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Information for Sale in the European Union

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Abstract

This paper empirically explores the role of informational lobbying in shaping the EU trade policy. To this purpose, we construct an original dataset by collecting information on the participation of national and international organizations in the European Commission consultations on trade issues and by merging it with newly released data on non-tariff measures aggregated at the tariff-line level between 1999 and 2007. Our results suggest that European lobbies exert a major influence on policy-makers. Drawing upon the panel structure of the dataset, we find that participation in consultation meetings increases the probability of a protectionist policy, even after controlling for product fixed effects and a number of control variables. Moreover, actual attendance turns out to be more effective than simple registration and organizations representing more than one industrial category are more likely to obtain protection than single-sector organizations. These findings are interpreted in light of a political economy model of lobbying with (possibly endogenous) costs.

Keywords: Informational Lobbying; Trade policy; European Union

JEL: D72; D80; F13; F14

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1 Introduction

World trade is on a much smaller scale than predicted by theoretical models although there is little disagreement, among international economists, about the welfare benefits of free trade. This still holds in the twenty-first century, although multilateral trade negotiations have appreciably lowered tariff barriers in the past thirty years, especially among the developed countries. However, while tariff measures have undergone considerable reduction, neo-protectionist and regulatory trade instruments have proliferated in the past thirty years (Beghin, 2006; Orden et al., 2012; WTO, 2012; Nicita and Gourdon, 2013; Basu et al., 2011). Although they are not necessarily protectionist, non-tariff measures (NTMs) represent an important source of international trade costs (Anderson and van Wincoop, 2004; Hoekman and Nicita, 2011). As stressed by a large body of literature (surveyed by Gawande and Krishna, 2003), special interest groups play a major role in the trade policy formation process. This paper explores the role of informational lobbying in the European Union.

In the past 20 years, as the power of the European Union institutions has grown, there has been a proliferation of special interest groups gravitating around Brussels and a dramatic intensification of their activity. The Corporate Europe Observatory (2011) estimates that between 15,000 and 30,000 lobbyists meet Commission and European Parliament officials on a daily basis. This frenetic activity has resulted in a massive exchange of information and has acquired a remarkable role in policy formation. The decision-making process of the European Union is indeed more decentralized than that characterizing a national system and much more open to outside input and consultation mechanisms (Coen, 2009). The European Commission, which has the power of initiative in trade and regulatory matters, largely resorts to private actors to gather the information needed to draft legislation (Broscheid and Coen, 2007). Thus, lobbies represent an important source of grass-roots information and play a very dynamic role during the legislative process: they bring issues to policy-makers' attention, provide information, and often take part in the committees (Directorates-General) that assist the Commission in preparing proposals (Bouwen, 2002).

In this paper we measure the influence of lobbies in forming trade policy by considering the participation of business groups in the regular meetings on external trade matters organized by the European Union Directorate-General for Trade (DG-Trade), the Trade Civil

Society Dialogue, and involving the European Commissioner for trade, the senior Commission officials, and the trade negotiators (European Commission, 2012). While consultations between the European Commission and civil society started in 1998, regular meetings have only been held since 2001. Registration is compulsory for attendance, the registration procedure for organizations having been established in 2002. We collect information on the organizations registered for each meeting that took place between 2002 and 2006 and on whether or not they in fact attended those meetings. After classifying registered organizations into industrial manufacturing categories, we match this information with data on NTMs aggregated at the tariff-line level (6-digit of the Harmonized System - HS) in 1999 and 2007. Since we can observe non-tariff measures before and after the official meetings were launched, we are able to disentangle the effects of the consultations on European policy decisions.

To provide guidance to our empirical analysis, we rely on a stylized theoretical framework that is general enough to fit the European institutional environment. *“I know that for many of your organizations, resources are limited, and that you can’t be everywhere at once. So I particularly want to thank you for taking the time to come today. I understand that some of you have been wondering whether coming to such meetings makes a difference to the outcomes in these and other negotiations. To us, it is very obvious that it does”* (Pascal Lamy at the meeting with Civil Society on the 4th of July 2002). The simple model that we exploit in this paper captures two distinguishing features of the European trade policy formation process, which have been summarized by the former European Union Trade Commissioner in the quoted passage. First, lobbies have a fundamental role in informing policy-making, as is openly recognized by European representatives and officials. Second, information dissemination and participation in policy consultations is costly and lobbies’ resources are limited. Accordingly, we adopt a model of informational lobbying with possibly endogenous costs, borrowed from Potters and van Winden (1992) (see also Grossman and Helpman, 2001, ch. 5). We obtain that costly informational lobbying may be instructive even if the policy-maker cannot check the accuracy of the message delivered and there exists a potential conflict of interest between the government and the lobbies. In the presence of an information advantage of the special interest groups, the policy-maker may be able to infer relevant information about the policy environment from the act of

lobbying and from the size of the lobbies' expenses. Hence, the business groups spend resources to buy credibility, and the more they spend, the more favorable is the response elicited. It follows that the probability of a protectionist trade policy increases with the lobbying effort.

Figure 1 shows the correlation between the cumulative number of the European Union Trade Civic Society Dialogue meetings attended by at least one organization between 2002 and 2006 and the European Union average coverage ratio in 2007 computed for each industrial category (4-digit of the International Standard Industrial Classification, Revision 3 - ISIC). As will be seen, there is a positive and statistically highly significant correlation between the two. This association is suggestive, but it could, of course, be merely the spurious outcome of many omitted and confounding factors: these will be duly taken into account in our estimation strategy.

Figure 1 - Coverage ratios and attended meetings in the EU

NOTE: Coverage ratio (Crat) is the EU average share of imports covered by an NTM in each industrial sector (4-digit ISIC). Source: TRAINS-UNCTAD (2013). Fraction of attended meetings (Meetings) is the fraction of meetings organized by the European DG-Trade Civic Society Dialogue attended by at least one organization in each industrial sector (4-digit ISIC) between 2002 and 2006. Source: European Commission (2012).

By exploiting the panel structure of the dataset, we find that the industrial categories which

registered for and attended the meetings more often than others tend to be associated with higher levels of NTM protection in the period considered. This holds even after employing instrumental variable estimation methods to deal with possible endogeneity concerns and after controlling for product characteristics, a number of industrial variables, and a proxy for traditional lobbying suggested by the protection-for-trade literature pioneered by Grossman and Helpman (1994). Moreover, we are able to distinguish between organizations that only registered for the meeting, and then failed to show up, and organizations that actually attended the meeting. We obtain that simple registration has a positive and statistically significant effect on the strictness of NTMs, but this effect is considerably more limited than that of actual attendance. Finally, our results suggest that organizations which represent more than one industrial category are more effective in lobbying for protection than single-sector organizations.

This paper contributes to the empirical literature on the political economy determinants of trade policy. In the past twenty years, most of the effort in this literature has been devoted to testing the predictions of Grossman and Helpman (1994)'s protection-for-sale model, according to which the level of protection in a given industry and in a given country is the level that maximizes a combination of the general welfare and the contributions of the special interest groups.¹ The United States has been the main object of analysis. The reason for this is that the United States is one of the very few countries where campaign contributions by special interest groups are legal and hence registered. For instance, Gawande and Bandyopadhyay (2000) and Goldberg and Maggi (1999) exploit the campaign contributions of corporate political action committees (PACs) and define as organized those industries that allocate resources to political contributions above a certain cutoff level. This approach presents a major problem, however: it does not allow distinction between the amount of resources that lobbies spend for trade policy from those that are directed to other goals (for instance domestic support not related to trade).²

¹ A review of this literature is provided by Gawande and Krishna (2003). More critical assessments are proposed by Imai et al. (2009a, 2009b). Earlier works are surveyed by Rodrik (1995). See, in particular, Baldwin (1985) and Trefler (1993). Gawande (1998) conducted an empirical comparison among different approaches.

² To circumvent this problem, Gawande and Bandyopadhyay (2000) assign the organization variable

Very few studies consider the political economy of the European trade policy. Karacaovali and Limão (2008) investigate the effects of preferential trade agreements on multilateral trade liberalization between the European Union and its partners; as regards lobbying, they assume that all European industries are organized. Belloc and Guerrieri (2007) tailor a political economy model to fit the multi-level European governance structure; they proxy lobbying action by adopting industrial variables that, while useful to distinguish between national and supra-national groups, do not make it possible to single out pressure groups with specific regard to trade policy. Barbosa et al. (2013) explore the determinants of non-tariff protection in intra-union trade; in their paper, however, no account is taken of the role of special interest groups.

Our strategy is closer to Mitra et al. (2002), who map membership of one of the most important Turkish industrialist organizations, the TUSIAD. The main pitfall here is again that identification cannot capture pure trade policy concerns, given that the TUSIAD is a general (both domestic and international) interest business organization. We deal with the aforementioned concerns by using participation in the DG-Trade Civil Society Dialogue meetings, as we explain in Subsection 4.2 in greater detail. Our strategy enables us to achieve two goals. First, we examine a specific feature of the European Union institutional arena, where lobbying is wielded mainly at the early stages of the policy formation process through information provision and negotiations with the European Commission. Second, we focus on the special interest groups' activity with pure trade policy concerns. To the best of our knowledge, the present work is the first attempt to provide direct measures of lobbying influence at the European level and to relate them to European trade policy.

Finally, our paper adds to the literature on informational lobbying and trade policy.³ Lima and Moreira (2014) model lobbying by means of strategic information transmission, with an application to customs unions agreements. Ponzetto (2011) studies the effects

also by considering the association of corporate contributions with trade flows. With regard to other countries, McCalman (2000) exploits the Australian practice whereby any trade policy operation is reviewed by an independent advisory body (the “Tariff Board”): the author classifies an industry as organized if a Tariff Board report was prepared in the given period. Yet this strategy is specific to Australia.

³ See Grossman and Helpman (2001) and van Winden (2003) for surveys on informational lobbying.

of public information about protection on trade policy and provides a test of his theory using United States' data. Broscheid and Coen (2003), Coen (1997), and Crombez (2002) consider informational lobbying in the European Union legislative process. But there is scant empirical evidence available, and quantification of the presence of business groups in the European policy arena has to date been impeded by a lack of data.

The structure of the paper is as follows. In Section 2 we briefly introduce the institutional and policy-making environment of the European Union. In Section 3 we describe the theoretical model, while in Sections 4 and 5 we illustrate respectively the data and the empirical strategy. Section 6 discusses the results. Finally, Section 7 sets out our concluding remarks.

2 European institutional environment and non-tariff protection

Before the adoption of the Single European Act (SEA) in 1987, European policy-making was mainly the task of the Council of Ministers, and individual governments had veto power. As a consequence, most of the lobbying activity was performed by national groups through political and administrative channels (Mazey and Richardson, 1993, 2001). Since adoption of the SEA, this situation has changed remarkably. The Commission has been empowered to initiate European Union policies, and it has become a crucial actor in the formulation of policy proposals. This transfer of regulatory competencies from the member states to the Commission in often specialized and complex areas has produced an extraordinary need on the part of the European Commissioners for expertise and information acquisition. The information advantage that the special interest groups enjoy in their area of competency has consequently led to the emergence of a unique relationship between insider lobbyists and the European Commission officials (Coen, 2009), and it has stimulated a more active debate among the stakeholders. It follows increasing coalition-building at the European level in the early stages of the legislative process.

Hence, the interest groups have gained a substantial and legitimate role in assisting the Commission in drafting policy proposals and participating in the policy consultations. The consequent easier access to the Commission has made it the principal focus of the lobbying activity. In the past twenty years, these developments have triggered a dramatic

increase in the number and power of the interest groups operating at the European level (Greenwood, 2003). One example is the Trade Civil Society Dialogue, which holds regular meetings on external trade matters among the European Commissioner for Trade, the senior Commission officials and the trade negotiators (European Commission, 2012). The official goal of these meetings is to foster confident working relationships among all stakeholders interested in trade policy issues and to gather the basic information that the Commission needs to draft legislation. This open system of consultation has improved the Commission's access to specialized information, but has also exposed it to the potential influence of the European civil society attempting to shape legislation.

In the period studied, the European Union made extensive use of non-tariff measures for trade protection purposes. For instance, Hanson (2010) documents that between 2002 and 2007 two of Europe's major trading partners and competitors, the United States and Japan, raised several issues (forty) against the European Union regarding import-related matters. A substantial portion of them concerned social protection, environmental initiatives, and food protection. In a number of cases the WTO dispute resolution system ruled against the European Union, on the grounds that the regulations were discriminatory and favored European producers. In some other cases disputes were not settled, European regulations were not emended, and interpretations remain unclear. Examples of standards and technical requirements that provoked complaints are: the REACH (Registration, Evaluation, Authorization and Restriction of Chemical substances) concerning environmental policies (European Union, 2006), the WEED (Waste from Electrical and Electronic Equipment Directive) regarding recovery/recycling requirements (European Union, 2002b), and the RoHS (Hazardous Substances in electrical and electronic equipment) relating to the use of hazardous materials (European Union, 2002a). Several other issues were subject to considerable debate, including pharmaceutical and medical device regulation and sanitary and phytosanitary requirements (e.g. the Genetically Modified Organisms and the Wood Packaging Material Directives).

3 Informational lobbying

In this section we present a simple theoretical framework, whose purpose is not to reflect the full richness and complexity of the European policy-making environment but, rather, to capture its essential ingredients in the design of our empirical analysis. The model builds on Potters and van Winden (1992) and Grossman and Helpman (2001, ch. 5) to give a stylized representation of lobbying action in the presence of asymmetric information. Here it is applied to trade policy.⁴

Consider a game with two players: a policy-maker (the European institutions that we will call the ‘government’ for convenience) and an organized business group (the specific factor owners as in Grossman and Helpman, 1994). Trade policy is the only policy instrument adopted by the government to pursue her goals: import taxes or export subsidies, as well as price controls and non-automatic licenses for sensitive products, for example. For the sake of tractability, it is assumed that the policy variable can take just two values: π_P (protectionist) $>$ π_F (free trade). The welfare of the government, $G(\pi, \theta)$, and that of the special interest group, $V(\pi, \theta)$, depend on the policy implemented and on the state of the world, θ . The variable θ , for instance, may capture the level of hazardous material in a given production. Again for simplicity, θ can take only two values: θ_P (high) $>$ θ_F (low). The state of the world, θ , is a random variable: its distribution is common knowledge, whereas its realization is private information of the special interest group. Hence, the latter can engage in activities to support the policy formation process and, possibly, persuade the government to implement her own preferred policy.

The information advantage of the interest group (for which she learns the realization of θ at no cost, while the government does not know it) stems from her familiarity with many technical issues relevant to her area of activity and her practical involvement in related matters. By contrast, information dissemination involves resource spending targeted to, for instance, hire lawyers and experts, meet the policy-makers, gather credible evidence, write reports, present policy briefs, and so on. We assume that these costs, denoted by c (> 0), are initially exogenous and independent of the content of the final message (m) that

⁴ See Gawande et al. (2009) for an application to foreign tourism agencies.

will be delivered to the policy-maker. For simplicity, we assume throughout that the only possible signal $s = m$ is that $\theta = \theta_P$, and $s = 0$ otherwise. We will allow the lobbying costs to be endogenous later in this section.

The government and the special interest group do not pursue exactly the same goals. The policy-maker's objective function is greater when policy π_F (π_P) is implemented if the state of the world is θ_F (θ_P). Hence, for instance, under perfect competition in the relevant markets and in the absence of externalities associated with production and consumption in the relevant industry (θ_F), the government maximizes her objective function implementing free trade policies (π_F). If the relevant industry makes large use of toxic substances (θ_P), the policy-maker may want to impose special restrictions on production technologies for imported products, which result in a protectionist policy (π_P). By contrast, the special interest group always prefers a protectionist policy, π_P , rather than a free trade policy, in any state of the world. Thus, we say that the interest group's preferences suffer a protectionist policy bias. Moreover, her welfare under a protectionist policy is higher when the state of the world is θ_P rather than θ_F . The game is characterized by the following payoff matrix:

$$\begin{aligned} G(\pi_F, \theta_F) &= G(\pi_P, \theta_P) > G(\pi_F, \theta_P) = G(\pi_P, \theta_F) = 0, \\ V(\pi_P, \theta_P) &> V(\pi_P, \theta_F) > V(\pi_F, \theta_P) = V(\pi_F, \theta_F) = 0, \end{aligned}$$

The assumption that $G(\pi_F, \theta_F) = G(\pi_P, \theta_P)$, applied to our case, ignores the well-established result that a protectionist policy is a second best with respect to free trade. This is equivalent to saying that the government obtains the same maximum payoff by implementing the right choice in the given state of the world. Our conclusions would not change should we instead allow that $G(\pi_F, \theta_F) > G(\pi_P, \theta_P)$. The assumption that $V(\pi_P, \theta_P) > V(\pi_P, \theta_F)$ introduces a congruence between the government's and the special interest group's objectives (see Potters and van Winden, 1992).⁵ This is necessary for the lobby to deliver informative messages: the interest group has a greater incentive to persuade the policy-maker when her preferred policy and that of the government are one and the same (i.e. persuasion, from

⁵ This is equivalent to saying that the lobby's protectionist policy bias is not too large (Grossman and Helpman, 2001).

the point of view of the policy-maker, is justified). In order for lobbying to take place, it must be that $V(\pi_P, \theta_P) > c$.

We denote by $\lambda_P(s)$ ($\lambda_F(s)$) the probability that the lobby group will send the signal s after learning that the state of the world is θ_P (θ_F). A lobby will send a signal only if she has relevant information. For brevity, we denote by L_P an interest group which learns that $\theta = \theta_P$ and by L_F a group which knows that $\theta = \theta_F$.

The policy-maker has some prior probability, denoted by q ($1 - q$), that the state of the world is θ_P (θ_F). After the signal has been sent by the lobby and the experts have argued her case, whenever possible this probability is updated by the Bayes' rule so that $\tilde{q}(s) = \text{Prob}[\theta_P = \theta | s]$, where $\tilde{q}$ ($1 - \tilde{q}$) is the posterior probability that the state of the world is θ_P (θ_F). We indicate with $\gamma(s)$ the probability that the government will implement a protectionist policy after receiving the signal s .

The government is aware of the existence of a conflict between her objectives and those of the lobby, and she knows that the lobby's representatives are sometimes tempted to lie. When the lobby learns that the state of the world is θ_P , she will always tell the truth, because her preferred policy and that of the government will be one and the same and such that $\pi = \pi_P$. By contrast, if the interest group learns that the state of the world is θ_F , she will have an incentive to persuade the policy-maker that it is instead θ_P . Nonetheless, the policy-maker will be able to learn from the lobby's strategy and to deal with strategic manipulation of the relevant information.

The time structure of the game is as follows. After the lobby learns the true state of the world, she decides whether or not to send a message to the policy-maker and bear the relative costs. Then, after observing the lobby's strategy, if she has opted either to deliver the message or not to communicate, the government updates her beliefs. Finally, the policy decision is taken. An equilibrium is a pair of strategies, γ and λ , such that the lobby's expected payoff is maximized taking the government's strategy as given, and the government's expected payoff is maximized given her posterior beliefs concerning the realization of θ .

Building on Potters and van Winden (1992) (see also Grossman and Helpman, 2001, ch. 5), it is possible to characterize equilibria in which the government can learn relevant policy information from the mere observation of the lobby's behavior. The following predictions

are derived:

- (a) The probability that the interest group will disseminate information is a negative function of the lobbying costs and a positive function of the lobby's potential stakes. L_P will be willing to pay c and send the signal, $s = m$, whenever $c < V(\pi_P, \theta_P)$.⁶ By contrast, L_F will never send a signal, and so $s = 0$, if $c > V(\pi_P, \theta_F)$.⁷ Since $V(\pi_P, \theta_F) < V(\pi_P, \theta_P)$, for parameter values such that $V(\pi_P, \theta_F) < c < V(\pi_P, \theta_P)$, informational lobbying will always be truthful: the policy-maker will then choose a policy $\pi = \pi_P$ if she observes $s = m$ and will set $\pi = \pi_F$ otherwise.
- (b) When $c < V(\pi_P, \theta_F)$, L_P will always send the signal $s = m$, whereas L_F will adopt a mixed strategy of sometimes sending a message and on other occasions choosing no communication. In this case, the policy-maker can still update her beliefs by observing the lobby's behavior: no signaling ($s = 0$) will always be interpreted as $\theta = \theta_F$, whereas more weight will be attached to the event $\theta = \theta_P$ whenever a signal $s = m$ is received.

We conclude that:

- (c) With exogenous lobbying costs, the policy-maker will be more inclined to set $\pi = \pi_P$ whenever she meets the lobby's experts and hears the message $s = m$, and will set $\pi = \pi_F$ otherwise.

Assume now that, while the content of the message remains independent of the lobbying costs, the special interest group can choose the size of the lobbying effort and the amount of resources to invest in communication with the policy-maker. The lobby can, thus, decide to hire a large team of experts, participate in more than one meeting, or send multiple messages. By intensifying her communication effort, she aims to obtain greater credibility with the policy-maker and to enhance the persuasiveness achieved by the message. We denote the endogenous lobbying costs by $c(e)$, where e measures the size of the lobbying effort made by the interest group and e^+ is the maximum feasible effort (due to technological or monetary constraints). If $c(e^+)$ is not too large (i.e. $c(e^+) < V(\pi_P, \theta_F)$), predictions on

⁶ That is $V(\pi_P, \theta_P) - c > V(\pi_F, \theta_P) = 0$.

⁷ That is $V(\pi_P, \theta_F) - c > V(\pi_F, \theta_F) = 0$.

the lobby's strategy are similar to (a) and (b) above: L_F will be able to benefit from false reporting,⁸ so that a mixed-strategy equilibrium exists. By contrast, when $c(e^+)$ is large enough ($c(e^+) > V(\pi_P, \theta_F)$), a full revelation equilibrium is always possible: L_P will be able to choose her spending such that $V(\pi_P, \theta_F) < c(e) < V(\pi_P, \theta_P)$ and L_F will never follow; this will indicate to the policy-maker that the state of the world is necessarily $\theta = \theta_P$. We, thus, conclude that:

- (c') With endogenous lobbying costs, the probability of a protectionist trade policy will increase with the size of the lobbying expenses targeted to persuade the policy-maker that this policy is optimal given the state of the world.

The model presented in this section offers a rationalization for the fact that organized interest groups engage in information transfer with the policy-maker and succeed in influencing policy decisions even when the policy-maker cannot verify the accuracy of the message delivered. Lobbies spend resources to gain credibility: the larger is the amount of resources spent, the greater credibility is gained by the lobby groups and the more favorable policy response is elicited. Information transfer is particularly important in the European institutional environment, where the Commission largely relies on private information by the interest groups to draft legislation and formulate policy proposals. Hence, the frequent formal and informal consultations between Commission officials and interest groups' representatives offer opportunities for lobbies to affect policy outcomes. In this context, the model illustrated above suggests that it might pay for lobbies to bear considerable communication costs, hire large teams of experts, and participate in multiple consultation meetings, even when the message could be delivered more parsimoniously. These theoretical predictions will provide guidance to our empirical analysis carried out in the following sections.

⁸ If $c(e^+) < V(\pi_P, \theta_F)$, even when L_P will choose to exert the maximum feasible cost e^+ , L_F will always be able to follow.

4 Data description

4.1 Trade protection

The two most obvious proxies for trade policy are tariffs and NTMs, and the choice between the two is fraught with important implications (Gawande and Krishna, 2003). On the one hand, adopting an index of NTMs (discussed below) as a measure of trade protection is likely to exhibit large measurement errors that can lead to over-estimation of the extent of protection since NTMs are not necessarily protectionist (Nicita and Gourdon, 2013). On the other hand, adopting tariffs would most probably imply under-estimation of protection due to the extensive use of new trade measures made by most of the industrialized countries that have recently substituted the traditional policy instruments. What we need are ad-valorem equivalents of trade protection that measure overall trade restrictiveness including both tariff and non-tariff measures. However, this index, constructed for European countries, is available for a single time observation (Kee et al., 2009) and using it as a measure of protection would prevent us from exploiting any time variation. Hence, though acknowledging the above shortcomings of this choice, we employ data on non-tariff measures (*NTM*) provided by the UNCTAD-TRAINS (2013). The data are available for 1999 and 2007 only, and are aggregated at the tariff line level, which is the level of aggregation at which trade policy is set.⁹

There are two main approaches to identifying the incidence of NTMs. The first relies on the coverage ratio ($crat_i$), defined as the share of the value of imports in each product group covered by an NTM. In symbols $crat_i = (\sum_{k=1}^K d_k v_k / \sum_{k=1}^K v_k)$, where d_k is a dummy variable that equals 1 if one (or more) NTMs is (are) present for product k (8-digit HS) within each product group i (6-digit HS) and zero otherwise, whereas v_k is the value of imports of product k . The second approach employs the frequency ratio ($frat_i$), defined as the number of imported product categories subject to NTMs as a fraction of the total number of imported product categories in each product group. In symbols $frat_i = (\sum_{k=1}^K d_k m_k / \sum_{k=1}^K m_k)$, where m_k is a dummy variable that equals 1 if product k

⁹ Data are also available for 2010, but they are classified by a different coding system and therefore cannot be used for the present purposes.

is imported and zero otherwise; while the other symbols are already known.

Both indexes have shortcomings. First, they provide no information about the economic (prices and volumes) effects of NTMs (Deardorff and Stern, 1998). Second, missing information cannot be clearly interpreted since it is not obvious whether the lack of HS codes means that NTMs do not exist for those product categories or simply that the data are missing (Carrère and De Melo, 2011). In addition, the coverage ratio suffers from limitations due to the endogeneity of the value of imports: it may be that highly protected sectors turn out to have, as a consequence, low import flows; in the extreme case, if a product category is so protected that the value of imports is zero, the NTM on such a product is not counted in the coverage ratio. This problem does not affect the frequency ratio, which, however, is limited by the fact that it does not reflect the relative value of the imported product in the group (a product that is imported very little and one that is largely imported have identical weights within a given HS group, for instance). Despite these limitations, the coverage and frequency ratios are commonly used in the literature and are acceptable in our case given that our main interest lies not in measuring the welfare/trade effects of NTMs but in the determinants of NTMs themselves. In this paper, we will in all cases report results only for coverage ratios, since using frequency ratios would not change our conclusions in any significant way.

One further important remark is that NTMs are not necessarily trade barriers, and that considering the two expressions as synonymous is a mistake. However, the use of NTMs to pursue protectionist goals is so widespread that they can, with an acceptable degree of approximation, be interpreted as a proxy for neo-protectionism with trade-hindering effects. Take, for instance, the electronics industry: in the case of the production of electrical and electronic equipment, there are objective reasons for regulation in connection with the use of hazardous substances, such as mercury, lead, and hexavalent chromium (Electrical and Electronic Equipment Directive, European Union, 2002a), or the recovery/recycling of waste materials (Waste from Electrical and Electronic Equipment Directive, European Union, 2002b). Nonetheless, US producers complain about overuse of the regulatory instrument, alleging that it has a covert protectionist purpose (Hanson, 2010; Ecorys, 2009). First, the technical requirements tend to be extremely demanding, possibly in excess of any technical justification, as in the case of the ban on nickel-cadmium batteries (Eu-

ropean Union, 2006). Second, even when specific requirements are justified, a lack of harmonization imposes extra costs on non-European exporters that alter the conditions of competition. In the United States there are no measures like the European restrictions on the use of hazardous materials. It follows that American exporters incur, *ceteris paribus*, additional costs when the final market is the European Union. It goes without saying that similar complaints might be made, in their turn, by European producers with respect to the regulations of their own trading partners, and so on.

Figure 2 shows the changes between 1999 and 2007 of the average overall coverage ratios as compared with the average of MFN applied tariffs. As is evident, tariff protection decreased in the time span considered; by contrast, the NTMs increased dramatically, the coverage ratio jumping on average from 0.1523 to 0.4047.

Figure 2 - Coverage ratio and MFN tariffs

NOTE: Average coverage ratio is computed as the EU cross-sector average share of total imports covered by an NTM. Source: TRAINS-UNCTAD (2013). Average MNF applied is the EU cross-sector average of MFN applied tariff. Source: UNCTAD-TRAINS (2013).

4.2 Lobbying

Since 2001 the Trade Civil Society Dialogue has held regular meetings on external trade matters among the European Commissioner for Trade, senior Commission officials, and

trade negotiators. The main goal of these meetings is to foster a confident working relationship among all stakeholders interested in trade policy issues and to gather the basic information that the Commission needs to draft legislation. Every sector is eligible to participate in the dialogue, the only exception being the national European member states, which are not represented and often continue consultations at the national level. Meetings may be of four types: regular meetings (including those with the Commissioner), *ad-hoc* meetings, contact group meetings, and ministerial meetings. Registration for the Trade Civil Society Dialogue is compulsory for attendance and the registration procedure began in 2002. The DG-Trade maintains a database of all the civil society organizations registered to take part in the meetings held each year (European Commission, 2011).

We collect information on which organizations registered for/attended each meeting between 2002 and 2006.¹⁰ In particular, we restrict our attention to business organizations in the manufacturing sector and exclude NGOs, think-tanks, workers' associations, and organizations that cannot be linked to industrial categories.¹¹ In our period of interest 585 organizations were registered for the Trade Civil Society Dialogue, of which 18% can be classified as business organizations. After identifying the sectoral business of interest, we categorize each organization into one or more 4-digit ISIC industrial groups.¹² We only consider manufacturing sectors, meaning ISIC codes between 1511 and 3699, which correspond to 15% of the total organizations registered for the dialogue up to 2006. For each organization we also collect information about whether or not it in fact attended the

¹⁰ Descriptive statistics and additional details on the Civil Society Dialogue meetings are also supplied by Slob and Smakman (2006) and Dür and De Bièvre (2006). Note that the exact number of registered organizations must be calculated after considering that a number of organizations were found to be registered more than once (by distinct offices of the same organization, for instance). Furthermore, the list of registered organizations also includes embassies, the OECD, the World Bank, and similar institutions (on this see also Fazi and Smith, 2006).

¹¹ One example of an excluded organization is the *Movimento dei Consumatori*, which safeguards consumers' interests.

¹² For instance *FoodDrinkEurope* is an umbrella organization representing the interests of the various sectors forming the food and beverages industry (ISIC 1511-1554). By contrast the *The European Cosmetic, Toiletry and Perfumery Association* represents the interests of the manufacturers of soap and detergents, perfumes, and toilet preparations, which belong to the sector ISIC 2424.

meeting.

Most of the Civil Society Dialogue meetings concern general trade issues potentially of interest to any manufacturing organization, such as the Doha Development Agenda and related negotiations. Some of the meetings, however, besides being still related to trade, focus on issues of interest to specific sectors. As will be clear later, our main variable of interest only includes general interest meetings and meetings of specific interest for manufacturing industrial sectors.¹³ Hence, in the construction of our main measures for lobbying, we exclude thematic meetings that deal with matters of concern to sectors other than manufacturing, i.e. ISIC codes below 1511 and above 3699. These residual meetings are used to build two of our instrumental variables.

Relying on these data, we construct the following variables: the fraction of meetings (in the total number of meetings held in the time span considered) attended by at least one organization in a specific industrial sector between 2002 and 2006 (*meetings*); the fraction of meetings (in the total number of meetings held in the time span considered) for which at least one organization in a given sector registered, regardless of actual attendance (*registrations*); the number of organizations in a given sector that attended at least one meeting in the time interval considered (*attending organizations*); the number of organizations in a given sector that registered for the Civil Society Dialogue in the time interval considered (*registered organizations*); the number of multi-sector, meaning more than one 4-digit ISIC category (*multi-sector organizations*), or single-sector, meaning just one 4-digit ISIC category (*single-sector organizations*), organizations that attended at least one meeting; the fraction of non-industrial meetings attended by at least one organization in a specific industrial sector (*non-industrial meetings*); and the number of organizations in a given sector that attended at least one non-industrial meeting (*organizations attending non-industrial meetings*). In Table 1 we rank macro-industrial categories (2-digit ISIC) according to their average participation in the dialogue (from the largest fraction of meetings attended to zero meetings). The food and beverage industrial category proves to be the most active group in consultations, whereas other sectors, such as publishing, never

¹³ Our results that follow are unchanged if we exclude general meetings such as the ‘General Meetings with the Commissioner Pascal Lamy’ and the ‘Meetings of Evaluation of the Civil Society Dialogue’.

participated in meetings with the European Commission in the sample period considered.

Table 1 - Ranking of macro-sectors from high to low participation (2-digit ISIC)

ISIC code	Description	Ranking
15	Food products and beverages	1
24	Chemicals and chemical products	2
19	Leather products	3
17	Textiles	4
18	Wearing apparel	4
31	Electrical machinery and apparatus	5
33	Medical, precision, and optical instruments	5
35	Other transport equipment (e.g. aircraft and spacecraft)	5
36	Furniture and manufacturing n.e.c. (e.g. jewelry)	5
32	Radio, television, and communication equipment	6
34	Motor vehicles	7
27	Basic metals	8
29	Machinery and equipment n.e.c.	9
21	Paper and paper products	10
20	Wood and products of wood	11
28	Fabricated metal products	11
26	Non-metallic mineral products (e.g. glass)	12
25	Rubber and plastics products	13
22	Publishing, printing, and recording	14

Table 2 sets out the descriptive statistics. The total number of meetings on trade matters held in this time span is 148 (34 in 2002, 30 in 2003, 26 in 2004, 29 in 2005, and 27 in 2006). Of course, more than one organization belonging to a given sector could participate in each meeting (so the number of presences per meeting could be larger than the number of meetings). Manufacture of Cocoa, Chocolate, and Sugar Confectionery (ISIC 1543) is the sector with the largest fraction of meetings in which at least one organization was present (61%) or for which at least one organization registered regardless of actual attendance (98%), and the largest number of multi-sector organizations (equal to 7). Manufacture of Pharmaceuticals (ISIC 2423) is the sector for which the largest number (11) of organizations registered for the Civil Society Dialogue (regardless of their actual participation); of these, 7 attended at least one meeting. Manufacture of Dairy Products (ISIC 1520) is the sector with the largest fraction of meetings attended by more than one organization. Finally, the largest number of active (i.e. attending at least one meeting) organizations (7) over the whole period is recorded by all the three aforementioned sectors. The average annual fraction of meetings attended by at least one organization increased over time, rising from

0.06 in 2002 to 0.17 in 2006, attesting to the fact that industrial groups have increasingly recognized the importance of taking part in the public consultations.

Table 2 - Descriptive statistics of lobby variables

Variable	Obs	Mean	St.Dev.	Max.	Min.
<i>Meetings</i>	117	0.16	0.20	0.00	0.62
<i>Registrations</i>	117	0.23	0.29	0.00	0.99
<i>Registered organizations</i>	117	2.84	3.04	0.00	12.00
<i>Attending organizations</i>	117	1.91	2.13	0.00	8.00
<i>Single-sector organizations</i>	117	0.14	0.52	0.00	4.00
<i>Multi-sector organizations</i>	117	1.78	1.98	0.00	8.00
<i>Non-industrial attended meetings</i>	117	0.12	0.26	0.00	0.85
<i>Organizations attending non-industrial meetings</i>	117	0.82	1.79	0.00	8.00

Finally, note that because trade data (NTM indexes, trade, and import demand elasticities) are aggregated at the 6-digit HS, we match industrial codes from 4-digit ISIC with codes from 6-digit HS. Here, the fact that the lobbying variable is at a higher level of aggregation than the trade variables should not create problems since producers, especially at the European level, gain more advantage from organizing at the industry rather than at the product level to lobby for protection. This is confirmed by the fact that, in the European Union, there is more variation in protection across industries than within them (on this point see also Karacaovali and Limão, 2008).

4.3 Trade, import-demand elasticities, and industrial data

The data on import values (*import*) have been obtained from Eurostat (2012) and consist in extra-EU trade statistics covering the total trading of goods between any member state and a non-member state. By ‘goods’ we mean all movable properties. Data are at the 6-digit level of aggregation according to the HS (import values have also been downloaded at the 8-digit HS to compute coverage within each 6-digit HS). Import prices (*prices*) are computed using unit values of extra-EU imports at the 6-digit level and are also extracted from Eurostat (2012).

Import demand elasticities (*elas*) for the European Union are computed using data provided by Kee et al. (2004), which are suitable for our study for a number of reasons. First, they are aggregated at the tariff line level, i.e. 6-digit HS (more than 4000 products in our

case), so as to maintain consistency with the level of aggregation of the trade protection measure and trade data. This is important because we expect the import demand elasticities to be proportionally greater with the narrower levels of aggregation. As a consequence, using more aggregated data for import demand elasticities than for protection would have led to under-estimation of the elasticity of the import-demand function. Second, they are obtained by using a methodology consistent with trade theory and by employing the same data sources for each country and good considered. Finally, Kee et al.'s elasticities are quite precisely estimated: considering the overall study, which includes 117 countries, 89% of the elasticities are statistically significant at the 1% level, 91% at the 5%, and 93% at the 10% levels. Import demand elasticities are available from source for each European Union country member and they are aggregated by weighted sum, the weights being the share of the individual country's imports in total imports. In the present paper we define import demand elasticities as always positive and trim data by excluding observations respectively below and above the 1st and the 99th percentiles.

Finally, we need data on industrial variables. These are provided by OECD (2013) by country and detailed at the 4-digit ISIC level. The industrial variables used in the estimation are: total number of employees (*workers*), industry scale (*scale*, obtained as the value added per firm), annual average earnings per employee (*wage*), labor share (*labor share*, computed as the share of the value of production consisting of the wages and salaries of all the persons engaged, including social contributions, income taxes but not social security, pensions and other retirement contributions), total investment over value added (*investment*), import penetration (*import/output*, computed as the ratio between imports and value of production). All the variables are ratios, except for the average annual earnings, which are in thousands of euro at 2005 prices. Industrial variables are available from the source for each member country, so they have to be aggregated at the European Union level. The value added, the number of firms, the number of employees, the total investment, and the value of production are aggregated by simple sum; the labor share, the industry scale, and the import penetration ratio are computed for the European Union as a whole.

5 Empirical strategy

We start by considering the following empirical specification:

$$NTM_{it} = \zeta_i + \beta \cdot lobby_{it} + \gamma \cdot gh_{it} + (\delta \cdot x_{it}) + \varepsilon_{it}, \quad (1)$$

where t denotes time (1999, 2007) and i indicates the product (6-digit HS). NTM is an index of non-tariff measures defined as $crat/(1 + crat)$, where $crat$ is the coverage ratio, gh is the inverse of the import penetration ratio weighted by the import-demand elasticity (as in Grossman and Helpman, 1994), x is a vector of possible controls, and $lobby$ is a proxy for European level lobbying influence. Finally, ζ are the product fixed effects at the product level (6-digit HS) and ε is the residual term.

As already explained, consultations (in regular meetings) through the Civil Society Dialogue of the DG-Trade started after 2001; hence in 1999 this form of lobbying activity was not present. We capture the influence on policy-makers by a given industrial sector i in each year t by measuring the participation in the Civil Society Dialogue on the part of organizations which belong to that industrial sector during the period between the starting year of the regular meetings, t_0 and year $t - 1$.¹⁴ Hence for each time $t > t_0$, we have:

$$lobby_{it} = \sum_{\tau=t_0}^{t-1} participation_{i\tau},$$

where $t_0 = 2002$ (the first year in which attendance was recorded) and $t = 2007$. In our empirical analysis, we measure *participation* by employing alternative variables such as the fraction of meetings attended, the fraction of registrations, the number of attending organizations, and others. Since we only have two time periods, before and after the launch of the Civil Society Dialogue, we estimate equation (1) in first difference as follows:

$$\Delta NTM_i = \alpha + \beta \cdot lobby_i + \gamma \cdot \Delta gh_i + \delta \cdot \Delta x_i + \Delta \varepsilon_i, \quad (2)$$

where we include a constant (as in Mitra et al., 2002, and Karacaovali and Limão, 2008).¹⁵ Since in 1999, before the launch of the Civil Society Dialogue (which occurred in 2001),

¹⁴ By employing $t - 1$, here, we mitigate possible problems of endogeneity of the lobby proxy variable in the analysis that follows.

¹⁵ Although the intercept, α , is not directly derived from theory, it captures the fact that all sectors (either organized or not) are associated with a positive (or non-negative) change in non-tariff protection.

lobby is necessarily equal to zero, the differenced lobbying variable is equal to the lobbying variable itself and captures the increase in lobbying intensity over the first five years after the beginning of the consultation initiative. In the analysis that follows, we always cluster the standard errors at sector (4-digit ISIC) level. Estimation of equation (2) using OLS is likely to be biased due to endogeneity concerns, which are discussed and addressed below.

First, the variable *lobby* may be endogenous, in that trade policy decisions influence, in their turn, the interest groups' incentive to participate in the Civil Society Dialogue. This may happen, for instance, if the DG-Trade were to organize a larger number of meetings relevant to sectors which are strategic according to the European trade policy in a given period. These would give some sectors more opportunities to lobby policy-makers than other sectors. To deal with this possibility, we implement an IV-GMM approach and proceed as follows. Recall that our analysis only focuses on manufacturing industries (ISIC codes between 1511 and 3699). To build our instrument, we consider all the Civil Society Dialogue meetings which were relevant to sectors other than manufacturing industries (ISIC codes below 1511 and above 3699, such as forestry, fishing, agriculture, etc), and we count the number of those meetings in which each industrial sector included in our analysis participated. Participation in these meetings captures the involvement of industrial business groups in the DG-Trade consultations, but it is unlikely to be directly affected by the DG-Trade decisions to negotiate specific issues related to the manufacturing groups.

Second, the Δgh variable might be endogenous as well if either the import penetration ratio or the import-demand elasticities are affected by trade policy. To address this problem, we follow Karakaovali and Limão (2008). Accordingly, as an instrument for Δgh , we employ the change between 1996 and 1999 in the industry scale ($\Delta scale_{-1}$) and in import prices ($\Delta price_{-1}$).¹⁶ Large entry costs associated with high economies of scale are predicted to be negatively correlated with the import penetration ratios, whereas high world prices have

¹⁶ The choice of 1996 as the starting year is made for convenience. Our results do not change in any relevant way if we instead adopt 1995 or more recent years up to 1998 (earlier years not being considered because the number of European Union member states changed in 1995). Karakaovali and Limão (2008) also use an interaction term, $\Delta scale_{-1} \cdot \Delta price_{-1}$, which we drop because the corresponding estimated coefficient is never statistically significant in our first stage regressions.

a direct influence on imports and on the import-demand elasticities. On the other hand, changes between 1996 and 1999 in these two variables ($\Delta scale_{-1}$ and $\Delta price_{-1}$) should not be affected by NTMs' changes occurring after 1999. Since we have more instruments than exogenous variables we are able to verify the instruments' exogeneity by implementing the Sargan-Hansen test for over-identifying restrictions.

6 Estimation results

The theoretical framework described in Section 3 suggests that special interest groups can fruitfully engage in strategic information transfer in the attempt to influence policy decisions. The model implications indicate that, when the interest groups can vary the size of their lobbying effort, persuasion tends to be the more credible the more resources are spent in communication with the policy-maker. In this section we test such prediction and illustrate our estimation results for equation (2) where *lobby* measures the lobbying effort.

We start by considering, as a proxy for *lobby*, the fraction of meetings attended by at least one organization in each industrial sector in the time span considered (*meetings*). The results are reported in Table 3.

Column (1) sets out the OLS estimates. As will be seen, the estimated coefficient on meeting participation is positive and statistically significant at the 10% level: sectors that participate more actively in the Civil Society Dialogue meetings tend to obtain stricter non-tariff measures, even after removing product fixed characteristics by first differencing. By contrast, the effect of the Δgh variable is not statistically different from zero. As already noted, these results may be affected by endogeneity problems.

Column (2) shows the estimation output obtained by implementing IV-GMM and instrumenting Δgh with the lagged values of the change in import prices and industry scale, denoted respectively by $\Delta price_{-1}$ and $\Delta scale_{-1}$. The effects of the “traditional” lobbying variable (Δgh) is now positive and statistically significant at the 1% level, suggesting that the OLS estimates could be affected by a negative bias. Under the assumption that all industrial sectors are able to exert some sort of political pressure *a la* Grossman and Helpman (1994), this result supports the protection-for-sale prediction that lobbying is the more effective, the lower the import penetration ratio weighted by the import elasticity. These

Table 3 - Attended meetings

	OLS	IV - GMM	IV - GMM	OLS	IV - GMM	IV - GMM	First stage of column (3)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Lobby (Meetings)</i>	0.1539* (0.0913)	0.1893** (0.0950)	0.2706** (0.1151)	0.2486*** (0.0878)	0.2797*** (0.0843)	0.3438*** (0.0941)	Dep. var.	
Δgh (<i>Output/(import · elas)</i>)	-0.0000 (0.0000)	0.0009*** (0.0002)	0.0008*** (0.0002)	-0.0000 (0.0000)	0.0006** (0.0003)	0.0005* (0.0003)	Dep. var.	
<i>Constant</i>	0.1531*** (0.0226)	0.1522*** (0.0229)	0.1360*** (0.0303)	0.0584 (0.0511)	0.0561 (0.0511)	0.0298 (0.0549)	0.1394*** (0.0251)	-2.9253*** (0.7192)
Δs_1 ($\Delta scale_1$)							0.0031 (0.0033)	1.9348*** (0.5652)
Δp_1 ($\Delta price_1$)							0.0003*** (0.0001)	0.4264*** (0.0018)
z_1 (<i>Non-industrial meetings</i>)							0.0234*** (0.0014)	-2.4056 (2.2935)
Observations	4,391	4,391	4,391	4,391	4,391	4,391	4,391	4,391
Number of industries	117	117	117	117	117	117	117	117
Instrumented variables	None	Δgh	<i>Lobby</i> , Δgh	None	Δgh	<i>Lobby</i> , Δgh	n/a	n/a
Instruments	None	Δs_1 , Δp_1	Δs_1 , Δp_1 , z_1	None	Δs_1 , Δp_1	Δs_1 , Δp_1 , z_1	None	None
Additional controls	None	None	None	$\Delta work$, Δinv , $\Delta wage$, $\Delta labsh$			None	None
Sargan-Hansen <i>p</i> -val	n/a	0.8553	0.8621	n/a	0.4894	0.4641	n/a	n/a
First stage statistics								
Angrist-Pischke <i>p</i> -val (Δgh)	n/a	0.000	0.000	n/a	0.000	0.000		
Angrist-Pischke <i>p</i> -val (<i>Lobby</i>)	n/a	n/a	0.000	n/a	n/a	0.000		

NOTE: Robust standard errors (in parentheses) are clustered at the sector level (4-digit ISIC). *** significant at 1%; ** significant at 5%; * significant at 10%. Null hypothesis of the Sargan-Hansen *J*-test: exclusion restrictions are valid. Null hypothesis of the Angrist-Pischke *F*-test: first stage is weakly identified.

findings are also consistent with those of the most recent empirical literature in general and of Karacaovali and Limão (2008), in particular. The coefficient on *lobby* is again positive and statistically significant at the 5% level. Our conclusions are also confirmed by the results reported in column (3), which are obtained by instrumenting, in addition to Δgh , the *lobby* variable. In this case, as an instrument we employ z_1 , i.e. the fraction of meetings with a non-industrial focus in which at least one organization participated. Again the estimated coefficient on *lobby* is positive and statistically significant at the 5% level. It is however larger in size. This suggests that equation (2) suffers from downward bias. An explanation for this is that the DG-Trade may be more likely to organize meetings of interest for strategic and more competitive sectors.

Column (4) shows our estimates when we include a number of control variables, such as the lagged change in a measure of sectoral employment ($\Delta work$), in the annual average earnings per employee ($\Delta wage$), in the labor share ($\Delta labshare$), and in the total investment over value added ($\Delta invest$). As will be seen, the size of the estimated parameter capturing the lobbying influence is even larger than before, and again statistically significant at any conventional level. By contrast, the size of the coefficient on Δgh is now smaller, although still positive and statistically significant. In the subsequent analysis, we do not include these additional regressors as suggested by the relevant literature; the results would not change in any significant way if we instead considered them in estimation.¹⁷ In Table 3 we also report the p -value of the Sargan-Hansen J -statistic (see Hayashi, 2000: 220-24), which induces us not to reject the null hypothesis that the over-identifying restrictions are valid, and the Angrist-Pischke F -statistic (see Angrist and Pischke, 2009: 217-18), which always strongly rejects the null hypothesis of weak instruments. Finally, columns (7) and (8) set out the first stage of our preferred equation regression corresponding to column (3).¹⁸

¹⁷ Grossman and Helpman's (1994) model suggests that, once the *gh* variable has been considered, additional industrial variables should not exert any further effect on trade protection. Accordingly, for instance, Karacaovali and Limão (2008) do not include any additional control besides those predicted by theory, whereas Goldberg and Maggi (1999) only use measures of sectoral employment in the robustness checks, as we do.

¹⁸ Results from the first stage are reasonable: the *lobby* variable increases with the lagged import prices and with participation in non-industrial meetings; the *gh* variable increases with the lagged industry scale

One possible interpretation of our findings is that it is not meeting attendance that matters, but simple registration for the Civil Society Dialogue. In this case, registration would signal active participation in lobbying action at the European level even when the organizations do not in fact take part in consultations during the official meetings. Fortunately, our data allow us to distinguish between simple registration for meetings and actual attendance. Registration is free and compulsory for attending meetings. Once an organization has registered, it may or may not attend the meeting.

Hence, to better evaluate the role of actual participation in meetings, we investigate whether or not our results change when we substitute the *meetings* variable, which captures the fraction of meetings that at least one organization in a given industrial sector attended in the time span considered, for the *registrations* variable, which captures the fraction of meetings for which at least one organization in a given sector only registered (regardless of attendance).

In Table 4 we show our output corresponding to the three alternative estimation methods: OLS, IV-GMM where only Δgh is instrumented, and IV-GMM where we instrument both Δgh and *lobby*. Columns (1) through (3) of Table 4 consider *registrations* as a proxy for *lobby*. On comparison with the regression output shown in Table 3, it will be seen that the effect of registration on the coverage ratio is smaller than the effect of meeting attendance; and, in particular, that the estimated coefficient is 0.1772 (column (3) of Table 4) versus 0.2706 (column (3) of Table 3). The two coefficients are statistically different at the 5% level (F -statistic=5.07; p -value=0.0263). Similar conclusions are drawn when we estimate our equation substituting *meetings* for *attending organizations* (columns (4) through (6)), which is a variable measuring the number of organizations attending meetings in each industrial category, and compare the results with those obtained by employing *registered organizations* (columns (7) through (9)), which is a variable measuring the number of organizations registered for the Civic Society Dialogue (regardless of actual participation in meetings). Here the lobby variable is instrumented with z_2 , which is the

and the lagged import prices. Since first stages of the alternative specifications are similar, for reasons of space, in what follows we do not report the full estimation results (which are available upon request), but only the results of the Angrist-Pischke test.

Table 4 - Registrations and organizations

	OLS (1)	IV - GMM (2)	IV - GMM (3)	OLS (4)	IV - GMM (5)	IV - GMM (6)	OLS (4)	IV - GMM (5)	IV - GMM (6)
<i>Lobby (Registrations)</i>	0.1186* (0.0607)	0.1365** (0.0599)	0.1772** (0.0751)						
<i>Lobby (Registered org.s)</i>				0.0063 (0.0050)	0.0052 (0.0052)	0.0248** (0.0102)			
<i>Lobby (Attending org.s)</i>							0.0178** (0.0081)	0.0160** (0.0076)	0.0279*** (0.0098)
Δgh (<i>Output/(import · elas)</i>)	-0.0000 (0.0000)	0.0009*** (0.0002)	0.0008*** (0.0002)	-0.0000 (0.0000)	0.0010*** (0.0002)	0.0006* (0.0003)	-0.0000 (0.0000)	0.0009*** (0.0002)	0.0007*** (0.0002)
<i>Constant</i>	0.1491*** (0.0228)	0.1495*** (0.0231)	0.1358*** (0.0302)	0.1607*** (0.0280)	0.1711*** (0.0308)	0.0809 (0.0543)	0.1380*** (0.0263)	0.1488*** (0.0287)	0.1112*** (0.0352)
Observations	4,391	4,391	4,391	4,391	4,391	4,391	4,391	4,391	4,391
Number of industries	117	117	117	117	117	117	117	117	117
Instrumented variables	None	Δgh	<i>Lobby</i> , Δgh	None	Δgh	<i>Lobby</i> , Δgh	None	Δgh	<i>Lobby</i> , Δgh
Instruments	None	Δs_{11} , Δp_{11}	Δs_{11} , Δp_{11} , z_1	None	Δs_{11} , Δp_{11}	Δs_{11} , Δp_{11} , z_2	None	Δs_{11} , Δp_{11}	Δs_{11} , Δp_{11} , z_2
Sargan-Hansen p -val	n/a	0.8783	0.8919	n/a	0.8226	0.7345	n/a	0.8945	0.9467
First stage statistics									
Angrist-Pischke p -val (Δgh)	n/a	n/a	0.000	n/a	n/a	0.000	n/a	n/a	0.000
Angrist-Pischke p -val (<i>Lobby</i>)	n/a	0.000	0.000	n/a	0.000	0.000	n/a	0.000	0.000

NOTE: Robust standard errors (in parentheses) are clustered at the sector level (4-digit ISIC). *** significant at 1%; ** significant at 5%;

* significant at 10%. Null hypothesis of the Sargan-Hansen J -test: exclusion restrictions are valid. Null hypothesis of the Angrist-Pischke

F -test: first stage is weakly identified.

number of organizations registered for non-industrial meetings. As will be seen, a higher number of organizations in a given industrial sector is associated with higher non-tariff barriers, considering both only registered and attending organizations. However, again, the estimated coefficient on the number of organizations that actually participated in the meetings is larger than that on the registered organizations. The Sargan-Hansen test suggests the validity of our exclusion restrictions, while the Angrist-Pischke F -statistic always leads us to reject the null hypothesis that our instruments are weak.

Finally, our dataset enables us to distinguish between organizations representing more than one sector and organizations representing just one industrial category. A well-established result in the political economy literature (Olson, 1965) is that organization by lobby groups is more costly when more severe problems of collective action must be tackled. It follows that organized interest groups representing more than one industrial sector tend to signal a greater lobbying effort to the policy maker. As a consequence, we expect lobbying activity by multi-sector organizations to be more persuasive and, thus, more effective in terms of policy outcomes. Hence, to provide additional evidence in support of our previous conclusions, we estimate equation (2) and include, as regressors, both the number of multi-sector (*multi-sector organizations*) and the number of single-sector (*single-sector organizations*) organizations that attended at least one meeting. As instruments for these two lobby variables we adopt interactions between z_2 and, respectively, $\Delta scale_{-1}$ and $\Delta price_{-1}$. The conclusions are consistent across estimation methods: we find that the estimated coefficient associated with multi-sector organizations is positive and statistically significant at any conventional level, whereas the parameter associated with single-sector organizations is positive, but smaller in size and not or weakly statistically significant, thus corroborating our expectations. In particular, when we consider our preferred specification (column (3) of Table 5), the difference between the two estimated parameters is statistically significant at the 10% level (the p -value of the F -statistic is equal to 0.0617). Again, according to the results of the J -test we cannot reject the null hypothesis that our exclusion restrictions are valid, whereas the Angrist-Pischke F -statistic induces us strongly to reject the null hypothesis that the first stages are weakly identified.

Table 5 - Single- and multi-sector organizations

	OLS	IV - GMM	IV - GMM
	(1)	(2)	(3)
<i>Lobby1</i> (<i>Single-sector organizations</i>)	0.0065 (0.0192)	0.0067 (0.0191)	0.0112 (0.0094)
<i>Lobby2</i> (<i>Multi-sector organizations</i>)	0.0194** (0.0095)	0.0173* (0.0088)	0.0602*** (0.0182)
Δgh (<i>Output/(import · elas)</i>)	-0.0000 (0.0000)	0.0009*** (0.0002)	0.0003 (0.0003)
<i>Constant</i>	0.1372*** (0.0260)	0.1480*** (0.0283)	0.0445 (0.0493)
Observations	4,391	4,391	4,391
Number of industries	117	117	117
Instrumented variables	None	Δgh	<i>lobby1</i> , <i>lobby2</i> , Δgh
Instruments	None	Δs_{-1} , Δp_{-1}	Δs_{-1} , Δp_{-1} , $z_2 \cdot \Delta s_{-1}$, $z_2 \cdot \Delta p_{-1}$
Sargan-Hansen <i>p</i> -val	n/a	0.8909	0.8689
First stage statistics			
Angrist-Pischke <i>p</i> -val (Δgh)	n/a	0.000	0.000
Angrist-Pischke <i>p</i> -val (<i>Lobby1</i>)	n/a	n/a	0.000
Angrist-Pischke <i>p</i> -val (<i>Lobby2</i>)	n/a	n/a	0.000

NOTE: Robust standard errors (in parentheses) are clustered at the sector level (4-digit ISIC). *** significant at 1%; ** significant at 5%;

* significant at 10%. Null hypothesis of the Sargan-Hansen *J*-test: exclusion restrictions are valid. Null hypothesis of the Angrist-Pischke

F-test: first stage is weakly identified.

7 Conclusions

Industrial lobbies are key actors in trade policy-making, as has been largely documented by the international trade and the political economy literature. To date, however, hardly any empirical evidence on lobbying activities in the European Union and their impact on trade policy outcomes has emerged due to a lack of relevant data. This is unfortunate because the European Union is one of the largest trade actors in the world. To the best of our knowledge, this paper is the first to empirically assess the role of informational lobbying in the European environment and to gauge its influence on trade policy decisions.

As regards trade policy analysis, the European Union is a peculiar environment to study. On the one hand, unlike the United States, in Europe monetary contributions by business groups to politicians are illegal. As a consequence, tracking any direct link between pressure groups and policy-makers is practically impossible. On the other hand, trade policy proposals are drafted by the European Commission, which is essentially a technical body. From this it follows that traditional forms of policy pressure, such as electoral support, are (at least apparently) inhibited. By contrast, in Europe, lobby groups have a very active and openly recognized role in disseminating basic information during the legislative process.

The persuasiveness of informational lobbying on trade policy formation is far from obvious. Why should policy-makers listen to lobbies' experts when it is known that they have an incentive to lie? Why does the Commission consult with business groups and invite them to argue their case even if there is no mechanism to ensure honest reporting? One reason is suggested by the model illustrated in Section 3 of this paper. Lobbies' messages can be informative even when there is a potential conflict between the objectives of the government and those of the lobbies (Potters and van Winden, 1992). This implies that lobbying may be socially desirable: the Commission may be able to gather relevant information to guide policy decisions and exploit the knowledge advantage of the business groups; lobbies may be able to gain a way to elicit favorable responses from policy-makers.

Can we conclude that the European governance system has benefitted general welfare more than other systems? This paper cannot answer this question. Nonetheless it takes important positive steps toward quantifying the presence of business groups in the European

policy arena. It has empirically assessed the influence of lobbies on trade policy formation between 1999 and 2007, drawing on the evidence on participation by business groups in the meetings on external trade matters organized by the Civil Society Dialogue among the European Commissioner for trade, senior Commission officials, and trade negotiators. By exploiting the panel structure of the dataset, we have been able to assess the role of lobby participation in consultations on NTM coverage ratios, which proves to be important from both the economic and the statistical viewpoints, even after controlling for product fixed effects and a number of additional confounders. We have also obtained a number of further findings; in particular, attendance is more effective than just registration and multi-sector organizations are more likely than others to obtain protection.

Several important aspects of the interaction between special interest groups and European policy-makers remain unexplored in this paper. First, we have disregarded the presence of non-business groups (such as NGOs, think-tanks, workers' associations, etc), given that it is not possible to associate them with any particular industrial sector. Second, we have not explicitly considered in our analysis the influence exerted by the member states, which are not officially represented in the DG-Trade meetings. Third, we are aware that public consultations are only the tip of the iceberg and that a number of alternative ways to exert policy pressure are available to both national and European lobbyists. These issues have considerable potential for future research in this area.

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