_{Of} = \$6,700$) and in part because $-\theta_1 > \theta_2$. Given that about two thirds of proponents lobby, we would expect the average gain for all proponents (organized or not) to exceed π^L. Conversely, given that only 2% of contacted firms actually lobby against suspensions, the average expected loss to contacted firms is probably considerably less than λ^L.

To go further, we need to add assumptions regarding government priors. Since our equilibrium is fully revealing for $\pi \geq \pi^L$ and $\lambda \geq \lambda^L$, we need only specify distributions on the intervals $\left[\underline{\pi}, \pi^L\right)$, $\left[0, \lambda^O\right)$, and $\left[\lambda^O, \lambda^L\right)$, and only up to the first moments. To keep matters simple we assume uniform priors over these

of employees, a dummy for whether the firm is in Compustat, to denote an indicator variable for large firms. The results are qualitatively similar.

intervals.[48] Using (7) again we obtain,

$$\lambda^O = \left(1 - \frac{\theta_1}{\theta_0}\right)\lambda^L = \$177,000 \tag{18}$$

$$\omega = -\theta_O \lambda^L = \$30,970 \tag{19}$$

$$\Lambda = \frac{\lambda^O + \lambda^L}{2} = \$196,000 \tag{20}$$

$$\Omega = \frac{\lambda^O}{2} = \$88,480 \tag{21}$$

Thus, we can assign dollar values on the government beliefs concerning opponent loss, conditional on the actions of the contacted firms. The jump in expected opponent loss when opposition is voiced is over one hundred thousand dollars ($196,000 - $88,480), compared to the more modest jump of about twenty thousand dollars, ($215,100 - $196,000), when lobbying commences. Furthermore, we see that the cost of opposition that rationalizes these beliefs is about thirty thousand dollars. This cost is enough to prevent contacted firms from voicing opposition unless their loss exceeds λ^O.

To complete the quantification of the model, we need to make an assumption about one last parameter: $\underline{\pi}$, the minimum proponent gain. Simple tariff theory implies that, if the proponent is the sole consumer of the product, its gain from a tariff suspension should be at least as large as the total loss to import-competing firms plus the loss of tariff revenue. Drawing on this intution, we construct a hypothetical lower bound for each bill by taking the government's belief about the loss to the average unopposed firm Ω multiplied by the number of contacted firms plus the estimated tariff revenue loss over the three years of the suspension bill.[49] We then take the mean of the lowest 1% of this variable in our sample and arrive at an admittedly rough estimate of $207,000. Using this estimate, we get,

$$\Pi = \frac{\underline{\pi} + \pi^L}{2} = \$311,850 \tag{22}$$

Thus the jump in the government's belief about the proponent's gain when the proponent begins lobbying, ($416,700 - $311,850), is roughly on par with the jump in expected opponent loss when opposition is voiced. This tells us that the disproportionate influence of verbal opposition must be due to government bias. Using (16), (20), (21) and (22) in (15) yields,

$$\frac{\beta}{\alpha} = \frac{-\theta_0}{\theta_2}\frac{\left(\pi^L - \underline{\pi}\right)}{\lambda^L} = 7.1 \tag{23}$$

This bias is not very sensitive to our choice of $\underline{\pi}$. Adding or substracting one hundred thousand dollars from our assumed value produces a range of $[3.7, 10.5]$. It is robust to imposing symmetry on the lobbying thresholds, i.e., setting $\lambda^L = \pi^L$. It is also robust the inclusion of a quid pro quo motive for lobbying, as explained in Appendix A. Intuitively, quid pro quo would tend to enhance the effectiveness of proponent organization

[48] Note that the government's priors need not match the actual distributions of types. Moreover, even if we were to allow priors to be updated over time based on past play, Bayes' rule would at most lead to changes in the probabilities assigned to each interval, not the relative probabilities assigned to points within a given interval. Thus, a government that begins with naive priors would maintain uniform priors over these intervals without violating Bayes' rule.

[49] We use average unopposed firm losses, because we are interested in a lower bound. The average unopposed firm's loss is less than average potential opponent loss. Nonetheless, our lower bound could still be too high, because tariff revenue plus opponent loss could exceed proponent gain. This could occur, for example, if the proponent is not the sole consumer or if the tariff has terms of trade effects. By inflating our estimate of $\bar{\pi}$, these factors would make it harder to find evidence of opponent bias, as the amount of information conveyed by proponent organization would be underestimated.

relative to voicing oppostion (since voicing opposition alone involves no transfers to the government). Thus, our finding that voicing opposition is seven times more effective proponent organization, despite the rough equality in the information conveyed by the two actions, cannot be explained by quid pro quo.

Beyond this, we can only speculate about the source of the government bias, but we suspect it is due to differences in firm characteristics. Previous studies on trade at the firm level find that, similar to exporting firms, firms that source from abroad tend to be larger, more productive, more capital intensive (Bernard, Jensen, Redding and Schott, 2007) and more likely to be foreign owned (Girma and Görg, 2004) than their non-outsourcing counterparts. While the majority of the firms in our dataset are privately held (and thus do not disclose financial data), among the publically held, proponent sales are indeed twice as large as opponent sales on average. News media coverage has depicted tariff suspensions as unwarranted "earmarks" that enable large, multinational firms to offshore U.S. jobs and harm small U.S. businesses (Stephens, 2006). Congressional defenders of suspensions frequently point out that suspensions are carefully chosen to avoid harm to domestic firms, suggesting sensitivity to this public perception. However, it is possible to justify opponent bias on pure economic welfare grounds as well. The model in Appendix B shows that, in the presence of labor market frictions, greater labor intensity of opponents would produce an opponent bias even for a welfare maximizing government. Exploring these and other possible explanations for government bias is the task of future research.

One final puzzling aspect of the model is our finding of a non-neglible cost of opposition. While there may be administrative costs involved in responding to the USITC survey, it seems unlikely that these costs would approach thirty thousand dollars. One possible resolution to the puzzle is that the proponents and opponents talk about suspensions and arrive at tacit agreements to not oppose each other's bills. The opposition cost would then be the cost of breaching such an agreement. This cost should depend on the likelihood that a given contacted firm will be proponent in the future as well as the likelihood that the bill it proposes will fail should the firm breach the agreement. In our data, about 6% of all contacted firms became proponents at some point during the sample period. We also know that the probability than an opposed suspension is successful is about 68% lower on average than unopposed suspension. If we assume that firms take the pessimistic view that any bill they propose following breach will surely be opposed, then cost of breach would be about 4.1% of the expected value of a proposed bill. Using our estimates above, unconditional expected value of a proposed bill is about $763,000, and 4.1% of this is $31,130. This suggests that tacit agreements provide a quantitatively plausible explanation for the cost of opposition.

6 Conclusions

We have developed a model that incorporates information as a driver of trade policy and empirically tested its predictions using data on US tariff suspensions and firm-level information on trade lobbying expenditures. Our results are consistent with theory and are robust to addressing endogeneity concerns using an IV estimation strategy. We found that verbal opposition itself, without opponent spending, reduces the probability of a suspension. Given that they do not lobby (or make contributions), unorganized opponents should not matter to politicians, except through the welfare (profits, employment, etc.) and, ultimately, votes, that they generate. We interpret the voicing of opposition as informing the government of the welfare/votes that are at risk should the suspension pass. The big drop in success rates associated with unorganized opposition is suggestive of the influence of this information.

The probability of a suspension also declines with the trade policy lobbying expenditures of organized

opponents and increases with the expenditures of organized proponents. Recall that we began with the question of whether lobbying expenditures constitute quid pro quo or a signal of information, and we have provided a partial answer. The finding that messages are influential implies that the government relies on information possessed by firms; if this is so, it follows from the model that political spending must also convey information. That said, we cannot rule out the possibility that lobbying expenditures are also a form of quid pro quo, as quid pro quo spending is observationally equivalent to signaling in our model. Thus, while the exact mixture of signaling and quid pro quo cannot be distinguished, we do find that information matters and so does spending. Moreover, we have achieved a substantial improvement in accuracy over previous work in the estimation of the spending effect by clearly linking targeted lobbying expenditures to discretionary tariff changes and by using firm level data.

References

[1] Austen-Smith, David, 1992. "Strategic Models of Talk in Political Decision Making." *International Political Science Review*, 13(1): 45-58.

[2] Austen-Smith, David and John Wright, 1994. "Counteractive Lobbying." *American Journal of Political Science*, 38(1): 25-44.

[3] Bagwell, Kyle and Robert W. Staiger, 2009. "What Do Trade Negotiators Negotiate About? Empirical Evidence from the World Trade Organization" *American Economic Review*, forthcoming.

[4] Belloc, M., 2007. "Protection for sale in the EU." Mimeo, Sapienza University of Rome.

[5] Benard, Andrew B., J. Bradford Jensen, Stephen J. Redding and Peter K. Schott, 2007. "Firms in International Trade," *Journal of Economic Perspectives*, 21(3):105-130.

[6] Bohara, Alok K and William H. Kaempfer, 1991. "A Test of Tariff Endogeneity in the United States." *American Economic Review*, 81(4): 952-60.

[7] Bombardini, Matilde, 2008. "Firm Heterogeneity and Lobby Participation." *Journal of International Economics,* 75(2): 329-348.

[8] Bombardini, Matilde and Francesco Trebbi, 2009. "Competition and Political Organization: Together or Alone in Lobbying for Trade Policy" NBER working paper No. 14771.

[9] Broda, Christian, Nuno Limao, and David E. Weinstein. 2008. "Optimal Tariffs and Market Power: The Evidence." *American Economic Review*, 98(5): 2032-65.

[10] Chamberlain, G., 1984. Panel data. In: Griliches, Z., Intriligator, M.D. (Eds.), *Handbook of Econometrics*, Vol. 2. North-Holland, Amsterdam.

[11] Chen, Hui, Parsley, David C. and Yang, Ya-wen, 2010. "Corporate Lobbying and Financial Performance." Available at SSRN: http://ssrn.com/abstract=1014264

[12] Costinot, Arnaud, 2009. "Jobs, Jobs, Jobs: A 'New' Perspective on Protectionism." *Journal of the European Economic Association*, 7(5): 1-31.

[13] de Figueiredo, John M. and Cameron, Charles M., 2009. "Endogenous Cost Lobbying: Theory and Evidence." CELS 2009 4th Annual Conference on Empirical Legal Studies Paper. Available at SSRN: http://ssrn.com/abstract=1443559.

[14] de Figueiredo, J. M. and B. S. Silverman 2006. "The returns to lobbying: University lobbying efforts and the allocation of earmarked academic grants." *Journal of Law and Economics,* 49: 597-626.

[15] Ederington, Josh and Jenny Minier, 2008, "Reconsidering the Empirical Evidence on the Grossman-Helpman Model of Endogenous Protection." *Canadian Journal of Economics*, 41(3): 501-516.

[16] Eicher, Theo and Thomas Osang, 2002. "Protection for Sale: An Empirical Investigation: A Comment." *American Economic Review*, 92(5): 1702-11.

[17] European Union, 1998, "Commission communication concerning autonomous tariff suspensions and quotas," *Official Journal of the European Communities* (98/C 128/02).

[18] Facchini, Giovanni, Anna Maria Mayda and Prachi Mishra, 2008. "Do Interest Groups Affect US Immigration Policy?" Centre for Economic Policy Research. Discussion Paper.

[19] Fudenberg, Drew and Jean Tirole, 1991. Game Theory. Boston: MIT Press.

[20] Gawande, Kishore and Usree Bandyopadhyay, 2000. "Is Protection for Sale? Evidence on the Grossman-Helpman Theory of Endogenous Protection." *Review of Economics and Statistics*, 82(1): 139-152.

[21] Gawande, Kishore, Pravin Krishna, Marcelo Olarreaga, 2005. "Lobbying Competition Over Trade Policy" NBER Working Paper No. 11371

[22] Gawande, Kishore, Pravin Krishna and Michael J Robbins, 2006. "Foreign Lobbies and U.S. Trade Policy." *Review of Economics and Statistics,* 88(3): 563-571.

[23] Gawande, Kishore, William Maloney, and Gabriel Montes-Rojas, 2009. "Foreign informational lobbying can enhance tourism: Evidence from the Caribbean." *Journal of Development Economics,* 90(2): 267-275.

[24] Girma, S. and H. Görg (2004), "Outsourcing, Foreign Ownership and Productivity: Evidence from UK Establishment-level Data," *Review of International Economics*, 12, 5, 817?32.

[25] Goldberg, Pinelopi Koujianou and Giovanni Maggi, 1999. "Protection for Sale: An Empirical Investigation." *American Economic Review,* 89(5): 1135-1155.

[26] Goldberg, Pinelopi Koujianou and Nina Pavcnik, 2007. "Distributional Effects of Globalization in Developing Countries." *Journal of Economic Literature,* 45(1): 39-82.

[27] Grossman, Gene M. and Elhanan Helpman, 1994. "Protection for Sale." *American Economic Review,* 84(4): 833-850.

[28] Grossman, Gene M. and Elhanan Helpman, 2001. *Special Interest Politics*, Boston: MIT Press.

[29] Grossman, Gene M. and Elhanan Helpman, 2005. "A Protectionist Bias in Majoritarian Politics." *Quarterly Journal of Economics,* 120(4): 1239-1282

[30] Gokcekus, Omer and Amber Barth, 2007, "Political economy of the U.S. temporary duty suspension program: An empirical note." *Public Choice,* 131:345-350.

[31] Igan, Deniz, Prachi Mishra and Thierry Tressel, "A Fist Full of Dollars: Lobbying and the Financial Crisis," NBER Macroeconomics Annual, forthcoming.

[32] Imai, Susumu, Hajime Katayama, and Kala Krishna, 2009, "Is Protection Really for Sale? Survey and Directions for Future Research," *International Review of Economics & Finance,* 18(2): 181-191.

[33] Lohmann, Susanne, 1995. "Information, Access and Contributions: A Signaling Model of Lobbying."*Public Choice,* 85: 267-284.

[34] Ludema, Rodney D. and Anna Maria Mayda, 2008. "Do Countries Free Ride on MFN?" *Journal of International Economics,* 77(2):137-150.

[35] Ludema, Rodney D. and Anna Maria Mayda, 2010. "Do Terms of Trade Effects Matter for Trade Agreements? Evidence from WTO Countries." CEPR Discussion Paper 7695.

[36] Mansfield, Edward D. and Marc L. Busch, 1995. "The Political Economy of Nontariff Barriers: A Cross-National Analysis." *International Organization*, 49(4): 723-749.

[37] Mayer, Wolfgang, 1984. "Endogenous Tariff Formation." *American Economic Review*, 74(5): 970-985.

[38] McCalman, P., 2004. "Protection for sale and trade liberalization: an empirical investigation." *Review of International Economics*, 12: 81-94.

[39] Mitra, D., Thomakos, D., & Ulubasoglu, M., 2002. "Protection for sale in a developing country: democracy versus dictatorship." *Review of Economics and Statistics*, 84: 497-508.

[40] Milyo, Jeffrey, David Primo and Timothy Groseclose, 2000. "Corporate PAC Campaign Contributions in Perspective." *Business and Politics,* 2(1): 75-88.

[41] Potters, J. and F. van Winden, 1992. "Lobbying and asymmetric information." *Public Choice,* 74: 269-292.

[42] Pinsky, L., & Tower, E., 1995. "Temporary duty suspension in the United States." *North American Journal of Economics and Finance,* 6(1): 17-36.

[43] Dutt, Pushan and Devashish Mitra, 2002. "Endogenous trade policy through majority voting: an empirical investigation," *Journal of International Economics,* 58(1),:107-133.

[44] Snyder, J. M. 1990. "Campaign contributions as investments: The US House of Representatives 1908-1986." *Journal of Political Economy,* 61: 195-206.

[45] Stephens, J., 2006, "A Quiet Break for Corporations," *The Washington Post*, September, 20, 2006.

[46] Trefler, D., 1993. "Trade liberalization and the theory of endogenous protection: an econometric study of U.S. import policy." *Journal of Political Economy,* 101: 138-160.

[47] Tripathi, M., S. Ansolabehere, and J. Snyder 2002. "Are PAC contributions and lobbying linked? New evidence from the 1995 Lobby Disclosure Act." *Business and Politics,* 4: 131-155.

[48] Wooldridge, J. M. 2002. *Econometric analysis of cross section and panel data*, The MIT Press, Cambridge, Massachusetts.

[49] Wright, John R., 1996. *Interest Groups and Congress: Lobbying, Contributions, and Influence.* Allyn & Bacon, Boston.

Appendix A: The Lobbying Model with Contributions

Our model in the main text treated lobbying expenditures as pure signals of information, whereas Grossman and Helpman (1994) assume political spending, in the form of contributions, enters directly into the politician's objective function and can be made contingent on the policy choice. Here we adapt our model to incorporate this assumption. Suppose that at the information stage of the model, each firm decides whether or not to hire a lobbyist, and, if so, pays the lobbyist a (variable) fee: l_P in the case of the proponent, and l_i in the case of each opponent. The lobbyist in turn offers a contribution to the government equal to a fraction ψ of the fee received from the firm, which is contingent upon the government granting the firm's desired policy. If it grants the suspension, the government receives ψl_P from the proponent lobbyist, while if it refuses the suspension, it receives $\psi \sum_{i=1}^{N} l_i$ from the opponent lobbyists. Equation (1) become

$$G = \gamma + \alpha\pi - \beta\sum_{i=1}^{N}\lambda_i + \psi\left(l_P - \sum_{i=1}^{N} l_i\right) - \varepsilon \tag{24}$$

We assume that any unspent fees are profit for the lobbyists. This ensures that the government's receipt of contributions is contingent on its policy choice, but the fees paid by the firms are not. The former assumption is the key component of the quid pro quo model, while the latter is made solely for tractability.[50]

Given (24) the probability of suspension becomes,

$$\Pr[\textit{suspension}] = \frac{1}{2} + \frac{\gamma + \alpha\tilde{\pi} - \beta\sum_{i=1}^{N}\tilde{\lambda}_i + \psi\left(l_P - \sum_{i=1}^{N} l_i\right)}{2\delta} \tag{25}$$

The proponent's expected gain from the suspension net of lobbying expenses becomes,

$$u_P(\pi, \tilde{\pi}, l_P) = \frac{\pi}{2\delta}\left[\delta + \gamma + \alpha\tilde{\pi} + \psi l_P - NE(\beta\tilde{\lambda} + \psi l_i(\tilde{\lambda}))\right] - l_P \tag{26}$$

while potential opponent i's expected gain net of lobbying expenses is

$$u_i(\lambda, \tilde{\lambda}_i, \omega\, m_i + l_i) = -\frac{\lambda}{2\delta}\left[\delta + \gamma - \beta\tilde{\lambda}_i - \psi l_i + \alpha E(\tilde{\pi} + l_P(\tilde{\pi})) - (N-1)E(\beta\tilde{\lambda} + \psi l_i(\tilde{\lambda}))\right] - \omega m_i - l_i \tag{27}$$

Because political spending has a direct effect on the probability of spension, it effectively reduces the marginal cost to a firm of using spending as a signal. To capture this effect, we define the function $s(x) = 1-(x\psi/2\delta)$, which is the marginal cost of political spending for a firm of type x, holding beliefs constant. We restrict parameters such that $s(x) \in [0, 1]$ for all firm types. Using $s(x)$ in (26) and (27), it straightforward

[50] Otherwise, the lobbying cost to the firm depends on the probability of suspension. This makes the mathematics much more complicated. The equilibrium lobbying functions can only be determined by solving a system of nonlinear differential equations. Numerical simulations show qualitatively similar results to what is shown here.

to solve for the equilibrium threshold values,

$$\frac{\alpha}{2\delta}\left(\pi^L-\Pi\right)\pi^L = s(\pi^L)l_{Pf}\ , \quad \frac{\beta}{2\delta}\left(\lambda^L-\Lambda\right)\lambda^L = s(\lambda^L)l_{Of}\ , \quad \frac{\beta}{2\delta}\left(\Lambda-\Omega\right)\lambda^O = \omega \tag{28}$$

Comparing (28) to (7), we see that the threshold condition for λ^O is unchanged. This is because it involves no spending and thus is unaffected by the introduction of quid pro quo. The spending thresholds are affected however. The introduction of quid pro quo is equivalent to reducing the fixed costs of lobbying.

The first order conditions for the lobbying expenditures are now given by,

$$\frac{\alpha\pi}{2\delta} = s(\pi)\frac{dr_P}{d\pi}\ , \quad \frac{\beta\lambda_i}{2\delta} = s(\lambda_i)\frac{dr_i}{d\lambda_i} \tag{29}$$

These conditions result in more complicated lobbying functions than the quadratic ones in the main text. However, their log-linear approximation is largely unaffected, resuting in a final estimating equation of,

$$\Pr(\textit{suspension}) \approx \Gamma - \frac{\beta\left(\Lambda-\Omega\right)}{2\delta}\sum_{i=1}^{N} I_{[\lambda_i>\lambda^O]} - \frac{\beta\left(\lambda^L-\Lambda\right)}{2\delta s(\lambda^L)}\sum_{i=1}^{N} L_i + \frac{\alpha\left(\pi^L-\Pi\right)}{2\delta s(\pi^L)}L_P \tag{30}$$

From an empirical standpoint, therefore, the only effect of introducing quid pro quo is on the interpretation of the coefficients on effective lobbying. In particular, these coefficients now capture the combined effects of information, quid pro quo, and government preference on the probability of suspension. Note, however, that this reinterpretation does not help to resolve the puzzle as to why voicing opposition is seven times more influential proponent organization. In fact, it makes the finding even more striking. To see this, note that with quid pro quo (15) becomes:

$$\frac{\beta\left(\Lambda-\Omega\right)}{\alpha(\pi^L-\Pi)}s(\pi^L) = \frac{-\theta_0}{\theta_2} = 7.3 \tag{31}$$

Since $s(\pi^L)<1$, this means that the combined effect of opponent bias β/α and the information differential $\left(\Lambda-\Omega\right)/(\pi^L-\Pi)$ must be even greater to account for the sevenfold difference in effectiveness. Intuitively, the presence of quid pro quo should enhance the effectiveness of lobbying relative to voicing oppostion. The finding voicing opposition is more effective thus cannot be explained by quid pro quo.

Appendix B: A Model of Vertical Production with Wage Rigidity

The model in the main text assumed reduced form payoffs to the firms and the government. Here we show a complete economic model to justify those reduced forms. We assume that the proponent and opponents are adjacent links in a vertical production chain. To produce a unit of good Y the proponent combines, in fixed proportions, one unit of good X, which may be imported at a fixed price $p = p^* + t$, and one unit of an input Q_P, which the proponent produces using land, labor and firm-specific capital, according to the Cobb-Douglas production function, $Q_P = K_P^{1-\rho}T_P^{(1-\mu)\rho}L_P^{\mu\rho}$. The proponent receives a fixed price a for each unit of Y sold. Similarly, to produce a unit of good X, each opponent combines, in fixed proportions, one unit of an intermediate input Z, which can be acquired at firm-specific cost b_i, with one unit of input Q_i, produced using land, labor and firm-specific capital, according to the Cobb-Douglas production function $Q_i = K_i^{1-\rho}T_i^{(1-\phi)\rho}L_i^{\phi\rho}$. Assuming the wage is fixed at w and the land rent is normalized to 1, the minimum cost of quantities Q_P and Q_i are $Aw^{\mu}Q_P^{1/\rho}K_P^{(1-\rho)/\rho}$ and $Bw^{\phi}Q_i^{1/\rho}K_i^{(1-\rho)/\rho}$, respectively, where $A = \mu^{-\mu}(1-\mu)^{1-\mu}$ and $B = \phi^{-\phi}(1-\phi)^{1-\phi}$. Setting $K_P = K_i = 1$ and $\rho = \frac{1}{2}$, we can write firm profits as

functions of Y and X as follows,

$$\Pi_P = (a-p)Y_P - Aw^{\mu}Y_P^2 \tag{32}$$

$$\Pi_i = (p-b_i)X_i - Bw^{\phi}X_i^2 \tag{33}$$

Maximizing Π_P gives $Y_P = (a-p)/2Aw^{\mu}$, $\Pi_P = (a-p)^2/4Aw^{\mu}$, and $L_P = \mu\Pi_P/w$, for the output, profit and employment, respectively, of the proponent. Maximizing Π_i gives the corresponding values of each opponent: $X_i = (p-b_i)/2Bw^{\phi}$, $\Pi_i = (p-b_i)^2/4Bw^{\phi}$, and $L_i = \phi\Pi_i/w$.

Assume the economy is endowed with L workers, and those not working for one of the $N+1$ firms receive an outside wage of 1. We assume $w > 1$, possibly due to union wage bargaining, efficiency wages, or some other labor market distortion specific to the sector. The effect of the tariff suspension on welfare thus depends the change in labor income, the changes in producer profits and the loss of tariff revenue (there is no change in consumer surplus, as the price of Y is fixed). Thus,

$$\Delta W = \left(\frac{w-1}{w}\right)\left(\mu\pi + \phi\sum_{i=1}^{N}\lambda_i\right) + \pi - \sum_{i=1}^{N}\lambda_i - (p-p^*)\left(Y_P - \sum_{i=1}^{N}X_i\right) \tag{34}$$

The first term above reflects the wage distortion and the fact that changes in employment are proportional to changes in profits. The gain to the proponent and loss the opponent can be written,

$$\pi = (p-p^*)\frac{(2a-p-p^*)}{Aw^{\mu}} \tag{35}$$

$$\lambda_i = (p-p^*)\frac{(p+p^*-2b_i)}{Bw^{\phi}} \tag{36}$$

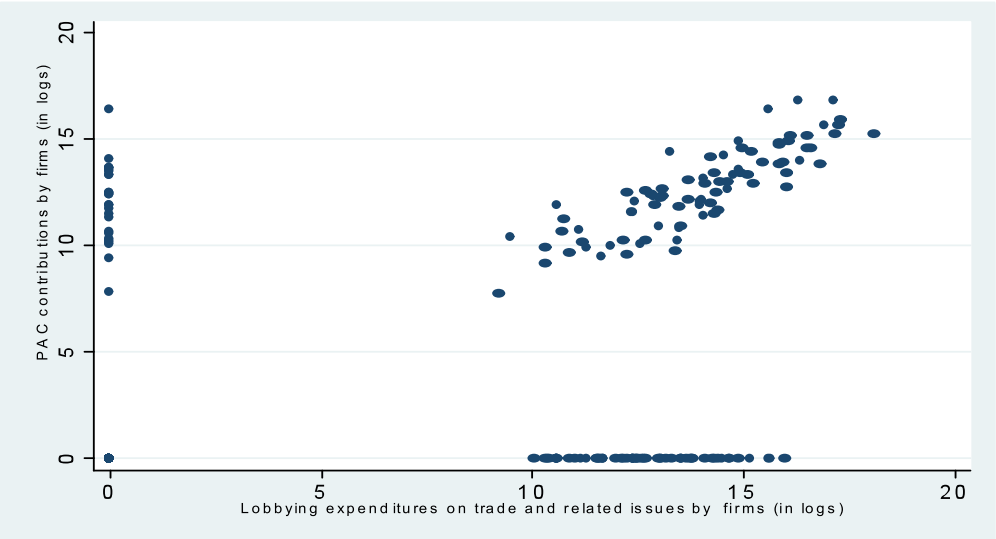
If we think of a and b_i as being privately observed by the proponent and opponents, respectively, then π and λ_i are private information. Substituting (23) and (24) into (22) and simplifying gives,

$$\Delta W = \left(\frac{1}{Aw^{\mu}} + \frac{N}{Bw^{\phi}}\right)t^2 + \mu\left(\frac{w-1}{w}\right)\pi - \phi\left(\frac{w-1}{w}\right)\sum_{i=1}^{N}\lambda_i \tag{37}$$

Defining the first term in (25) as γ, we see it is a function of the squared tariff and is thus proportional the dead-weight loss of the tariff. The coefficients on the second and third terms correspond to α and β respectively. These are constants that depend on the size of the wage distortion. This is why the wage distortion (or some other distortion) is a necessary part of the story if we want to interpret G solely in welfare terms.

Figure 1. Scatter Plots between Lobbying Expenditures and Campaign Contributions from Political Action Committees (PACs) at the Firm Level

Campaign contributions from PACs and lobbying expenditures on trade and other issues related to tariff suspension bills
(in millions of US$)



Notes. The scatter plots are based on data on campaign contributions and lobbying expenditures over four election cycles -- 1999-2000, 2001-02, 2003-04 and 2005-06. The correlation between (log) contributions from PACs and (log) lobbying expenditures for trade is 0.504 (robust standard error=0.041; p-value=0.000). Logarithms of zero values of PAC and lobbying expenditures are assumed equal to zero.

Figure 2: Proponent Lobbying and the Probability of Suspension

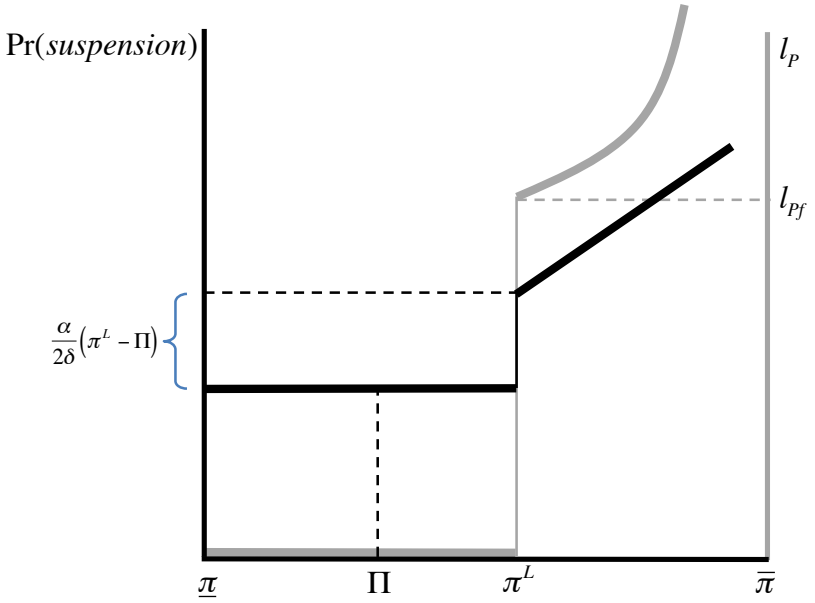


Figure 3: Opponent Lobbying and the Probability of Suspension

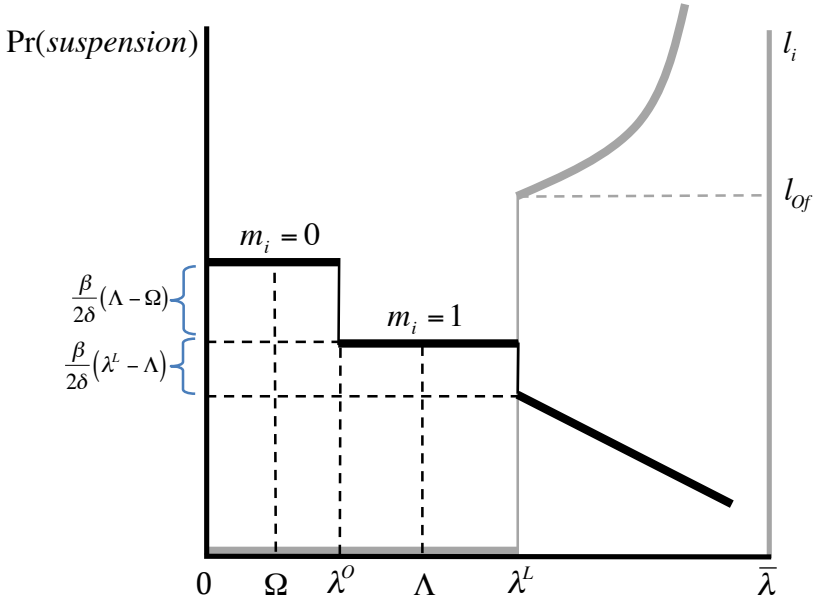


Table 1. Summary Statistics

Variable	Observations	Mean	Std. Dev.	Min	Max
Dummy=1 if the suspension is granted	1,408	0.79	0.41	0	1
Dummy=1 if the bill has an opponent	1,408	0.17	0.37	0	1
Number of opponents	1,408	0.30	0.81	0	6
Dummy=1 if the bill has an organized opponent	1,408	0.06	0.24	0	1
Number of organized opponents	1,408	0.07	0.30	0	3
Dummy=1 if the bill has an organized proponent	1,408	0.68	0.47	0	1
Pre-exemption tariff rate	1,408	0.07	0.05	0	1.32
Number of potential opponents	1,408	11.20	9.06	0	69
Number of bills sponsored by the Congressman	1408	22.06	17.61	1	62
Estimated tariff revenue loss (in US dollars)	1,408	377,679	1,156,643	0	20,306,000
Dummy=1 if the bill is an extension	1,408	0.23	0.42	0	1
Dummy=1 if the bill is presented both in House and Senate	1,408	0.14	0.35	0	1
Lobbying expenditures by opponent on trade/related issues	1,408	28,450	207,034	0	3,808,159
Effective lobbying expenditures by opponent	1,408	0.30	1.47	0	18.55
Lobbying expenditures by proponent on trade/related issues	1,408	329,345	506,438	0	6,075,000
Effective lobbying expenditures by proponent	1,408	2.88	2.24	0	7.41
Instrumental variables					
Number of potential opponents that are also currently proponents on bills	1408	0.58	0.86	0	4
Number of potential opponents that have expressed opposition in current or past Congresses	1408	0.65	1.06	0	5
Number of potential opponents that have been contacted in the past	1408	4.40	5.35	0	33
Number of opponents who lobby on issues other than trade (or any other issue closely related to the bill)	1408	0.07	0.36	0	6
Dummy =1 if proponent lobbies on issues other than trade (or any other issue closely related to the bill)	1,408	0.59	0.49	0	1
Number of issues other than trade or any other issue closely related to the bill for which the opponent lobbies)	1,408	0.43	2.68	0	54
Number of issues other than trade or any other issue closely related to the bill for which the proponent lobbies)	1,408	4.75	6.32	0	70

This table shows the summary statistics of variables used for regressions in our main tables (Tables 3 and 4). Effective lobbying expenditures=1+Log (lobbying expenditures)-minimum Log (lobbying expenditures).

Table 2a: Success Rates of Suspension Bills

	Number of Bills	Success Rate
Opponents		
Total number of bills	1408	79%
Bills with Opponents	236	23%
Organized	83	11%
Unorganized	153	29%
Organized (including PAC)	104	16%
Unorganized (including PAC)	132	27%
Bills without Opponents	1172	90%
Proponents		
Total number of bills	1408	79%
Organized	951	80%
Unorganized	457	75%
Organized (including PAC)	1057	81%
Unorganized (including PAC)	351	72%

Notes. Success rate of a bill in each cell is measured by the number of bills passed as a proportion of the total number of bills in that cell. Organized refers to bills with a proponent or opponent firm that makes positive lobbying expenditures on trade or related issues. Organized (including PAC) refers to bills with a proponent or opponent firm that makes positive lobbying expenditures on trade or related issues or makes PAC contributions.

Table 2b-- Suspensions and Lobbying -- Simple Correlations

Dependent variable: Dummy=1 if the suspension is granted

	[1]	[2]	[3]
Dummy=1 if the bill has an opponent	-0.674***		
	[0.029]		
Dummy=1 if the bill has an organized opponent		-0.719***	
		[0.036]	
Dummy=1 if the bill has an organized proponent			0.052**
			[0.024]
Number of observations	1408	1408	1408
R-squared	0.376	0.170	0.003

Standard errors denoted in parentheses are robust to heteroskedasticity. ***, ** and * represent statistical significance at 1, 5 and 10 percent respectively.

Table 3-- Suspensions and Lobbying -- Ordinary Least Squares

Dependent variable: Dummy=1 if the suspension is granted

	[1]	[2]	[3]	[4]
Number of opponents	-0.179***	-0.180***	-0.199***	-0.200***
	[0.031]	[0.030]	[0.030]	[0.030]
Number of organized opponents	-0.246***	-0.250***		
	[0.072]	[0.073]		
Dummy=1 if the bill has an organized proponent	0.028	0.012		
	[0.021]	[0.022]		
Effective lobbying expenditures by opponent			-0.037**	-0.037**
			[0.015]	[0.015]
Effective lobbying expenditures by proponent			0.011**	0.009*
			[0.004]	[0.004]
Number of contacted firms (in logs)	0.017	0.022	0.022	0.026
	[0.018]	[0.018]	[0.018]	[0.018]
Pre-exemption tariff rate	0.214	0.237	0.196	0.219
	[0.136]	[0.146]	[0.132]	[0.137]
Number of bills sponsored by the Congressman (in logs)	-0.007	-0.007	-0.008	-0.009
	[0.010]	[0.010]	[0.010]	[0.010]
Estimated tariff revenue loss (in logs)		-0.002		-0.003
		[0.005]		[0.005]
Dummy=1 if the bill is an extension		0.075***		0.074***
		[0.020]		[0.020]
Dummy=1 if the bill is presented both in House and Senate		0.060**		0.056*
		[0.030]		[0.030]
Dummy=1 if sponsor belongs to the House Ways and Means or Senate Finance Committees in the current or past three Congresses		0.038		0.029
		[0.025]		[0.025]
Dummy=1 if sponsor belongs to the Democratic Party		0.021		0.023
		[0.060]		[0.061]
Dummy=1 if Congress=107	0.160***	0.171***	0.163***	0.176***
	[0.039]	[0.040]	[0.039]	[0.040]
Dummy=1 if Congress=108	0.004	0.063	0.010	0.064
	[0.059]	[0.072]	[0.059]	[0.071]
Dummy=1 if Congress=109	0.119***	0.125***	0.117***	0.121***
	[0.029]	[0.034]	[0.029]	[0.034]
Number of observations	1408	1408	1408	1408
R-squared	0.31	0.32	0.30	0.31

Standard errors denoted in parentheses are robust to heteroskedasticity. ***, ** and * represent statistical significance at 1, 5 and 10 percent respectively. Effective lobbying expenditures=1+Log (lobbying expenditures)-minimum Log (lobbying expenditures). All regressions include industry and Congress fixed effects. Columns [2] and [4] also include the interactions between Congress fixed effects and party of the sponsor.

Table 4-- Suspensions and Lobbying --Instrumental Variables Regressions

Dependent variable: Dummy=1 if the suspension is granted

	[1]	[2]	[3]	[4]
Number of opponents	-0.178***	-0.189***	-0.168***	-0.175***
	[0.049]	[0.050]	[0.045]	[0.045]
Number of organized opponents	-0.221**	-0.207**		
	[0.096]	[0.094]		
Dummy=1 if the bill has an organized proponent	0.059**	0.048*		
	[0.028]	[0.029]		
Effective lobbying expenditures by opponent			-0.034**	-0.031*
			[0.018]	[0.017]
Effective lobbying expenditures by proponent			0.025***	0.024***
			[0.006]	[0.007]
Number of contacted firms (in logs)	0.018	0.025	0.015	0.020
	[0.020]	[0.020]	[0.020]	[0.020]
Pre-exemption tariff rate	0.218	0.230	0.224*	0.230*
	[0.138]	[0.142]	[0.136]	[0.136]
Number of bills sponsored by the Congressman (in logs)	-0.008	-0.008	-0.010	-0.010
	[0.010]	[0.010]	[0.010]	[0.010]
Estimated tariff revenue loss (in logs)		-0.003		-0.006
		[0.005]		[0.006]
Dummy=1 if the bill is an extension		0.073***		0.073***
		[0.020]		[0.020]
Dummy=1 if the bill is presented both in House and Senate		0.053*		0.049
		[0.030]		[0.030]
Dummy=1 if sponsor belongs to the House Ways and Means or Senate Finance Committees in the current or past three Congresses		0.032		0.015
		[0.025]		[0.026]
Dummy=1 if sponsor belongs to the Democratic Party		0.025		0.037
		[0.060]		[0.062]
Dummy=1 if Congress=107	0.166***	0.178***	0.182***	0.199***
	[0.040]	[0.041]	[0.041]	[0.041]
Dummy=1 if Congress=108	0.004	0.054	0.026	0.067
	[0.058]	[0.070]	[0.058]	[0.069]
Dummy=1 if Congress=109	0.122***	0.124***	0.130***	0.126***
	[0.030]	[0.034]	[0.030]	[0.034]
Number of observations	1408	1408	1408	1408
R-squared	0.227	0.238	0.212	0.223
Instrumental variables	Number of potential opponents that are also currently proponents		Number of potential opponents that are also currently proponents	
	Number of potential opponents that have expressed opposition in current or past Congresses		Number of potential opponents that have expressed opposition in current or past Congresses	
	Number of potential opponents that have been contacted in the past		Number of potential opponents that have been contacted in the past	
	Number of opponents who lobby on issues other than trade (or any other issue closely related to the bill)		Number of issues other than trade or any other issue closely related to the bill for which the opponent lobbies	
	Dummy =1 if proponent lobbies on issues other than trade (or any other issue closely related to the bill)		Number of issues other than trade or any other issue closely related to the bill for which the proponent lobbies	
First-stage F (number of opponents)	25.31	25.69	19.79	19.95
First-stage F (number of organized opponents)	13.37	12.60		
First-stage F (D=1 if bill has an organized proponent)	279.57	273.15		
First-stage F (effective lobbying expenditures by opponent)			25.49	25.19
First-stage F (effective lobbying expenditures by proponent)			75.39	75.89
Hansen's J statistic (p value)	0.96	0.94	0.95	0.88

Standard errors denoted in parentheses are robust to heteroskedasticity. ***, ** and * represent statistical significance at 1, 5 and 10 percent respectively. The first-stage regressions are shown in Table 5. The number of opponents; number of organized opponents; dummy for organized proponent; and the effective lobbying expendituresof opponents and proponents, are treated as endogenous. Effective lobbying expenditures=1+Log (lobbying expenditures)-minimum Log (lobbying expenditures). All regressions include industry and Congress fixed effects. Columns [2] and [4] also include the interactions between the Congress fixed effects and party of the sponsor.

Table 5-- Suspensions and Lobbying --First Stage Instrumental Variables Regressions

Dependent variable: ►	[1a] Number of opponents	[1b] Number of organized opponents	[1c] Dummy=1 if the bill has an organized proponent	[2a] Number of opponents	[2b] Number of organized opponents	[2c] Dummy=1 if the bill has an organized proponent	[3a] Number of opponents	[3b] Effective lobbying expenditures by opponent	[3c] Effective lobbying expenditures by proponent	[4a] Number of opponents	[4b] Effective lobbying expenditures by opponent	[4c] Effective lobbying expenditures by proponent
Number of contacted firms that are also currently proponents	-0.251***	0.011	-0.005	-0.257***	0.008	-0.005	-0.263***	0.022	0.203**	-0.271***	0.011	0.167*
	[0.034]	[0.008]	[0.017]	[0.035]	[0.008]	[0.017]	[0.037]	[0.041]	[0.092]	[0.038]	[0.042]	[0.090]
Number of potential opponents that have been contacted in the past	-0.036***	-0.002	0.002	-0.034***	-0.001	0.002	-0.035***	-0.002	0.050***	-0.033***	0.002	0.057***
	[0.006]	[0.002]	[0.003]	[0.006]	[0.002]	[0.003]	[0.006]	[0.007]	[0.015]	[0.006]	[0.007]	[0.015]
Number of contacted firms that have expressed opposition in current or past Congresses	0.236***	0.007	-0.007	0.227***	0.006	-0.012	0.256***	0.055	-0.388***	0.251***	0.053	-0.400***
	[0.029]	[0.008]	[0.013]	[0.029]	[0.008]	[0.013]	[0.030]	[0.038]	[0.060]	[0.029]	[0.038]	[0.058]
Number of opponents which lobby on other issues	0.846***	0.673***	-0.031	0.829***	0.672***	-0.033						
	[0.174]	[0.110]	[0.029]	[0.173]	[0.112]	[0.029]						
Dummy=1 if the bill has a proponent which lobbies on other issues	0.018	0.028***	0.724***	-0.015	0.022**	0.721***						
	[0.033]	[0.009]	[0.020]	[0.037]	[0.009]	[0.020]						
Number of other issues for which the opponent lobbies							0.083***	0.463***	-0.130***	0.082***	0.460***	-0.131***
							[0.026]	[0.049]	[0.025]	[0.025]	[0.050]	[0.026]
Number of other issues for which the proponent lobbies							0.010**	0.008	0.254***	0.008	0.006	0.247***
							[0.005]	[0.008]	[0.015]	[0.006]	[0.008]	[0.016]
Number of contacted firms (in logs)	0.439***	0.010	0.013	0.444***	0.009	0.023	0.422***	-0.064	-0.179*	0.428***	-0.064	-0.130
	[0.055]	[0.009]	[0.015]	[0.054]	[0.009]	[0.016]	[0.056]	[0.042]	[0.092]	[0.055]	[0.044]	[0.094]
Pre-exemption tariff rate	-0.417	0.319	-1.047***	-0.295	0.328	-0.976***	-0.402	1.917*	-0.564	-0.319	1.984*	-0.020
	[0.269]	[0.202]	[0.157]	[0.285]	[0.211]	[0.161]	[0.284]	[1.131]	[0.589]	[0.307]	[1.183]	[0.708]
Number of bills sponsored by the Congressman (in logs)	-0.005	0.007	0.020**	-0.007	0.009*	0.011	-0.007	0.006	0.078*	-0.009	0.011	0.049
	[0.017]	[0.005]	[0.009]	[0.018]	[0.005]	[0.009]	[0.017]	[0.022]	[0.047]	[0.018]	[0.023]	[0.050]
Estimated tariff revenue loss (in logs)				0.009	-0.002	-0.007				0.012	0.017	0.067***
				[0.009]	[0.002]	[0.005]				[0.010]	[0.012]	[0.025]
Dummy=1 if the bill is an extension				-0.080***	-0.013	0.059***				-0.090***	-0.051	0.269***
				[0.030]	[0.008]	[0.021]				[0.032]	[0.038]	[0.100]
Dummy=1 if the bill is presented both in House and Senate				-0.013	0.024*	0.099***				-0.003	0.132*	0.196
				[0.050]	[0.014]	[0.026]				[0.050]	[0.071]	[0.125]
Dummy=1 if sponsor belongs to the House Ways and Means or Senate Finance Committees in the current or past three Congresses				0.095*	0.036**	-0.033*				0.074	0.111*	0.173
				[0.050]	[0.014]	[0.018]				[0.051]	[0.059]	[0.110]
Dummy=1 if sponsor belongs to the Democratic Party				0.007	0.037	0.001				0.020	0.092	-0.485**
				[0.080]	[0.024]	[0.049]				[0.073]	[0.125]	[0.243]
Dummy=1 if Congress=107	0.037	0.008	-0.084**	0.011	0.017	-0.085**	-0.009	-0.088	-1.621***	-0.017	-0.060	-1.889***
	[0.059]	[0.014]	[0.033]	[0.060]	[0.017]	[0.038]	[0.064]	[0.076]	[0.169]	[0.065]	[0.077]	[0.181]
Dummy=1 if Congress=108	-0.118	0.029	-0.050	0.015	0.051	0.024	-0.082	0.241**	-0.782***	0.025	0.297*	-0.905***
	[0.076]	[0.022]	[0.033]	[0.111]	[0.033]	[0.027]	[0.081]	[0.122]	[0.212]	[0.119]	[0.164]	[0.270]
Dummy=1 if Congress=109	0.011	0.011	0.010	0.081	0.028	0.040	0.039	0.067	-0.108	0.113*	0.155*	0.010
	[0.057]	[0.018]	[0.026]	[0.070]	[0.022]	[0.029]	[0.055]	[0.070]	[0.138]	[0.067]	[0.081]	[0.153]
Number of observations	1408	1408	1408	1408	1408	1408	1408	1408	1408	1408	1408	1408
R-squared	0.457	0.685	0.589	0.466	0.689	0.607	0.414	0.74	0.534	0.422	0.743	0.558

Standard errors denoted in parentheses are robust to heteroskedasticity. ***, ** and * represent statistical significance at 1, 5 and 10 percent respectively. All regressions include industry and Congress fixed effects. Columns [2a]-[2c] and [4a]-[4c] also include interactions between the Congress fixed effects and party of the sponsor.

Table 6 -- Suspensions and Lobbying --Broad Measure of Organization I (including campaign contributions by Political Action Committees)

Dependent variable: Dummy=1 if the suspension is granted

	OLS				IV			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Number of opponents	-0.171***	-0.171***	-0.189***	-0.188***	-0.149**	-0.161***	-0.153***	-0.157***
	[0.034]	[0.033]	[0.033]	[0.033]	[0.059]	[0.059]	[0.050]	[0.050]
Number of organized opponents (makes lobbying expenditures or PAC contributions)	-0.189***	-0.196***			-0.236**	-0.221**		
	[0.056]	[0.058]			[0.101]	[0.099]		
Dummy=1 if the bill has an organized proponent (makes lobbying expenditures or PAC contributions)	0.026	0.002			0.075**	0.061*		
	[0.023]	[0.025]			[0.035]	[0.038]		
Effective lobbying expenditures and PAC contributions by opponent			-0.027**	-0.028**			-0.028**	-0.027*
			[0.011]	[0.011]			[0.015]	[0.015]
Effective lobbying expenditures and PAC contributions by proponent			0.009**	0.006			0.025***	0.025***
			[0.004]	[0.004]			[0.006]	[0.007]
Number of contacted firms (in logs)	0.020	0.025	0.022	0.026	0.016	0.022	0.014	0.018
	[0.018]	[0.018]	[0.018]	[0.019]	[0.020]	[0.021]	[0.021]	[0.021]
Pre-exemption tariff rate	0.259*	0.280*	0.248*	0.271*	0.321**	0.321**	0.310**	0.313**
	[0.141]	[0.154]	[0.136]	[0.146]	[0.157]	[0.161]	[0.142]	[0.143]
Number of bills sponsored by the Congressman (in logs)	-0.005	-0.005	-0.008	-0.009	-0.006	-0.006	-0.010	-0.010
	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]
Estimated tariff revenue loss (in logs)		-0.003		-0.004		-0.004		-0.007
		[0.006]		[0.006]		[0.005]		[0.006]
Additional controls	No	Yes	No	Yes	No	Yes	No	Yes
Number of observations	1408	1408	1405	1405	1408	1408	1405	1405
R-squared	0.30	0.31	0.30	0.31	0.22	0.23	0.21	0.22
First-stage F (opponent)					25.31	25.69	19.68	19.81
First-stage F (organized opponent)					16.93	15.82		
First-stage F (organized proponent)					152.47	152.41		
First-stage F (opponent lobbying expenditures)							26.65	25.48
First-stage F (proponent lobbying expenditures)							66.33	67.08
Hansen's J statistic (p value)					0.91	0.89	0.85	0.73

Standard errors denoted in parentheses are robust to heteroskedasticity. ***, ** and * represent statistical significance at 1, 5 and 10 percent respectively. Effective lobbying expenditures=1+Log (lobbying expenditures)-minimum Log (lobbying expenditures). The number of opponents; number of organized opponents; dummy for organized proponent; and the effective lobbying expendituresof opponents and proponents, are treated as endogenous. All regressions include industry and Congress fixed effects. Columns [2], [4], [6] and [8] also include interactions between the Congress fixed effects and party of the sponsor. The additional controls are the same as Table 4. All instruments are identical to Table 4.

Table 7-- Suspensions and Lobbying --Broad Measure of Organization II (inlcuding lobbying in past and future Congresses)

Dependent variable: Dummy=1 if the suspension is granted

	OLS				IV			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Number of opponents	-0.176***	-0.176***	-0.201***	-0.201***	-0.184***	-0.198***	-0.161***	-0.167***
	[0.030]	[0.030]	[0.031]	[0.030]	[0.051]	[0.051]	[0.046]	[0.046]
Number of organized opponent in current, past or future Congresses	-0.238***	-0.246***			-0.218**	-0.206**		
	[0.071]	[0.071]			[0.094]	[0.091]		
Dummy=1 if the bill has an organized proponent in current, past or future Congresses	0.010	-0.009			0.019	-0.000		
	[0.022]	[0.023]			[0.026]	[0.028]		
Effective lobbying expenditures by opponent in current, past and future Congresses			-0.035**	-0.037**			-0.042**	-0.041**
			[0.017]	[0.016]			[0.020]	[0.020]
Effective lobbying expenditures by proponent in current, past and future Congresses			0.011**	0.008*			0.030***	0.030***
			[0.005]	[0.005]			[0.007]	[0.008]
Number of contacted firms (in logs)	0.018	0.022	0.023	0.027	0.020	0.028	0.013	0.018
	[0.018]	[0.018]	[0.018]	[0.018]	[0.020]	[0.020]	[0.020]	[0.020]
Pre-exemption tariff rate	0.229*	0.251*	0.206	0.228*	0.222	0.230	0.284**	0.291**
	[0.137]	[0.149]	[0.132]	[0.137]	[0.141]	[0.149]	[0.139]	[0.140]
Number of bills sponsored by the Congressman (in logs)	-0.004	-0.005	-0.008	-0.009	-0.005	-0.005	-0.012	-0.012
	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]	[0.010]
Estimated tariff revenue loss (in logs)		-0.002		-0.003		-0.002		-0.007
		[0.005]		[0.006]		[0.005]		[0.006]
Additional controls	No	Yes	No	Yes	No	Yes	No	Yes
Number of observations	1408	1408	1408	1408	1408	1408	1408	1408
R-squared	0.31	0.32	0.30	0.31	0.23	0.24	0.20	0.22
First-stage F (opponent)					28.78	29.12	22.76	23.19
First-stage F (organized opponent)					21.71	20.65		
First-stage F (organized proponent)					803.59	729.34		
First-stage F (opponent lobbying expenditures)							50.35	49.63
First-stage F (proponent lobbying expenditures)							86.18	85.08
Hansen's J statistic (p value)					0.94	0.86	0.97	0.95

Standard errors denoted in parentheses are robust to heteroskedasticity. ***, ** and * represent statistical significance at 1, 5 and 10 percent respectively. Effective lobbying expenditures=1+Log (lobbying expenditures)-minimum Log (lobbying expenditures). The number of opponents; number of organized opponents; dummy for organized proponent; and the effective lobbying expendituresof opponents and proponents, are treated as endogenous. All regressions include industry and Congress fixed effects. aColumns [2], [4], [6] and [8] also include interactions between the Congress fixed effects and party of the sponsor. The additional controls are the same as Table 4. The instruments are the same as in Tables 4 and 6, except those for organization and effective lobbying expenditures, which are redefined to include past, current and future Congresses.

Table B1. List of Issues

Code	Issue
ACC	Accounting
ADV	Advertising
AER	Aerospace
AGR	Agriculture
ALC	Alcohol & Drug Abuse
ANI	Animals
APP	Apparel/Clothing Industry/Textiles
ART	Arts/Entertainment
AUT	Automotive Industry
AVI	Aviation/Aircraft/ Airlines
BAN	Banking
BNK	Bankruptcy
BEV	Beverage Industry
BUD	Budget/Appropriations
CHM	Chemicals/Chemical Industry
CIV	Civil Rights/Civil Liberties
CAW	Clean Air & Water (Quality)
CDT	Commodities (Big Ticket)
COM	Communications/ Broadcasting/ Radio/TV
CPI	Computer Industry
CSP	Consumer Issues/Safety/ Protection
CON	Constitution
CPT	Copyright/Patent/ Trademark
DEF	Defense
DOC	District of Columbia
DIS	Disaster Planning/Emergencies
ECN	Economics/Economic Development
EDU	Education
ENG	Energy/Nuclear
ENV	Environmental/Superfund
FAM	Family Issues/Abortion/ Adoption
FIR	Firearms/Guns/ Ammunition
FIN	Financial Institutions/Investments/ Securities
FOO	Food Industry (Safety, Labeling, etc.)
FOR	Foreign Relations
FUE	Fuel/Gas/Oil
GAM	Gaming/Gambling/ Casino
GOV	Government Issues
HCR	Health Issues
HOU	Housing
IMM	Immigration
IND	Indian/Native American Affairs
INS	Insurance
LBR	Labor Issues/Antitrust/ Workplace
LAW	Law Enforcement/Crime/ Criminal Justice
MAN	Manufacturing
MAR	Marine/Maritime/ Boating/Fisheries
MIA	Media (Information/ Publishing)
MED	Medical/Disease Research/ Clinical Labs
MMM	Medicare/Medicaid
MON	Minting/Money/ Gold Standard
NAT	Natural Resources
PHA	Pharmacy
POS	Postal
RRR	Railroads
RES	Real Estate/Land Use/Conservation
REL	Religion
RET	Retirement
ROD	Roads/Highway
SCI	Science/Technology
SMB	Small Business
SPO	Sports/Athletics
TAX	Taxation/Internal Revenue Code
TEC	Telecommunications
TOB	Tobacco
TOR	Torts
TRD	Trade
TRA	Transportation
TOU	Travel/Tourism
TRU	Trucking/Shipping
URB	Urban Development/ Municipalities
UNM	Unemployment
UTI	Utilities
VET	Veterans
WAS	Waste (hazardous/ solid/ interstate/ nuclear)
WEL	Welfare

Source: Senate's Office of Public Records (SOPR)

Figure B1. Sample Bill Report

UNITED STATES INTERNATIONAL TRADE COMMISSION
Washington, DC 20436

MEMORANDUM ON PROPOSED TARIFF LEGISLATION of the 109th Congress [1]

[Date approved: August 1, 2005][2]

Bill No. and sponsor: S. 698 (Mr. Lautenberg)

Proponent name, location: Rhodia Inc.
259 Prospect Plains Road, CN 7500
Cranbury, New Jersey 08512-7500

Other bills on product (109th Congress only): H.R. 1392

Nature of bill: Temporary duty suspension through December 31, 2007.

Retroactive effect: None.

Suggested article description(s) for enactment (including appropriate HTS subheading(s)):

Mixtures of N-[2-(2-Oxo-1-imidazolidinyl)ethyl]methacrylamide (CAS No. 3089-19-8), methacrylic acid (CAS No. 79-41-4), and water (CAS No. 7732-18-5) (provided for in subheading 3824.90.91).

Check one: X Same as that in bill as introduced
___ Different from that in bill as introduced (explain differences in Technical comments section)

Product information, including uses/applications and source(s) of imports:

The product is used primarily to make polymer resins that are incorporated into architectural coatings. The product is imported from France.

[1] Industry analyst preparing report: Jack Greenblatt (202-205-3353); Tariff Affairs contact: Dave Michels (202-205-3440).
[2] Access to an electronic copy of this memorandum is available at http://www.usitc.gov/tata/hts/other/rel_doc/bill_reports/index.htm

Estimated effect on customs revenue:

HTS subheading: 3824.90.91					
	2005	2006	2007	2008	2009
Col. 1-General rate of duty (AVE) 1/	5.0%	5.0%	5.0%	5.0%	5.0%
Estimated value *dutiable* imports	$3,300,000	$3,300,000	$3,300,000	$3,300,000	$3,300,000
Customs revenue loss	$165,000	$165,000	$165,000	$165,000	$165,000

1/ The AVE is the ad valorem equivalent of a specific or compound duty rate expressed as a percent, using the most recent import data available.
Source of estimated dutiable import data: Industry estimates. The Customs revenue loss estimates provided in the above table assumes that the duty suspension will be renewed in 2008 and 2009.

Contacts with domestic firms/organizations (including the proponent):

Name of firm/organization	Date contacted	US production of same or competitive product claimed?	Submission attached?	Opposition noted?
		(Yes/No)		
Rhodia (proponent) Preston Gates, Rick Valentine (202) 661-3802	6/6/2005	No	No	No
Rohm & Haas Hank Stoebenau 215-628-4919	6/7/2005	Yes	Yes	Yes
Perstorp Polyols, Inc. Mai Pham 202-293-8144	6/7/2005	No	No	No
Bayer Corp. Karen Niedermeyer 412-777-2058	6/6/2005	No	No	No
Avecia Limited (Crowell & Moring) Ms. Melissa Coyle 202-624-2500	6/6/2005	No	No	No
Solutia, Inc. Mary Woodward 314-674-7211	6/7/2005	No	No	No

Figure B2. Sample Lobbying Report - 3M Company

Clerk of the House of Representatives	Secretary of the Senate
Legislative Resource Center	Office of Public Records
B-106 Cannon Building	232 Hart Building
Washington, DC 20515	Washington, DC 20510

SECRETARY OF THE SENATE
06 AUG 22 AM 11:03

LOBBYING REPORT

Lobbying Disclosure Act of 1995 (Section 5) - **All Filers Are Required to Complete This Page**

1. Registrant name
3M COMPANY

2. Address ☐ Check if different than previously reported
1425 K STREET, N.W. SUITE 300
WASHINGTON DC 20005 USA

3. Principal place of business (if different than line 2)
City State/Zip or Country

4a. Contact Name b. Telephone number c. E-mail
Mr. THOMAS F. BEDDOW 202-414-3001 TFBEDDOW@MMM.COM

5. Senate ID # 25465-12

7. Client Name ☒ Self
3M COMPANY

6. House ID # 31984000

TYPE OF REPORT 8. Year 2006 Midyear (January 1-June30) ☒ OR Year End (July 1-December 31) ☐

9. Check if this filing amends a previously filed version of this report ☐

10. Check if this is a Termination Report ☐ ⇨ Termination Date _____ 11. No Lobbying Activity ☐

INCOME OR EXPENSES - Complete Either Line 12 OR Line 13

12. Lobbying Firms

INCOME relating to lobbying activities for this reporting period was:

Less than $10,000 ☐

$10,000 or more ☐ ⇨ $ _____

Provide a good faith estimate, rounded to the nearest $20,000, of all lobbying related income from the client (including all payments to the registrant by any other entity for lobbying activities on behalf of the client).

13. Organizations

EXPENSES relating to lobbying activities for this reporting period were:

Less than $10,000 ☐

$10,000 or more ☒ ⇨ $ 985,300

14. REPORTING METHOD. Check box to indicate expense accounting method. See instructions for description of options.

☒ **Method A.** Reporting amounts using LDA definitions only
☐ **Method B.** Reporting amounts under section 6033(b)(8) of the Internal Revenue Code
☐ **Method C.** Reporting amounts under section 162(e) of the Internal Revenue Code

Edit Form | File with House | Senate Password | File with Senate

Signature THOMAS F BEDDOW Date 8/14/2006

Printed Name and Title THOMAS F. BEDDOW, STAFF V.P. CORPORATE PUBLIC AFFAIRS

LD-2DS (Rev. 4.07)

Registrant Name 3M COMPANY Client Name 3M COMPANY

LOBBYING ACTIVITY. Select as many codes as necessary to reflect the general issue areas in which the registrant engaged in lobbying on behalf of the client during the reporting period. **Using a separate page for each code,** provide information as requested. Attach additional page(s) as needed.

15. General issue area code TRD - Trade (Domestic & Foreign) (one per page)

16. Specific lobbying issues

FREE TRADE AGREEMENTS AND COMPLIANCE
SANCTIONS REFORM
AFRICA GROWTH & OPPORTUNITY ACT
DUTY SUSPENSIONS

17. House(s) of Congress and Federal agencies contacted ☐ None ☒ House ☒ Senate ☒ Other

USTR
DEPARTMENT OF COMMERCE

18. Name of each individual who acted as a lobbyist in this issue area

Name	Covered Official Position (if applicable)	New
MILDRED HAYNES		☐
THOMAS BEDDOW		☐
		☐
		☐
		☐
		☐
		☐
		☐
		☐

19. Interest of each foreign entity in the specific issues listed on line 16 above ☒ Check if None

Printed Name and Title THOMAS F. BEDDOW, STAFF V.P. CORPORATE PUBLIC AFFAIRS

LD-2DS (Rev. 4.07)