Globalization for Sale*

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Abstract

We study the political economy of trade agreements with heterogeneous firms. Using detailed information from lobbying reports filed under the Lobbying Disclosure Act, we find that virtually all firms that lobby on free trade agreements (FTAs) are in favor of their ratification. Moreover, relative to non-lobbying firms, lobbying firms are larger, more likely to be engaged in international trade and to operate in comparative advantage sectors. To rationalize these findings, we describe a model of endogeneous lobbying by heterogeneous firms on a FTA. We show that, if the fixed costs of lobbying are large enough, only the most productive firms are politically organized and support the agreement. The model also delivers predictions on the intensive margin of lobbying. In line with these predictions, we find that firms spend more supporting FTAs that generate larger potential gains (in terms of the reduction in tariffs on their final goods and intermediate inputs, the depth of the agreement, and the export and sourcing potential of the FTA partners) and when politicians are less likely to be in favor of ratification.

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1 Introduction

Recent decades have seen a proliferation of regional trade agreements. There are currently more than 300 of these agreements in force, with many more being negotiated, most of which take the form of free trade agreements (FTAs). For example, the United States has 14 FTAs in force with 20 countries, including the North American Free Trade Agreement (NAFTA) and the US-Korea Free Trade Agreement (KORUS).

What political interests lead to the ratification of these agreements? The workhorse model of the political economy of FTAs focuses on the role of lobbying by industry groups (Grossman and Helpman, 1995a). However, most lobbying is actually done by individual firms rather than industries. Moreover, even within narrowly defined sectors, firms differ in their participation in international trade (e.g. Bernard and Jensen, 1999; Melitz, 2003; Antrás et al., 2017), which can lead to heterogeneous preferences over trade agreements.

In this paper, we study the political economy of trade agreements with heterogeneous firms. First, using detailed information from lobbying reports available under the Lobbying Disclosure Act of 1995, we construct a unique dataset that allow us to trace firms’ lobbying expenditures on FTAs negotiated by the United States (US). The reports provide information on the identity of the lobbying firm, how much it spent, and whether it supported or opposed a particular trade agreement. Our main dataset is based on all reports that explicitly mention the bills for the ratification of FTAs in Congress. This methodology makes it possible to identify lobbying on specific types of trade policies. It also allows us to focus on the final version of a trade agreement, and examine whether firms lobby in favor or against its implementation. As an alternative methodology, we use keywords rather than bill numbers to track all lobbying reports related to a particular trade agreement.

Using this dataset, we uncover new facts about firms lobbying on trade agreements. First, virtually all lobbying firms are in favor of FTAs: in 99.25% of the cases, firms lobby in support of trade agreements. This finding continues to hold if we use keywords rather than bill numbers to track all lobbying reports related to a particular trade agreement. We then match our lobbying dataset with Compustat and document additional facts concerning the extensive margin of lobby-
ing: relative to non-lobbying firms, firms lobbying on FTAs are larger, more likely to be engaged in international trade, and tend to operate in sectors in which the US has a large comparative advantage.

These facts cannot be explained by the existing literature on the political economy of trade agreements. As mentioned above, the workhorse model by Grossman and Helpman is focused on industries rather than firms. Moreover, the decision to lobby is exogenous: it is simply assumed that some industries are organized, while others aren’t. Finally, contributions are paid ex-post (i.e. after the incumbent government has decided whether or not to ratify the agreement), while actual lobbying expenditures are paid ex-ante (i.e. before the ratification of the agreement).

To rationalize the patterns observed in our data, we develop a new model of the political economy of trade agreements with heterogeneous firms. Explaining lobbying by individual firms requires a model in which firms have positive mass and can thus affect policy outcomes such as the ratification of trade agreements. We introduce firm heterogeneity in Brander and Krugman (1983)’s oligopoly model, allowing for productivity differences within sectors and across countries. The model generates selection into exporting by the most productive firms, as in Melitz (2003), and features both intra-industry and inter-industry trade.

We examine the effects of a proposed FTA between two countries. If ratified, this leads to the reciprocal elimination of tariffs across all sectors. The entry into force of the trade agreement creates winners and losers. Low-productivity non-exporting firms lose from the FTA, since they suffer from an increase in competition in the domestic market and do not benefit from improved access to the foreign market. Exporting firms may gain or lose, depending on whether the increase in foreign profits outweighs the fall in domestic profits. The biggest winners from the trade agreement are the most productive firms operating in sectors in which their country has a large comparative advantage (the “global leaders”): these firms benefit from improved access to the foreign market, without suffering an increase in competition in the domestic market.

The political structure of the model is characterized by two key features. First, in line with what we observe in the data, lobbying expenditures are paid before the policy outcome is realized. To model ex-ante lobbying, we follow the literature on lobbying/rent-seeking in contests (e.g. Tullock, 1980; Becker, 1983; Esteban and Ray, 2001; Siegel, 2009). Firms decide whether to pay a fixed cost to be politically organized and how much to lobby in favor or against a proposed FTA, anticipating

7Firms lobbying on trade agreements must be large not only at the sectoral level (“big in the small”, in the words of Neary, 2016), but also in the economy as a whole (“big in the big”).

8As shown in the Theoretical Appendix, our stylized facts can also be rationalized under a mixed market structure, in which oligopolistic firms coexist with a continuum of monopolistically competitive firms, as in Parenti (2018).

9This is in line with Article XXIV of the GATT/WTO, which allows countries to negotiate preferential trading arrangements, but requires them to eliminate “the duties and other restrictive regulations of commerce” on “substantially all the trade between the constituent territories in products originating in such territories.” Very few products are indeed excluded from FTA. For example, the US did not exclude any HS8 good from the NAFTA agreement; the highest percentage of products excluded by the US is 1.73 (in the case of the FTA with Australia). We thank Shushanik Hakobyan, Tristan Kohl, and James Lake for providing us with this information.
the impact of their lobbying expenditures on the probability of ratification. The presence of fixed costs induces selection into lobbying.\footnote{These costs may involve setting up a lobbying department in house or establishing connections with lobbying firms, to obtain access to politicians (Blanes-i-Vidal et al., 2012) or issue-specific information (Bertrand et al., 2014).} Second, legislators deciding on the ratification of the FTA may be biased in favor or against it, and there is some uncertainty about this political bias. This feature of our model captures the political uncertainty faced by firms when making their lobbying decisions\footnote{Even after trade agreements have been signed by the President, US congressmen often oppose their ratification. Support for ratification varies across legislators, depending on many factors, including their party affiliation, whether it coincides with the President’s, whether they are members of the House or Senate, and their proximity to elections (Conconi et al., 2014). When making their lobbying decisions on FTAs, firms may thus be uncertain about whether there is a majority in favor in both houses of Congress, which is required for the agreement to be ratified.} and allows us to rule out trivial Nash equilibria, in which firms in both countries would choose not to lobby.

This model provides a simple rationale for our key empirical finding that virtually all lobbying firms are in favor of trade agreements. We show that, if the fixed costs of being politically organized are large enough, only the most productive firms that benefit from the FTA select into lobbying and support the ratification of the agreement. The intuition for this result is simple: anti-FTA firms are less productive than pro-FTA firms, implying that their stakes are smaller. In particular, the maximum loss that can be incurred by non-exporting firms is smaller (in absolute terms) than the maximum gains that can be achieved by exporting firms.

The model is also consistent with the other facts that emerge from our dataset. In particular, it can explain why lobbying on trade agreements is a rare event – even among publicly traded companies – and why lobbying firms are larger and more likely to be engaged in international trade than non-lobbying firms.

We show that the equilibrium is characterized by two types of free riding. On the extensive margin, non-organized pro-FTA firms in a sector can benefit from the efforts of other firms (in the same and other sectors), which lobby in favor of the agreement. On the intensive margin, each organized pro-FTA firm benefits from the efforts of other lobbying firms.

We next derive testable predictions about the intensive margin of lobbying on FTAs. First, larger firms should spend more lobbying in support of trade agreements. Second, individual firms should spend more when their potential gains from the improved access to the foreign market are larger. Third, lobbying expenditures should increase in the probability that legislators are biased against ratifying the agreement. Intuitively, when politicians are more likely to be in favor of the agreement, firms tend to free ride on their political bias, thereby decreasing their contributions.

To assess the validity of these predictions, we exploit both cross-firm and within-firm variation in lobbying expenditures on trade agreements. In line with the first prediction, we find that larger firms spend more in favor of the ratification of FTAs. We also find strong empirical support for the second prediction: individual firms spend more supporting FTAs when their potential gains from the agreement are larger – in terms of the reduction in the tariffs they face to export their
final goods and import their intermediate inputs, the depth of the agreement, and the export and sourcing potential of the FTA partners. Finally, individual firms spend more in support of FTAs when US congressmen are less likely to be in favor of ratification, in line with the third prediction of our model.

Our results differ from the standard view that trade liberalization efforts are met by staunch opposition. This is partly due to our focus on FTAs: these agreements are reciprocal – which allows firms to improve access to foreign markets for their final goods – and cover multiple sectors – which reduces the cost of importing their intermediate inputs. Our findings are thus not in contradiction with those of previous studies focused on unilateral and sector-specific trade policies (e.g. Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000; Bombardini, 2008).¹²

Our findings resonate with Rodrik (2018)’s argument that “trade agreements are shaped largely by rent-seeking, self-interested behavior on the export side. Rather than rein in protectionists, they empower another set of special interests and politically well-connected firms, such as international banks, pharmaceutical companies, and multinational corporations.” In line with this argument, we show that lobbying on FTAs is dominated by a few large firms that gain from the entry into force of these agreements. Rodrik focuses on “deep” trade agreements, which eliminate tariffs and include provisions on other policy issues, such as investment and intellectual property rights. We show that his argument also applies to “shallow” trade agreements, which simply eliminate tariffs among member countries.¹³

The rest of the paper is structured as follows. Section 2 briefly discusses the related literature. Section 3 describes the data used in our empirical analysis. In Section 4 we document some novel facts about firms lobbying on FTAs. Section 5 presents our theoretical model. In Section 6 we assess the validity of the model’s predictions concerning the intensive margin of lobbying. Section 7 concludes and discusses avenues of future research.

2 Related Literature

This is the first paper to study lobbying on FTAs by heterogeneous firms. Our analysis is related to four streams of literature.

First, we build on the literature on the political economy of trade policy and in particular on those studies focused on the impact of lobbying on trade policy outcomes. The workhorse theoretical framework in this area is the protection for sale (henceforth PFS) model of Grossman and Helpman

¹²Some of the firms that lobby in favor of FTAs may support unilateral and product-specific protectionist measures, such as antidumping duties. However, several studies show that these measures are used less among members of FTAs (e.g. Ahn and Shin, 2011; Silberberger and Stender, 2018; Tabakis and Zanardi, 2019).

¹³Tariff cuts can greatly benefit firms engaged in exporting and global sourcing. For example, following the entry into force of the KORUS agreement, US soybeans producers face no tariff when exporting to Korea (compared to the 487 percent tariff they faced before KORUS). In our empirical analysis, we show that the level of pre-agreement tariffs on final and intermediate goods is a key determinant of firms’ lobbying expenditures on FTAs.
This model emphasizes the interactions between lobby groups representing industry special interests and an incumbent government. In a perfectly competitive setting, industry lobbies promise campaign contributions to the government as a function of potential trade policies; the government chooses trade policy so as to maximize a weighted sum of campaign contributions and aggregate welfare. Grossman and Helpman (1994) considers the unilateral trade policy choice of a small country, while Grossman and Helpman (1995b) extends the analysis to trade negotiations between two large countries. Our paper is closer to Grossman and Helpman (1995a), which studies lobbying on the ratification of a FTA.

These seminal contributions have stimulated a large literature on the political economy of trade policy. Using cross-sectional data on US non-tariff barriers and PAC data on campaign contributions, Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000) find that the patterns of industry protection are broadly consistent with the predictions of Grossman and Helpman (1994). Other studies extend the PFS model along several dimensions, e.g. allowing for endogeneous lobbying by industries (Mitra, 1999) or investigating the consequences of lobbying competition between upstream and downstream producers (Gawande et al., 2012). In this literature, the paper that is closest to ours is by Bombardini (2008), who introduces heterogeneous firms in the PFS model. Our analysis differs from hers along several dimensions. From a theoretical perspective, we study ex-ante lobbying on trade agreements, which are reciprocal and cover all sectors, while she considers ex-post lobbying on a unilateral and sector-specific tariff. Moreover, her model features one sector with price-taking firms that are heterogeneous in size (due to differences in their endowment of a specific factor); there is no selection into exporting and no distributional effects of trade policy (all firms gain from an increase in the sectoral tariff). By contrast, we consider a two-country model with multiple sectors, with oligopolistic firms that are heterogeneous in productivity; the model features selection into exporting, and distributional effects of trade policy (the entry into force of a FTA generates winners and losers within and across sectors). In terms of data, we exploit detailed information from lobbying reports available under the Lobbying Disclosure Act, which allow tracing the specific policy issues targeted by lobbyists. By contrast, Bombardini uses data on PAC campaign contributions, which make it impossible to identify the policy issues that lobbyists are trying to influence. Finally, while her empirical analysis is at the industry level (explaining cross-industry variation in the level of protection), ours is at the firm level (explaining within- and cross-firm variation in lobbying expenditures on trade agreements).

Second, our paper is related to the literature on firm heterogeneity in international trade. This literature emphasizes selection effects in firms’ decisions to export (e.g. Bernard and Jensen, 1999; Melitz, 2003), establish foreign subsidiaries (e.g. Helpman, Melitz and Yeaple, 2004) and source

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14 Other contributions in this literature include Ornelas (2005), who examines the political viability of FTAs, Chang (2005), who develops a model featuring a Dixit-Stiglitz model with homogenous firms, Matschke and Sherlund (2006), who introduce lobbying by trade unions, and Gawande et al. (2006), who consider the role of foreign lobbying.
inputs from foreign suppliers (e.g. Bernard et al., 2007; Antràs et al., 2017). The bulk of this literature focuses on a setting with a continuum of monopolistically competitive firms. To explain lobbying by individual firms, we consider instead a setting with heterogeneous oligopolistic firms and a discrete number of sectors. In this setting, firms can affect both market and political outcomes.

Third, the political structure of our model builds on the large literature on lobbying/rent-seeking in contests (e.g. Tullock, 1980; Becker, 1983; Esteban and Ray, 2001; Epstein and Nitzan, 2006; Siegel, 2009; Jia et al., 2013; Bouton et al., 2018). Employing the contest success function approach allows us to capture lobbying that occurs ex ante, when firms are still uncertain about whether a trade agreement will be ratified. In this literature, the paper closest to ours is Cole et al. (2018). They describe a two-country model of trade agreements in which pro- and anti-trade interest groups in each country try to influence their government’s ratification decision. In line with their approach, we model lobbying on trade agreements as a “parallel” contest: given that the entry into force of a bilateral FTA requires ratification by both governments, lobbying in one country depends on the probability of ratification in the other country. The key novelty of our model is that we endogenize lobbying decisions by individual firms.

Finally, our analysis is related to a series of recent studies that exploit information made available by the Lobby Disclosure Act of 1995 to study firm-level lobbying. Some of these studies examine lobbying on trade policy, focusing on sector-specific tariffs. One of the stylized facts that emerges from these studies is that very few firms lobby. Our analysis shows that lobbying on trade agreements is also a rare event and provides a rationale for selection into lobbying by the largest most productive firms.

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15 We depart from models of oligopolistic competition with a continuum of sectors (e.g. Hottman et al., 2016; Neary 2016; Gaubert and Itskhoki, 2018), in which firms are “big in the small” (at the sectoral level), but “small in the big” (at the economy-wide level). Assuming a discrete number of sectors implies that firms are “big in the big” and can thus affect economy-wide policies, such as the ratification of trade agreements.

16 Cole et al. (2018) consider lobbying on trade agreements under a specific factors model, a monopolistic competition model à la Melitz, and an oligopoly model with two heterogeneous firms in each country. They study lobbying by pro- and anti-trade groups, while we are interested in explaining lobbying decisions by individual firms.

17 Bombardini and Trebbi (2012) show that in sectors characterized by a higher degree of competition firms tend to lobby through an industry association, while in more competitive sectors they are more likely to lobby individually. Kim (2017) shows that more productive exporting firms are more likely to lobby to reduce tariffs, especially when their products are differentiated. A study by Osgood (2015), based on firms’ public statements, documents that industries have internal disagreements about trade liberalization. Mayda et al. (2018) study lobbying by firms to influence Congressional decisions to suspend tariffs on intermediate goods. Others consider different policy issues, like immigration (Kerr et al., 2014) or energy (Kang, 2016). Blanes i Vidal et al. (2012) and Bertrand et al. (2014) study the role of lobbyists, showing that they provide access to politicians as well as issue-specific information. Huneeus and Kim (2018) study the impact of firm-level lobbying on the misallocation of resources.

18 For example, Kerr et al. (2014) document that only 327 firms lobbied on immigration policy in the 1996-2008 period, while Huneeus and Kim (2018) find that, of the 7,646 public firms operating in the United States in 2017, only 766 firms engaged in lobbying (across all policy issues).
Data

3.1 Lobbying Dataset

We construct a novel dataset on firm-level lobbying expenditures on trade agreements. This is constructed using detailed information from lobbying reports available under the Lobbying Disclosure Act (LDA), which was introduced in 1995. The LDA requires individuals and organizations engaged in lobbying to register with the federal government. Lobbying activities encompass all efforts to influence the thinking of legislators or other covered federal officials for or against a specific cause. As stated in the Act, they include lobbying contacts and efforts in support of such contacts, preparation and planning activities, research, and other background work.

The LDA requires individuals and organizations to file semi-annual reports providing information on their lobbying activities at the federal level. All lobbying expenditures must be disclosed, no matter how small. The legislation imposes significant civil and criminal penalties for violations of its requirements. Lobbying disclosure reports can be found on the website of the Senate’s Office of Public Records (SOPR). Lobbying reports filed prior 2008 are not available in scannable pdf format, and some of them are digital versions of handwritten documents. Starting from 2008, following the Honest Leadership and Open Government Act of 2007, lobbying reports are filed electronically at the quarterly level.

As mentioned in the previous section, data on lobbying reports have been used in recent studies on lobbying. Using this data has two key advantages compared to the data on campaign contributions that were used in earlier empirical studies on the political economy of trade policy (e.g. Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000; Bombardini, 2008). First, data on lobbying expenditures allow us to directly trace the issues targeted by lobbyists, which is not possible for data on contributions. This is because the LDA requires to disclose not only the amounts of lobbying expenditures, but also the issues for which the lobbying is carried out. Second, lobbying expenditures are the most important channel of political influence, more than ten times larger than PAC contributions (see Figure A-1 in the Empirical Appendix).

We examine lobbying by individual firms on trade agreements negotiated by the United States. Following earlier studies focused on other policies (e.g. Kang, 2016; Mayda et al., 2018), we use bill numbers to track reports related to the FTAs. Our main sample is based on all reports filed

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19 There is a very low minimum threshold to register as a lobby. For example, lobbying firms have to register if their total income for matters related to lobbying activities on behalf of a particular client exceeds $2,500. The LDA also specifies that, if a lobbying firm represent many companies on the same issue, the client (to which the $2,500 registration threshold applies) is “the coalition or association and not its individual members.”

20 When lobbying expenditures are below $5,000 during one quarter, the lobbying organization has still to file the report (specifying the general and specific issues it lobbied on), but does not have to write down the exact amount. In our lobbying dataset, there are a few firms/lobbying firms reporting lobbying expenditures below $5,000.

21 When filing its report, a firm has to choose the issue(s) it lobbied on from a list of 76 general issues (trade being one of them), and must indicate at least one specific issue (e.g. ratification of a particular trade agreement).

22 See Table A-2 in the Empirical Appendix for a list of all the FTAs that have been ratified during our sample...
by firms that explicitly mention the FTA ratification bills in the House and Senate. This allows us to focus on the final version of a trade agreement, and examine whether firms lobby in favor or against its implementation.\footnote{Although our analysis is focused on lobbying by individual firms, we have collected all lobbying reports related to FTA ratification bills, including those filed by industry associations and trade unions (see Figure A-3).}

Each report in our dataset provides information on the identity of the lobbying firm and the amount of expenditures on a specific trade agreement. A firm can lobby directly (through its own lobbying department) or indirectly (through a lobbying company).\footnote{In the first case, the firm reports its name and address in Sections 1-2 of the report and the amount of the lobbying expenses in Section 1-3. In the second case, the registrant is the lobbying firm, which reports the amount received by the firm as income in Section 1-2. Direct lobbying is the prevalent mode (see Table A-1): in more than 70% of the cases, firms use their own lobbying department to influence the ratification of FTAs; in the remaining cases, they use lobbying firms (22.99\%) or combine the two modes (6.57\%). There is no evidence that firms coordinate their lobbying efforts by using the same lobbying firm: there are 37 lobbying firms in our database; in 70.3\% of the instances, these firms lobby on behalf of a single client; in the other cases, the clients operate in very different sectors.}

To link the expenditures to a particular agreement, we use information contained in Sections 15 and 16 of each report, in which firms have to declare the general and specific issues to which their lobbying activities are related. All the reports in our main sample mention trade as a general issue and the FTA ratification bills as a specific issue. In most cases (91.4\%), other issues are also mentioned. Since the lobbying reports do not provide a breakdown of the expenditures by issue, we follow a procedure similar to Mayda et al. (2018) to define the share of expenditures associated with the FTA ratification. First, we count the number of general issues in each lobbying report. Second, we verify whether the FTA ratification bill was also mentioned, as a specific issue, in a general issue other than trade (this occurs in 12\% of the instances). For each report, we divide equally the reported expenditure by the number of general issues and then multiplying this amount by the number of times the ratification of the FTA was mentioned as a specific issue.\footnote{For example, if a firm lobbied on four different general issues, and the ratification of a FTA was mentioned (as a specific issue) in two out of the four general issues, we allocate half of the reported lobbying expenditure to the FTA.}

Given that individual firms tend to file multiple reports on the same agreement, we then sum up the amounts each firm spent in a given year on a particular agreement.

To study the extensive margin of lobbying on FTAs, we will use the dummy variable $\text{Lobbying on FTA}_{f,j,a,t}$, which is equal to 1 if firm $f$ producing good $j$ lobbies on the ratification of agreement $a$ in year $t$. We will keep track of the direction of lobbying, i.e. whether the firm lobbies in favor or against ratification. The intensive margin will be captured by the variable $\text{Lobbying Expenditure}_{f,j,a,t}$, which is the amount (in US dollars) that firm $f$, producing good $j$, spends on the ratification of agreement $a$ in year $t$. In robustness checks, we will use the variable $\text{Number of Reports}_{f,j,a,t}$, the number of lobbying reports filed by firm $f$ on agreement $a$.

Figures A-6-A-8 in the Empirical Appendix provide three examples of lobbying reports. The first was filed by DaimlerChrysler during the first semester of 2004. The firm reports having spent $2,466,317 lobbying on two general issues: Automotive and Trade. The House and Senate bills for
the ratification of the US-Australia free trade agreement are mentioned as a specific issue under Trade, but not under Automotive. In this case, we thus consider that the firm spent $1,233,158.5 on the ratification of the US-Australia Free Trade Agreement.\textsuperscript{26}

The second example is a report by Philip Morris, which in 2008 paid $1,020,000 to support the implementation of the United States-Colombia Free Trade Agreement. Interestingly, this FTA was not ratified before the end of the Congressional session in December 2008. The third is a report filed by US Steel Corporation, which in 2011 paid $800,000 to support the ratification and implementation of the US-Korea Free Trade Agreement (KORUS). All these companies have subsidiaries around the world and engage in both import and export activities.

Our main lobbying database contains 803 reports related to the ratification of 12 trade agreements, which were filed by 112 firms between 2001 to 2012. We collapse the data at the firm-FTA-year level. Table A-1 provides some descriptive statistics at the firm-FTA level on the lobbying expenditures, the number of reports filed, and the mode of lobbying. On average, individual firms spent $290,555 on the ratification of a FTA. Firms usually lobby on the same agreement more than once: the average number of reports for each ratification bill is 2.899. In most cases, firms lobby directly: in 70.44\% of the cases the registrant is the firm. In the remaining cases, they use a lobbying firm (22.99\%) or combine the two lobbying modes (6.57\%).

To determine the position of the lobbying firm, we manually code whether it supported or opposed the ratification of the trade agreement, using information contained in Section 16 of the report. For example, the report by Philip Morris mentioned above states that the firm lobbied “to implement the United States-Colombia Free Trade Agreement.” When information on the firm’s position is missing, the coding is based on official statements (e.g. company websites, public statements). For example, Section 16 of the above-mentioned report filed in 2004 by DaimlerChrysler does not explicitly mention the firm’s position on the US-Australia free trade agreement. However, DaimlerChrysler was one of the three members of the Automotive Trade Policy Council (ATPC), which strongly supported the agreement.\textsuperscript{27} We can code the firm’s position on the FTA, based on information from the reports or official company statements, in all but two cases. We exclude these cases from our analysis.

Our main dataset is based on firms lobbying on FTA ratification bills. As a robustness check, we use keywords rather than bill numbers to track lobbying reports related to a particular trade

\textsuperscript{26}Notice that this lobbying report, filed prior 2008, is in a non-digitalized format. This example also illustrates the fact that lobbying companies can be foreign owned: Chrysler Corporation was founded in 1925 in Detroit; from 1998 to 2007 it was incorporated in the German multinational Daimler-Benz AG, in a so-called “Merger of Equals,” forming DaimlerChrysler AG.

\textsuperscript{27}“The Automotive Trade Policy Council (ATPC) is a Washington, DC-based nonprofit trade association that represents the common international economic, trade, and investment interests of its member companies: General Motors Corp., Ford Motor Co., and DaimlerChrysler Corp. ATPC supports the U.S.-Australia FTA, asserting that it will benefit the U.S. industry by allowing for greater integration of its members’ operations, promoting growth and efficiency in ATPC members’ operations in both the U.S. and Australia” (statement made by Stephen J. Collins, President of ATPC, contained in Report 3697 of the United States International Trade Commission).
agreement. This methodology is less efficient than the one based on ratification bill numbers\footnote{For example, to collect lobbying reports related to the US-Korea FTA, we had to use several different keywords as KORUS, US-Korea FTA, United States Korea Free Trade Agreement. Using the keyword search might also lead to include reports that refer to the bilateral relationship between two countries, but are unrelated to the trade agreement (e.g. reports related to “extending US Korea Cooperative Agreement concerning civil uses of nuclear energy”).} but allows us to consider lobbying expenditures in earlier stages of the FTA negotiations. We can also apply this methodology to study lobbying on FTAs that did not reach the ratification stage.

3.2 Matched Dataset

To obtain additional information about lobbying and non-lobbying firms, we have matched our dataset with Compustat. This database from Standard and Poors provides extensive information on publicly listed firms since the 1950s. We were able to match 89% of the firms in our lobbying dataset with firms in Compustat using the Company Name. Among the unmatched lobbying firms are some of the largest privately held companies of the United States\footnote{For example, the unmatched firms include Koch Industries, Mars Inc., and Bechtel Group, which are respectively the 2nd, 3rd and 5th largest private companies in the United States.} The matched dataset contains 114,412 firm-FTA-year observations, covering the period 2001-2012.

3.3 Firm Controls

The Fundamentals segment of Compustat provides information about firm size, in terms of employment and sales. The variable $Employment_{f,t}$ is the total number of employees (in thousands) of firm $f$ in year $t$, while $Sales_{f,t}$ is total sales (in millions of US dollars) by firm $f$ in year $t$\footnote{The variables $Sales_{f,t}$ and $Employment_{f,t}$ include sales and employees in all consolidated subsidiaries of the firm.}.

We can use data from different segments of Compustat to infer whether a firm is an exporter. The Historical Segments provide information on export sales, although this information is missing for many firms. Additional information about exports can be found in the Customer Segment, which gives the geographic location of a firm’s top clients. To capture exporting firms, we define the dummy $Exporter_{f,t}$, which is equal to 1 if firm $f$ reports either positive export sales or at least one foreign customer among their top clients in year $t$\footnote{Non-exporters are firms that report zero export sales or no foreign customers among their top clients (when information on export sales is missing). We cannot define the variable $Exporter_{f,t}$ for firms for which the information on export sales is missing and who do not report information about foreign clients.}. This definition is very conservative, in that it does not allow us to capture many exporting firms. This is because information on export sales and on the geographic location of a firm’s clients is provided on a voluntary basis, and there are thus many missing values. Moreover, firms have to report foreign customers only if they are among the top clients.

Compustat does not provide any information on firms’ imports or foreign suppliers. To identify importing firms, we have used information from Jain et al. (2013). In their study, they use customs forms to extract information on over half a million sea shipments from global suppliers to US public
firms and link this information with financial data from Compustat. Based on this data, we have constructed the dummy variable $\text{Importer}_{f,t}$, which is equal to 1 if the firm is an importer (of any product, from any country) in year $t$. Unfortunately, information on firms' imports is only available for a small subset of firms starting from 2005, so the import dummy can only be defined for 8,186 observations (out of 114,412) of our matched sample. To maximize sample size, in our empirical analysis, we will combine information on firms’ trade activities in the variable $\text{Exporter and/or importer}_{f,t}$, which is equal to 1 if firm $f$ is an exporter or an importer in year $t$.

The Fundamentals segment of Compustat contains information on a company’s main activity, based on its reported Standard Industrial Classification (SIC) code and North American Industry Classification System (NAICS) code. Using this information, we create the dummy $\text{Tradable sector}_j$, which is equal to 1 if sector $j$ (the main activity of firm $f$) is classified as tradable by Mian and Sufi (2014).

Table A-2 provides descriptive statistics on firms in our matched sample, distinguishing between lobbying firms (top panel) and non-lobbying firms (bottom panel). As mentioned before, Compustat only contains information on publicly listed firms and is thus biased towards large firms. Within Compustat, lobbying firms are larger than non-lobbying firms: mean yearly sales and mean employment are respectively equal to 63.2 $\text{US billion}$ and 159,000 employees for lobbying firms, versus 2.7 $\text{US billion}$ and 8,500 employees for non-lobbying firms. The variable $\text{Exporter and/or importer}_{f,t}$ is equal to 1 for most firms in the sample for which it can be defined, with the propensity to trade being higher for lobbying than non-lobbying firms (99% instead of 78%). Lobbying firms are also more likely to operate in tradable sectors (the mean of the variable $\text{Tradable sector}_j$ is 0.678 for lobbying firms, and 0.406 for non-lobbying firms).

### 3.4 FTA Controls

We have also constructed a series of variables capturing variation across FTAs in terms of the potential gains firms can derive from the agreements and the political support for their ratification. All these variables are constructed using data for the year of the ratification of the FTA, with the exception of the variables about the depth of the agreement, which are time invariant. Descriptive statistics of the FTA variables are reported in Table A-3 in the Appendix.

The first variable, $\text{RCA}_{j,a}$, captures the extent to which the United States has a revealed

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32 We thank Nitish Jain for providing us with the data to construct this variable.

33 They provide two independent methods of industry classification which serve as a cross-check on each other. The first classification scheme is based on industry-level trade data for the U.S. and it defines industries to be tradable if the absolute value of trade or the value of trade per worker is above a given threshold. The second is based on an industry’s geographical concentration. The idea is that the production of tradable goods requires specialization and scale, so industries producing tradable goods should be more concentrated geographically. They place 4-digit NAICS industries into four categories: tradable, non-tradable, construction, and other.

34 Using the data of the ratification allows us to capture economic and political conditions before the entry into force of the agreement. The results are robust to constructing the FTA variables using different pre-agreement years.
comparative advantage in sector $j$ relative to the FTA partner(s) of agreement $a$. The RCA index, also known as Balassa index, is computed as the ratio between two shares: a country’s exports of a particular good $j$ over its total exports; and the corresponding share for the rest of the world (or a reference country). The source of the export data is the World Integrated Trade Solution (WITS) database. We download the data at the SIC4 level, which allows us to directly match it with the industry codes of firms in our lobbying dataset. The variable $RCA_{j,a}$ is constructed as the ratio between the Balassa index of the US and that of the FTA partner(s) of agreement $a$. The US has thus a revealed comparative advantage (disadvantage) in sector $j$ relative to the FTA partner(s) of agreement $a$ if $RCA_{j,a} > 1$ ($RCA_{j,a} < 1$). As shown in the descriptive statistics of Table A-3, lobbying firms tend to operate in sectors in which the US has a large comparative advantage (the mean of $RCA_{j,a}$ is 1472.893). Given that the distribution of $RCA_{j,a}$ is highly skewed, we take the log of this variable in the regressions.

The next three variables capture the extent to which a trade agreement leads to reductions in the tariffs applied by the US and its FTA partners. The source of the tariff data is the WITS database. We use the Effectively Applied Tariff, which is defined as the lowest available tariff, i.e. Most Favored Nation (MFN) or preferential.\footnote{Using Effectively Applied Tariffs is key when looking at the pre-agreement tariffs applied by the United States to imports from FTA partners. In several cases, producers in these countries were already able to export at preferential (i.e. GSP) rates before the agreement. For example, in 2005 the United States MFN tariff for Smoking Tobacco (HS240310) was 350%, while the Dominican Republic had a preferential tariff of 87.5%.}

**Tariff applied by FTA partners on the final good** $j,a$ is the tariff faced by firms producing good $j$ when exporting to the FTA partners, before the ratification of agreement $a$.

**Tariff applied by US on inputs** $j,a$ is the tariff faced by firms producing good $j$ when importing their inputs from the FTA partners, before the ratification of agreement $a$. To identify the relevant inputs, we use input-output data from the Bureau of Economic Analysis (BEA).\footnote{Benchmark IO Tables from the BEA include the make table, use table, and direct and total requirements coefficients tables. We employ the Use of Commodities by Industries after Redefinitions 1992 (Producers’ Prices) tables. The BEA employs six-digit input-output industry codes, while Compustat uses the SIC industry classification. We use the concordance guide provided by the BEA. The matching is almost one to one for manufacturing sectors.}

For every pair of industries, $i$, $j$, the input-output accounts provide the dollar value of $i$ required to produce a dollar’s worth of $j$.\footnote{Using an example in Alfaro et al. (2016), one of the inputs necessary to make ships is fabricated metal structures. The $IO_{ij}$ coefficient for this i-j pair is 0.0281, indicating that 2.8 cents worth of metal structures are required to produce a dollar’s worth of ships.}

The variable **Tariff applied by US on the final good** $j,a$ is the tariff applied by the US on imports...
of good \( j \) from the FTA partners, before the ratification of agreement \( a \).

National tariff schedules are usually based on the Harmonized System (HS) classification and defined at the product (HS6) level. WITS also provides tariff data based on other classifications, including the Standard Industrial Classification (SIC). To construct the three variables above, we use the data defined at the SIC4 level. One drawback is that SIC4 tariffs are constructed by aggregating product-level tariffs, which gives rise to measurement error and tends to hide the presence of high tariffs in some sectors. For this reason, we define the tariff variable as the maximum SIC4 tariff applied by the US/the FTA partners.\(^{38}\)

The descriptive statistics reported in Table A-3 show that the United States tends to apply lower tariffs before the agreement than its FTA partners: the variable \( \text{Tari}f \text{ applied by FTA partners on the final good}_{j,a} \) has a mean of 33.40 and a maximum of 800.3, while the mean and maximum of the variable \( \text{Tari}f \text{ applied by US on the final good}_{j,a} \) are respectively 2.71 and 48. There are two reasons for this difference: (i) the US has generally lower MFN tariffs than its FTA partners; (ii) as mentioned above, before the entry into force of trade agreements, the US was often granting better-than-MFN (GSP) tariff preferences to FTA partners. Notice also that the variable \( \text{Tari}f \text{ applied by US on inputs}_{j,a} \) has a much lower mean (0.145) and maximum (3.94). This is due to the fact that this variable is constructed as a weighted average of the tariffs applied to the inputs of good \( j \), and the \( IO_{ij} \) coefficients used as weights are very low.\(^{39}\)

A second set of FTA controls captures variation in the depth of trade agreements. As pointed out by Baldwin (2011), when firms set up production facilities abroad – or form long-term ties with foreign suppliers – they can gain from trade agreements not only through the elimination of tariffs, but also through the inclusion of provisions that reduce non-trade barriers (e.g. rules on services and competition) and help to protect their tangible and intangible assets in foreign markets (e.g. rules on investments and intellectual property rights). To measure the extent to which FTAs go beyond the elimination of tariff barriers, we use three measures of the depth of the agreements:

\( \text{Depth DESTA1}_a \): this measure, constructed by Dür et al. (2014), is an additive index that combines seven key provisions that can be included in PTAs. The first provision captures whether the agreement foresees that all tariffs (with limited exceptions) should be reduced to zero. The other six capture provisions that go beyond tariff reductions (related to services, investments, standards, public procurement, competition, and intellectual property rights).

\( \text{Depth DESTA2}_a \): this measure, also constructed by Dür et al. (2014), relies on latent trait

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\(^{38}\)When including the tariff measures in our regressions, we will control for other moments of the SIC4 tariffs. The results are robust to using only the weighted average tariffs provided by WITS. Another limitation is that tariff data is often missing, so we lose many observations when including the tariff variables in our regressions.

\(^{39}\)The average IO coefficient in our sample is 0.038. If we construct the variable \( \text{Tari}f \text{ applied by US on inputs}_{j,a} \) as a simple (unweighted) average of input tariffs, the mean is 3.31 (which is very similar to the mean of \( \text{Tari}f \text{ applied by US on the final good}_{j,a} \)).
analysis on 48 variables capturing the extent to which the agreement goes beyond simple tariff reduction.

*Depth World Bank* 

*Depth World Bank*: this measure is constructed by Hofmann *et al.* (2019), who codify provisions related to 52 policy areas in trade agreements and their legal enforceability.

The third set of variables captures variation across FTAs partners, in terms of their size, export and sourcing potential. With the exception of *GDP of FTA partners*, these variables are constructed using information from the US Census.

*GDP of FTA partners* is the GDP of the partner(s) in the year of the ratification of agreement *a*. The data come from the World Bank and are expressed in constant 2010 US millions of dollars.

*Export potential of FTA partners* measures US exports of good *j* to the partner(s) of agreement *a* (in millions of US dollars). It captures variation across FTA partners in the demand for good *j*.

*Sourcing potential of FTA partners* measures US imports of the inputs necessary to make good *j* from the partner(s) of agreement *a* (in millions of US dollars). It captures variation in the ability of FTA partners to produce the key inputs needed for the production of good *j*. To identify the relevant inputs, we use IO tables from the BEA (see description of the variable *Tariff applied by US on inputs* above).

The last set of variables captures variation in expected political support for trade agreements among legislators in charge of their ratification. Party affiliation is known to be a strong predictor of US congressmen’s support for trade liberalization, with Democrats being systematically more protectionist than Republicans (e.g. Baldwin and Magee 2000; Hiscox 2004). Based on roll-call votes on all major trade liberalization bills since the early 1970s, Conconi *et al.* (2014) find that membership in the Democratic party decreases the probability that congressmen support trade liberalization by more than 40 percentage points. We would thus expect political support for trade agreements to be lower when a larger share of US congressmen belong to the Democratic party. Political support for the ratification of FTAs should also be lower when different parties control the executive and the legislative branches of government (e.g. Lohmann and O’Halloran, 1994; Edwards *et al.*, 1997). This is because congressmen who are from the same party as the president are more likely to support the ratification of trade agreements. The estimates in Conconi *et al.* (2014)

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40 The US Census reports only merchandise trade statistics. Data are available for the following sectors (at the NAICS 2 level): 11 (Agriculture, Forestry, Fishing and Hunting), 21 (Mining, Quarrying, and Oil and Gas Extraction), 31-33 (Manufacturing) and 51 (Information). We have used the conversion table provided by Compustat to match firms in our lobbying dataset to NAICS2 sectors.
indicate that belonging to the same party as the executive increases the probability of a vote in favor of trade liberalization by around 11 percentage points.

We define the following variables:

\[ \text{Share of Democrats in Congress}_a \] is the share of members of the legislative branch belonging to the Democratic party in the year of the ratification of agreement \( a \). We construct two versions of this variable. The first includes only congressmen who are members of the Democratic party, while the second also includes independent congressmen who caucus with the Democrats.

\[ \text{Divided Government}_a \] is a dummy variable equal to 1 if the legislative and executive branches are not politically aligned in the year of ratification of agreement \( a \). We construct two versions of this variable. The first (second) is equal to 1 if one party controls the executive branch, while the other party controls at least one (both) of the houses of the legislative branch.

4 Stylized Facts

Using our lobbying dataset, we uncover three new facts. The first striking fact emerges when looking at the share of firms that lobby in favor/against the trade agreements:

**Fact 1.** Virtually all lobbying firms are in favor of FTAs.

Figure 1 illustrates the share of observations in our dataset corresponding to different positions on FTAs. Opposition to trade agreements is extremely rare: in 99.25% of the cases, firms lobbied in support of the agreement; they lobbied against in only 0.75% of the cases. Moreover, no firm systematically opposed trade agreements: only two firms lobbied against a trade agreement (with Korea), but the same firms supported other agreements (with Colombia and Panama).

Figure 1 is constructed based on our main sample, which uses information from all lobbying reports that explicitly mention the bills for the ratification of the FTAs. As mentioned before, this methodology allows us to study the firms’ position on the actual trade deal that, if ratified, will be implemented. However, one might be concerned that the firms’ position during the ratification stage — when the trade deal has already been finalized and signed by the executive — might be very different from their position in earlier stages of the negotiations — when they can still try to affect the content of the deal. To verify this, we have collected lobbying reports filed in earlier stages, using keywords instead of bill ratification numbers to trace all lobbying reports related to a FTAs. In particular, focusing on the Korea-United States FTA, the most important trade agreement negotiated during our sample period, we have collected all the reports that mention the words Korus, US-Korea FTA or US-Korea Free Trade Agreement. When using this methodology,
we obtain 588 reports filed by firms related to this agreement, covering the period 2000-2011 (see Figure A-4 in the Appendix). Even in this case, virtually all lobbying firms supported the agreement: 97.8% are in favor and 2.2% are against (see Figure A-5).41

Another possible concern is that using bill numbers to track lobbying on FTAs does not allow us to include trade agreements that did not reach the ratification stage. The concern here is that Fact 1 might be driven by selection effects: the overwhelming support for FTAs among lobbying firms may be due to the fact that our main sample does not contain agreements that did not reach the Congress floor precisely because they were not supported by firms. To deal with this concern, we have examined lobbying reports on the Trans-Pacific Partnership (TPP), a major FTA that never reached the ratification stage. In particular, we have collected all lobbying reports which mentioned the words Trans-Pacific Partnership or TPP filed by firms in 2016 (the year in which Obama signed the agreement). In that year, 276 firms filed 1,041 lobbying reports related to the TPP agreement. We were able to code the position of the firm in 93.8% of the cases. Our main result continues to hold: 98.4% of all firms for which we can sign the position on the FTA lobbied in favor of the agreement.

One may also worry that firms that support the ratification of FTAs could do so knowing that they will anyway get protected from increased import competition from the FTA partners. This would be the case if they could exclude their products from the trade agreement or increase the use of trade defense measures such as antidumping following the entry into force of the agreement. Recall, however, that exceptions are extremely rare in US FTAs, in line with Article XXIV of

41 Mostlobbying reports related to KORUS were filed in 2008 (following the signature of the agreement by President Bush) and 2011 (when President Obama presented a slightly modified version of the agreement to Congress for ratification). For 28 reports filed by 7 firms, we cannot code the firm’s position on the FTA based on the information contained in the report or on official company statements. Some of these reports involve expenditures related not only to lobbying the Senate and House of Representatives, but also federal agencies such as the U.S. Trade Representative (USTR) and the Department of Commerce (DOC).
the GATT (see footnote 9). Moreover, several studies show that FTAs actually reduce the use of antidumping duties (e.g. Ahn and Shin, 2011; Silberberger and Stender, 2018; Tabakis and Zanardi, 2019).

Two other facts emerge when matching our lobbying dataset with Compustat. The first concerns the role of firm size in explaining the extensive margin of lobbying on trade agreements:

**Fact 2. Larger firms are more likely to lobby on FTAs.**

Looking at firms’ employment and sales, we find that lobbying firms tend to be larger than non-lobbying firms. Figures 2 and 3 show that the distribution of employment and sales of lobbying firms is shifted to the right relative to the distribution of firms that do not lobby.

**Figure 2**
Employment distribution (lobbying vs non-lobbying firms)

![Employment distribution](image)

The figure plots the log of $\text{Employment}_{f,t}$ for lobbying and non-lobbying firms.

**Figure 3**
Sales distribution (lobbying vs non-lobbying firms)

![Sales distribution](image)

The figure plots the log of $\text{Sales}_{f,t}$ for lobbying and non-lobbying firms.

The systematic difference between lobbying and non-lobbying firms also emerges when we estimate a probit regression model to examine how firm size affects the probability of lobbying on
FTAs. The results are reported in Table 1. The dependent variable is \( \text{Lobbying on FTA}_{f,j,a,t} \), a dummy equal to 1 if firm \( f \) producing good \( j \) lobbies on the ratification of agreement \( a \) in year \( t \). Notice that this is also the probability that the firm lobbies in favor of the FTA, given that no firm in our matched dataset ever lobbied against a trade agreement. We use the log of \( \text{Sales}_{f,t} \) or \( \text{Employment}_{f,t} \) to proxy for firm size.\(^{42}\) We also include FTA fixed effects and sector fixed effects (at the SIC2 level) to account for differences across trade agreements and across industries. The positive and significant coefficients of the variables \( \text{Employment}_{f,t} \) and \( \text{Sales}_{f,t} \) support Fact 2: larger firms are more likely to lobby on trade agreements. The effect is sizable: our estimates indicate that a 1 percentage point increase in firm size (in terms of sales or employment) leads to a 0.004 percentage point increase in the probability that the firm lobbies in favor of FTAs. Notice that lobbying on trade agreements is a rare event: the predicted probability of lobbying reported at the bottom of Table 3 is 0.0037. Our estimates thus imply a 1 percent increase in the probability of lobbying for every percentage point increase in firm size.\(^{43}\)

Table 1: Probability of lobbying on FTAs, the role of firm size

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(Employment)</td>
<td>0.004***</td>
<td>0.004***</td>
</tr>
<tr>
<td></td>
<td>(0.0003)</td>
<td>(0.0002)</td>
</tr>
<tr>
<td>log(Sales)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FTA FE            | Yes       | Yes       |
SIC2 FE           | Yes       | Yes       |
N                 | 67,716    | 67,716    |
pseudo R\(^2\)     | 0.504     | 0.463     |
Predicted probability | 0.0037   | 0.0037   |

The table reports marginal effects of probit regressions. The dependent variable is \( \text{Lobbying on FTA}_{f,j,a,t} \) is a dummy equal to 1 if firm \( f \) producing good \( j \) lobbies on the ratification of agreement \( a \) in year \( t \). The variable \( \text{Employment}_{f,t} \) is the total number of employees of firm \( f \) in year \( t \), while \( \text{Sales}_{f,t} \) is total sales by firm \( f \) in year \( t \). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.

The third fact concerns firms’ involvement in international trade and how it affects the probability of lobbying on trade agreements:

\(^{42}\)We take logs of these variables because their distribution is highly skewed. The sample includes all firm-year observations for which we have information on sales and employment. We cannot include the variables \( \text{Employment}_{f,t} \) and \( \text{Sales}_{f,t} \) in the same specification because of multicollinearity (the correlation between them is above 0.8).

\(^{43}\)This result is obtained by dividing the marginal effects of the variables \( \text{Sales}_{f,t} \) and \( \text{Employment}_{f,t} \) by the average predicted probability of lobbying reported at the bottom of the table.
Fact 3. Firms engaging in international trade and operating in comparative advantage sectors are more likely to lobby on FTAs.

Table 2 reports the results of probit regressions in which we examine how the probability that a firm lobbies on trade agreements depends on whether the sector it operates in is tradable, the extent to which the US has a comparative advantage in this sector, and the firm’s participation in international trade.

Column 1-2 show that firms operating in tradable sectors are more likely to lobby on FTAs. In column 1, we only include the dummy $Tradable\ sector_{f,j}$ with FTA and broad industry fixed effects. In column 2 we also control for firm size by including the variable $Employment_{f,t}$. In both specifications, the marginal effect of the $Tradable\ sector_{f,j}$ dummy is positive and significant at the 1 percent level. The effect is sizable: our estimates imply that operating in tradable sectors increases the likelihood of lobbying on FTAs by between 143 and 278 percentage points.\footnote{These results are obtained by dividing the marginal effect of the dummy variable $Tradable\ sector_{f,t}$ in columns 1-2 of Table 2 by the average predicted probability of lobbying reported at the bottom of the table.}

In column 3-4, we study how the probability that a firm lobbies on a trade agreement depends on whether it operates in a sector in which the US has a comparative advantage vis-à-vis the FTA partner. Notice that, compared to columns 1-2, the number of observations drops from 64,112 to 23,478. This is due to the fact that the variable $RCA_{j,a}$ can only be defined for firms operating in manufacturing sectors. In both specifications, the coefficient of the log of $RCA_{j,a}$ is positive and significant at the 1 percent level, indicating that firms are more likely to lobby on trade agreements when they operate in sectors in which the US has a stronger comparative advantage vis-à-vis the FTA partner(s). In terms of magnitude, our estimates imply that, for every percentage point increase in the RCA variable, the probability of lobbying increases by 0.03 percent.\footnote{This result is obtained by dividing the marginal effects of the variable $RCA_{j,a}$ by the average predicted probability of lobbying reported at the bottom of the table.}
Table 2

Probability of lobbying on FTAs, the role of trade

<table>
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<tr>
<td>Tradable sector$_j$</td>
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<td>0.010***</td>
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<td>(0.0001)</td>
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<td>log(RCA$_{j,a}$)</td>
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<td>0.0002***</td>
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<td></td>
<td>(0.00005)</td>
<td>(0.00003)</td>
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<td>0.018***</td>
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<td>(0.0052)</td>
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<td>0.931</td>
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<td>Predicted probability</td>
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<td>0.0065</td>
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<td>0.0109</td>
<td>0.0111</td>
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The table reports marginal effects of probit regressions. The dependent variable is Lobbying on FTA$_{f,j,a,t}$ is a dummy equal to 1 if firm $f$ producing good $j$ lobbies on the ratification of agreement $a$ in year $t$. The variable Tradable sector$_j$ is a dummy equal to 1 if sector $j$ is classified as tradable. RCA$_{j,a}$ measures the extent to which the United States has a revealed comparative advantage in sector $j$ relative to the FTA partner(s) of agreement $a$. The dummy Exporter and/or importer$_{f,t}$ is equal to 1 if firm $f$ exports and/or imports in year $t$. Employment$_{f,t}$ is the total number of employees of firm $f$ in year $t$. Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.

As discussed in Section 3, we have also constructed the dummy variable Exporter and/or importer$_{f,t}$, combining information from Compustat on firms’ export sales and/or foreign clients and on firms’ imports from Jain et al. (2013). The drawback of using this variable in our analysis is that the sample size is drastically reduced due to missing data: when including it in columns 5-6 of Table 2, the number of observations drops to 12,434. The marginal effect of the variable Exporter and/or importer$_{f,t}$ is always positive and significant, indicating that firms that are engaged in exports and/or source inputs from foreign suppliers are more likely to lobby on FTAs. In terms of magnitude, our estimates imply that participation in international trade increases the probability of lobbying on FTAs by between 162 and 284 percentage points.

5 Model

In the previous section we have shown that only a few large US firms lobby on FTAs, and virtually all these firms support the ratification of trade agreements. Moreover, relative to non-lobbying
firms, lobbying firms are larger, more likely to be engaged in international trade and to operate in comparative advantage sectors.

In this section, we describe a theoretical model of endogeneous lobbying by heterogeneous firms on trade agreements. The model can rationalize the above findings on the extensive margin of lobbying and delivers predictions on the intensive margin of lobbying, which we take to the data in the next section.

We first describe the economic structure. Explaining lobbying by individual firms requires a model in which firms have a positive mass.\footnote{As discussed in Section A.2.2 of the Theoretical Appendix, standard models of monopolistic competition à la Melitz (2003) with a continuum of firms cannot explain lobbying by individual firms on the ratification of a FTA. This is because, in these models firms have no mass and are thus inconsequential, i.e. their lobbying expenditures cannot affect aggregate policy outcomes like FTA ratification.} In Section 5.1 we introduce firm heterogeneity in the two-country model of oligopolistic competition à la Brander and Krugman (1983).\footnote{This model allows us to derive closed-form solutions for the effects of a FTA on firms’ profits, which would not be feasible in other models of oligopolistic competition (e.g. Atkeson and Burstein, 2008; Gaubert and Itskhoki, 2018).} The model features selection into exporting, as in Melitz (2003), and accounts for both intra-industry and inter-industry trade. In this setting, the entry into force of a FTA creates winners and losers within and across sectors.

In Section 5.2 we turn to the political structure of the model. This has two main features. First, firms pay lobbying expenditures before the policy outcome is realized, i.e. before the ratification of a trade agreement. Second, politicians deciding on the ratification of the agreement may be biased in favor or against it and firms are uncertain about this political bias.

Finally, in Sections 5.3 and 5.4 we derive results about the extensive and intensive margin of lobbying on trade agreements.

5.1 Economic Structure

5.1.1 Setup

We describe a model of trade between two symmetric countries, Home and Foreign. We will use a * to denote variables related to Foreign. In each country, the economy consists of J + 1 sectors and labor is the only factor of production. Good 0 is a numeraire, produced under constant returns to scale technology, sold under perfect competition, and freely traded. Goods 1, ..., J are produced by heterogenous oligopolistic firms.

Each economy is populated by a unit mass of consumers, who shares the same quasi-linear and additively separable preferences:

\[
U(q_0, Q_1, ..., Q_J) = q_0 + \sum_{j=1}^{J} u(Q_j), \tag{1}
\]

where \(q_0\) represents the consumption of the numeraire good, and \(Q_j\) represent the consumption of
the other goods. Consumer-utility maximization leads to a linear inverse demand for each good
\[ j: p(Q_j) = \max \{\alpha - Q_j, 0\}. \]

In each sector \( j \), there is an arbitrary large number of potential entrants indexed by \( i \) in both
countries. We assume that the distribution of marginal costs in sector \( j \) has a support \([c_{j1}, \infty)\) in
Home and \([c^*_j, \infty)\) in Foreign. Firm 1 with marginal cost \( c_{j1} \) (resp. \( c^*_j \)) is the most productive
firm (the “technological leader”) in Home (resp. Foreign).

Productivity differences across countries are captured by \( \lambda_j \equiv c_{j1} - c^*_j \), the marginal cost gap
between the leader in Home and Foreign. Home has a comparative advantage in sectors \( 1 \ldots J/2 \)
(i.e. \( \lambda_j \geq 0 \)), while Foreign has a comparative advantage in the remaining \( J/2 + 1 \ldots J \) (i.e. \( \lambda_j \leq 0 \)).
We assume that the world technological frontier (the marginal cost of the most productive firm in
Home and Foreign) is the same across sectors \( \min(c_{j1}, c^*_j) = c_1, \forall j \). To derive firm-level predictions
about the distributional effects of a FTA, we use a deterministic distribution of productivity.\(^{49}\) In
particular, we assume a constant gap \( \delta_j > 0 \) in the marginal cost of firm \( i_{th} \) and \( i_{th+1} \) within an
industry, i.e. \( c_{ji} = c_{j1} + (i - 1) \delta^j \).\(^{50}\)

Following Brander and Krugman (1983), firms compete à la Cournot in segmented markets,
i.e. in the presence of constant returns to scale, they set their quantities to maximize their profits
independently in each market.

Entry is determined by a zero profit condition, i.e. firms that are not active in equilibrium
would make negative profits by entering. For simplicity, we will ignore the integer constraint and
consider that the last active firm makes exactly zero profits so that the equilibrium market price
coincides with its marginal cost of production. We define the endogenous cutoffs \( \bar{c}_j \) and \( \bar{c}^*_j \), which
identify the least productive active firms in Home and Foreign, and denote with \( N_j \) and \( N^*_j \) the
endogenous number of active firms that make strictly positive profits.

When selling a good on the foreign market, Home (resp. Foreign) producers of good \( j \) face a
specific tariff \( \tau^*_j \) (resp. \( \tau_j \)). Consequently, for a Home firm with technology \( c_{ji} \), producing for the
foreign market implies an augmented marginal cost of \( c_{ji} + \tau^*_j \).

In this setting, any equilibrium will feature perfect sorting of firms along their marginal costs.
As shown below, only the most productive firms will operate domestically and serve the foreign
market, even in the absence of fixed costs of production and exporting, as in other models with
choke prices (e.g. Melitz and Ottaviano, 2008).

\(^{49}\)We could assume that productivities are random draws from a (Pareto or log-normal) distribution, as in standard
models of trade with heterogeneous firms. However, with a discrete number of firms, the equilibrium productivity
distribution would be random and we could thus not derive firm-level predictions.

\(^{50}\)Assuming a constant marginal cost gap between firms implies that, when the number of firms operating in a
sector is large, productivity approximates a Pareto distribution (see Figure A.2 in the Appendix).

22
5.1.2 Closed Economy

To illustrate the model, consider first a sector $j$ in which tariffs $\tau_j$ and $\tau_j^*$ are prohibitively high, even for the most productive firms (i.e. $c_{j1} + \tau_j^* > \bar{c}_j$ and $c_{j1} + \tau_j > \bar{c}_j$).

Under Cournot competition and linear demand, total output in Home in sector $j$ is equal to

$$Q_j(N_j) \equiv \frac{N_j \alpha - \sum_{i=1}^{N_j} c_{ji}}{N_j + 1}.$$  

The cutoff $\bar{c}_j$ is determined by $\bar{c}_j = c_{j1} + N_j \delta$, where $N_j$ is the solution to

$$\frac{\alpha - c_{j1}}{\delta} = \left(\frac{N_j + 3}{2}\right) N_j. \quad (2)$$

Figure 4 illustrates the distribution of marginal costs of Home firms operating in sector $j$, from the most productive (with marginal cost $c_{j1}$) to the least productive one (with marginal cost $\bar{c}_j$).

Figure 4
Distribution of Marginal Costs of Home Firms

$c_{j1}$ $c_{j2} = c_{j1} + \delta$ $c_{j3} = c_{j1} + 2\delta$ $\ldots$ $\bar{c}_j = c_{j1} + N_j \delta$

Equilibrium profits of each firm $i$ are given by

$$\Pi_{ji} = \frac{1}{2}(\bar{c}_j - c_{ji})^2. \quad (3)$$

We can examine the effects of an exogenous technological shock. A decrease in $c_{j1}$, the marginal cost of the firm at the technological frontier, shifts the entire distribution of marginal costs to the left. This leads to an increase in the number of firms operating in the sector. Each firm in the new equilibrium is more productive and makes higher profits. Thus, in sectors where the technological leader is more productive, the $i^{th}$ firm is also more profitable.

---

51 From (2), we can see that when $c_{j1}$ falls, the right-hand side of the equation must increase.

52 The increase in productivity comes from the assumption of a constant marginal cost gap. Concerning profits, it can be shown that firm $i$’s profits are proportional to $(N_j - i)^2$. Profits of the $i^{th}$ firm thus increase when $c_{j1}$ falls.
5.1.3 Open Economy

We now move to the case of non-prohibitive tariffs, looking first at a sectors in which the productivity distribution of Home and Foreign firms coincide, and then at sectors in which there are cross-county differences in technology.

No Cross-Country Differences in Technology

Consider a sector $j$ with no cross-county differences in technology ($c_{j1} = c^*_j$, implying $\lambda_j = 0$), so that the marginal cost distributions of Home and Foreign firms are perfectly overlapping.

The open economy equilibrium features selection into exporting by the most productive firms in each country, as in standard models of monopolistic competition with heterogeneous firms (Melitz, 2003). As shown in Figure 5, a Home firm $i$ will export only if it can be competitive in the Foreign market, i.e. iff $c_{ji} \leq c^X_j \equiv \bar{c}_j^* - \tau_j^*$. Similarly, a Foreign firm $i$ will export iff $c_{ji}^* \leq c^X_{ji} \equiv \bar{c}_j^* - \tau_j$.

Figure 5
Distribution of Marginal Costs of Home and Foreign Firms

To determine the equilibrium cutoffs and the profits of Home and Foreign firms, we need to keep track of their relative position in each market. We define $\kappa_j$ ($\kappa_j^*$) as the “distance” between the frontier Home and Foreign firms when they operate in the Home (Foreign) markets. In the absence of technological differences between countries, this distance is only driven by tariffs, which gives a competitive edge to domestic firms relative to exporting firms.

As an example, consider Home producers of good $j$ exporting to the Foreign country and assume that $\tau_j^* = 2\delta$, implying that the Home leader makes the same profits as the third most productive Foreign firm ($c_{j1} + \tau_j^* = c_{j3}^*$). Figure 6 illustrates this case, i.e. when $\kappa_j^* = 2$.

Notice that $\kappa_j^*$ is equal to the difference between the equilibrium number of Foreign and Home firms that are active in the Foreign market, i.e. $N_j^* - N_j^X = \kappa_j^*$. Graphically, it captures the extent
to which the equilibrium cost distributions of firms operating in the Foreign market (inclusive of tariffs) do not overlap. Similarly, $\kappa_j$ is the difference between the equilibrium number of Home and Foreign firms that are active in the Home market, i.e. $N_j - N_j^X = \kappa_j$. In other words, $\kappa_j$ and $\kappa_j^*$ are sufficient statistics for the degree of import penetration in the two markets.

We can solve for the production cutoffs in the two markets. Consider first the Foreign market with an import tariff $\tau_j^* = \kappa_j^* \delta$. The cutoff $\bar{c}_j^*$ is determined by $\bar{c}_j^* = c_{j1}^* + N_j^* \delta$, where $N_j^*$ is the solution to

$$
\left( \frac{\alpha - c_{j1}^*}{\delta} \right) = \left( N_j^* + 2 - \kappa_j^* \right) N_j^* + \left( \frac{\kappa_j^* + 1}{2} \right) \kappa_j^*.
$$

Likewise, in the Home market, when import tariff is $\tau_j = \kappa_j \delta > 0$, the cutoff $\bar{c}_j$ is determined by $\bar{c}_j = c_{j1} + N_j \delta$, where $N_j$ is the solution to

$$
\left( \frac{\alpha - c_{j1}}{\delta_j} \right) = \left( N_j + 2 - \kappa_j \right) N_j + \left( \frac{\kappa_j + 1}{2} \right) \kappa_j.
$$

The profits of a Home firm $i$ are given by

$$
\Pi_{ji} = \frac{1}{2}(\bar{c}_j - c_{ji})^2 + \frac{1}{2}(c_{ji}^* - c_{ji} - \tau_j^*)^2 1_{c_{ji} + \tau_j^* \leq c_{ji}^*}
$$

and symmetrically for a Foreign firm $i$,

$$
\Pi_{ji}^* = \frac{1}{2}(\bar{c}_j^* - c_{ji}^*)^2 + \frac{1}{2}(\bar{c}_j^* - c_{ji}^* - \tau_j)^2 1_{c_{ji}^* + \tau_j \leq c_{ji}^*}.
$$

The model generates intra-industry trade, as in the standard model of oligopolistic competition with homogeneous firms (Brander and Krugman, 1983). By introducing productivity differences across firms, we also generate selection into exporting, as in the standard model of monopolistic competition with heterogeneous firms (Melitz, 2003). A sufficient condition for selection into
exporting is that tariffs exceed $\delta$, i.e. $\kappa_j = \kappa_j^* \geq 1$.

The model also features aggregate productivity gains from trade liberalization. To see this, notice that (4) and (5) imply that a decrease in $\tau_j$ and $\tau_j^*$ leads to a decrease in the cutoffs $\bar{c}_j$ and $\bar{c}_j^*$, inducing the exit of the least productive domestic firms. By contrast, the export cutoffs $\bar{c}_j^X = \bar{c}_j^{X*}$ unambiguously decrease, implying that a larger subset of domestic firms find it profitable to export. Figure 7 illustrates the effects of a simultaneous reduction in $\tau_j$ and $\tau_j^*$ on domestic and export cutoffs in the two countries.

Figure 7
Effect of a Reciprocal Tariff Liberalization on Domestic and Export Cutoffs

A reciprocal reduction in $\tau_j$ and $\tau_j^*$ decreases domestic profits of both exporting and non-exporting firms, but increases foreign profits of exporting firms. Thus, in the absence of technological differences across countries, non-exporting firms unambiguously lose from the entry into force of a FTA, while exporting firms may gain or lose (see discussion in Section 5.1.4).

Cross-Country Differences in Technology

We next consider sectors characterized by cross-country differences in technology. In this case, the degree of import competition in the two markets depends not only on the level of tariffs, but also on the technological gap between the two countries.

As an example, consider a sector $j$ in which Home has a comparative advantage ($\lambda_j > 0$), so that the most productive Home firm, with marginal cost $c_{j1}$, is also the global technological leader. The degree of import competition in the Foreign market is given by $\kappa_j^* = \frac{\tau_j^* - \lambda_j}{\delta}$.

Large technological differences across countries can give rise to one-way trade. This happens if

53 Thus the Home leader makes the same profits in the Foreign market as the $\kappa_j^* + 1$ most productive Foreign firm. For a given $\tau_j^* > 0$, having a cost advantage $\lambda_j > 0$ increases competition in the Foreign market. For a large enough $\lambda_j$, $\kappa_j^*$ can be negative, in which case the most productive Home firm makes larger profits abroad than the most productive Foreign firm.
the technological gap between the two countries is large enough that the distribution of marginal costs in the closed economy do not overlap, i.e. the least productive firm in Home is more productive than the technological leader in Foreign ($\bar{c}_j < c^*_j$), or equivalently

$$\lambda_j > \bar{\lambda}_j \equiv N_j \delta,$$  \hspace{1cm} \hspace{1cm} \hspace{1cm} (6)

where $N_j$ is the solution to (2). Figure 8 illustrates the distribution of marginal costs of Home and Foreign firms when $\lambda_j > \bar{\lambda}_j$ and $\kappa^*_j > 0$.

Figure 8
Distribution of Marginal Costs of Home and Foreign Firms

When $\lambda_j > \bar{\lambda}_j$, Foreign firms are too unproductive to serve consumers in the Home country, even if $\tau_j = 0$. By contrast, Home firms export to the Foreign country if they are productive enough, i.e. iff $c_{ji} \leq c^X_j \equiv \bar{c}^*_j - \tau^*_j$.

In the case of one-way trade, profits of a Home firm $i$ are given by

$$\Pi_{ji} = \frac{1}{2}(\bar{c}_j - c_{ji})^2 + \frac{1}{2}(\bar{c}^*_j - c_{ji} - \tau^*_j)^2 \mathbf{1}_{c_{ji} + \tau^*_j \leq \bar{c}^*_j},$$ \hspace{1cm} \hspace{1cm} \hspace{1cm} (7)

while Foreign firms earn

$$\Pi^*_ji = \frac{1}{2}(\bar{c}^*_j - c^*_j)^2.$$ \hspace{1cm} \hspace{1cm} \hspace{1cm} (8)

In sectors in which Home has a large technological advantage ($\lambda_j > \bar{\lambda}_j$), a reciprocal reduction in $\tau_j$ and $\tau^*_j$ improves Home firms’ access to the foreign market, but has no impact on their domestic profits (their technological advantage is large enough to protect them from foreign competition). As discussed below, in these sectors, Home firms unambiguously gain from a FTA. By contrast, Foreign firms are forced to exit and thus unambiguously lose from the trade agreement.
5.1.4 Distributional Effects of a FTA

We can finally examine the effects of a proposed FTA between Home and Foreign, which leads to the elimination of tariffs in all sectors.

Non-exporting Home firms always lose from the FTA:

\[ \Delta \Pi_{ji} = \frac{1}{2} (\bar{c}_{FTA}^j - c_{ji}^j) - \frac{1}{2} (\bar{c}_{ji}^j) < 0. \]

Exporting firms may gain or lose from the agreement. Their profit change is given by:

\[ \Delta \Pi_{ji} = \frac{1}{2} (\bar{c}_j^* - c_{ji}^j) + \frac{1}{2} (\bar{c}_{FTA}^j - c_{ji}^j) - \frac{1}{2} (\bar{c}_{ji}^j) \leq \bar{c}_{ji}^* - \frac{1}{2} (\bar{c}_{FTA}^j - c_{ji}^j), \]

where \( \bar{c}_{ji}^* \) identifies the least productive Home (Foreign) firms surviving in sector \( j \) after the entry into force of the trade agreement.

In sectors in which there are no technological differences between countries (\( \lambda_j = \bar{\lambda}_j \)), exporting firms thus benefit from the FTA only if their gains in the foreign market outweigh their losses in the domestic market. It can also be shown that the profits of exporting firms are U-shaped in the level of initial protection, with firms gaining from a FTA only if the initial tariff is lower than a threshold that increases in a firm’s productivity (similarly to what shown by Brander and Krugman (1983) for the case of homogeneous oligopolists).

By contrast, in sectors in which Home has a large technological advantage (\( \lambda_j > \bar{\lambda}_j \)), exporting firms unambiguously gain. The biggest winners are the most productive firms in these sectors (the “global leaders”), which experience the largest increase in foreign profits following the entry into force of the FTA and do not suffer from an increase in competition in the domestic market.

It is easy to show that the maximum gains (losses) from the FTA are experienced in sectors of comparative advantage (disadvantage). To see this, consider first a sector \( j \in (1, \ldots, J/2) \) in which Home has a technological advantage large enough that the FTA leads to one-way trade (from Home to Foreign) and forces Foreign firms to exit (as in Figure). The maximum possible gains from the FTA are achieved by the Home leader of this sector when, before the agreement, it was facing a prohibitive foreign tariff (\( \tau_j^* > \bar{\tau}_j^* - c_{ji}^j \)). In this case, the “global leader” gains the equivalent of its autarky profits, i.e. \( \Delta \Pi_{j1} = \frac{1}{2} (\bar{c}_j^* - c_{ji}^j)^2 > 0. \)

Consider next a sector \( j' \in (J/2 + 1, \ldots, J) \), in which Foreign has a technological advantage large enough that the FTA leads to one-way trade (from Foreign to Home) and forces Home firms to exit (the mirror image of Figure). The maximum losses are experienced by the Home leader in this sector when, before the FTA, it was completely sheltered from foreign competition (\( \tau_{j'}^* > \bar{\tau}_{j'}^* - c_{ji}^j \)).

\(^{54}\) For simplicity, and without loss of generality, we assume that firms keep maximizing their profits independently in the two markets, even when tariffs are entirely removed (\( \tau_j = \tau_j^* = 0 \)).
In this case, the Home leader loses its autarky profits: $\Delta \Pi_{j1} = -\frac{1}{2}(\bar{c}_j - c_{j1})^2 < 0$.

It is straightforward to show that the maximum gains from the FTA are larger (in absolute terms) than the maximum losses. In the example above, the maximum gains achieved in the comparative advantage sector $j$ are larger than the maximum loss experienced in the comparative disadvantage sector $j'$ ($\Delta \Pi_{j1} > |\Delta \Pi_{j'1}|$). This follows directly from the higher productivity of the “global leader” ($\bar{c}_{j1} < \bar{c}_{j'1}$). Thus the biggest winners from the FTA have larger stakes in the agreement than the biggest losers.

In our benchmark model, the FTA can benefit firms by eliminating foreign tariffs on their final goods, thus improving access to foreign consumers. Another source of potential gains from FTAs comes from the elimination of input tariffs, which improves access to foreign suppliers. Several studies emphasize the productivity-enhancing effects of input trade, showing that reductions in input tariffs allow firms to reduce production costs by accessing novel, cheaper, or higher quality foreign inputs (e.g. Amiti and Konings, 2007; Goldberg et al., 2010). A simple extension of the model allows us to capture the productivity-enhancing effect of trade agreements. In particular, let us assume that, by eliminating input tariffs, the entry into force of a FTA decreases the marginal cost of the technological leaders in all sectors. As discussed at the end of Section 5.1.2, a fall in $c_{j1}$ shifts the entire marginal cost distribution to the left, increasing productivity of all firms operating in sector $j$. It is straightforward to show that this shift increases the maximum gains that can be achieved from the FTA.

5.2 Political Structure

In the previous section, we have examined the distributional effects of a proposed FTA between Home and Foreign. The entry into force of the agreement creates winners and losers among firms operating in the same sector, as well as across firms in different sectors.

We next describe the political structure of the model, in which each firm $f$ chooses whether to lobby and how much to spend in favor or against a proposed FTA. We denote with $\Omega_P$ the set of Home firms that are pro agreement (i.e. for which $\Delta \Pi_f > 0$) and with $\Omega_A$ the set of Home firms that are against it (i.e. for which $\Delta \Pi_f < 0$). Notice that, while there are no inter-sectoral linkages in the economic structure of the model, the political structure features an interdependence between firms operating in different sectors, which share the same policy preferences (pro or against the agreement).

To be politically active, a firm must pay a fixed cost $F_L$. As mentioned before, these costs might involve setting up a lobbying department in house or establishing connections to independent lobbying firms. A politically organized firm then chooses its lobbying expenditures $l_f$ in favor or

55 Pre-FTA profits are supermodular in productivity $c$ and $\tau$, i.e. $\frac{d^2}{d\tau_j d\tau'} \Pi_{j1} = -\frac{d}{d\tau_j} (\bar{c}_j - \tau_j) > 0$.

56 In almost 80 percent of the cases, firms that lobby on FTAs have their own lobbying department (see Table A-1). Lobbyists can help firms to get access to politicians and obtain issue-specific information (see footnote 10).
against the ratification of the FTA.

There can be a bias ($B$) among politicians deciding whether to ratify the FTA. They may be in favor of ratifying the trade agreement ($B > 0$), possibly because they value the aggregate productivity gains that it generates. Or they may be opposed to ratification ($B < 0$), possibly because they are concerned about the distributional effects of the FTA. We model $B$ as a random variable, reflecting uncertainty about the direction of the political bias. We do not impose any constraints on the random variable $B$, except that its support is not empty for both negative and positive real numbers. In that sense, we simply rule out that the direction of the bias of the government is deterministic.

The probability that the Home country ratifies the FTA is given by the following contest success function:

$$P(l, B) \equiv \frac{\sum_{\Omega_p} l_f + B^+}{\sum_{\Omega_p} l_f + \sum_{\Omega_A} l_f + |B|},$$

(9)

where $B^+ = \max\{B, 0\}$.

A few remarks are in order. First, the fact that the policy outcome is probabilistic reflects some randomness in the effectiveness of lobbying activities, as in standard contest success functions (see Jia et al., 2013 and Section A 2.3 in the Theory Appendix for microfoundations).

Second, we add to the standard framework the possibility that the government can be biased, and there is uncertainty about the direction of this bias. Introducing the political bias is equivalent to adding a random contribution from a player who can be in favor or against the agreement. Compared to a situation without any bias, this unambiguously raises (decreases) the probability that a FTA is ratified in the absence of pro-FTA (anti-FTA) contributions.

Third, as discussed below, our setting features free riding: because lobbying expenditures are substitutable in the probability of ratification, the absence of coordination among firms with the same trade policy preference leads to under-lobbying.

The political biases $B$ and $B^*$ are independent across countries. The FTA is implemented only if politicians in both countries ratify it. The probability that the trade agreement enters into force can then be written as the product of the two countries’ contest success functions $P$ and $P^*$:

$$\mu(l, l^*; B; B^*) \equiv P(l, B) \cdot P^*(l^*, B^*) = \frac{\sum_{\Omega_p} l_f + B^+}{\sum_{\Omega_p} l_f + \sum_{\Omega_A} l_f + |B|} \cdot \frac{\sum_{\Omega_p} l^*_f + B^{*+}}{\sum_{\Omega_p} l^*_f + \sum_{\Omega_A} l^*_f + |B^*|},$$

(10)

Each firm chooses whether to pay the fixed lobbying cost $F_L$ and, if politically organized, its

57 Our model, in which politicians may be biased in favor or against trade agreements, is reminiscent of models of contests in which some players have a “head start” over others (e.g. Siegel, 2009 and 2010).

58 Politicians may worry that the trade agreement could hurt small firms in their constituency, particularly if they are averse to inequality. Re-election motives can also lead them to oppose trade agreements (Conconi et al., 2014).

59 From the perspective of the US firms in our lobbying dataset, this assumption implies that they are uncertain about whether there is a majority of House and Senate members in favor of the ratification of a trade agreement.
lobbying expenditure $l_f$ to maximize its expected payoff:

$$\mathbb{E}[P(l, B)] \cdot \mathbb{E}[P^*(l^*, B^*)] \cdot \Delta \Pi_f - \frac{l_f^2}{2} - 1_{l_f > 0} \cdot F_L,$$

(11)

where $\mathbb{E}[P(l, B)] \cdot \mathbb{E}[P^*(l^*, B^*)]$ is the expected probability that the agreement enters into force and $\Delta \Pi_f > 0 \ \forall f \in \Omega_P$ and $\Delta \Pi_f \leq 0 \ \forall f \in \Omega_A$. We assume that the marginal cost of lobbying is increasing as in Esteban and Ray (2001) and Bouton et al. (2018).61

From (11) it can be seen that all firms would find it optimal to lobby on trade agreements in the absence of fixed costs ($F_L = 0$). In the section below, we show that fixed costs can give rise to selection into lobbying by the most productive firms in the economy, which gain from FTAs.

5.3 Firm Lobbying on FTAs: Extensive Margin

The main finding of our empirical analysis is that all firms lobbying on FTAs are in favor of their ratification (Fact 1). In terms of our model, this means that only firms in the set $\Omega_P$ lobby, while firms in $\Omega_A$ are not politically organized. In what follows, we show that this can happen if the more productive firms gain from the trade agreement and select into lobbying, while less productive firms, which may lose or gain from the agreement, cannot cover the fixed lobbying cost $F_L$.62

Let us define with $\Delta \Pi_A$ the maximum loss experienced by a firm if the agreement enters into force. In what follows, we will assume that the following condition is satisfied:

**Condition 1.** $F_L > |\Delta \Pi_A|.$

This is a sufficient condition guaranteeing that no anti-FTA firm will have incentive to lobby against the trade agreement. It requires that the fixed cost of being politically organized (e.g. setting up a lobbying department) is larger than the profit losses that can be incurred by Home firms. This condition can be easily satisfied in our model. The intuition is simple: recall that the maximum loss that a firm can incur from the FTA is bounded by its pre-agreement profits; $\Omega_A$ comprises the least productive firms in the economy, implying that their initial profits are small, so their stakes in the agreement are limited.

When only pro-FTA firms lobby, we can rewrite the contest success function (equation (9)) in each country as a function of the overall contributions of firms in favor of the agreement $\mathcal{L} \equiv \sum_{\Omega_P} l_f$.

---

60 In our benchmark model, firms can only lobby to affect the ratification decision in their own country. The key results of our analysis continue to hold if we allow firms to affect the probability of ratification in Home and Foreign. In this case, firms choose to lobby in both countries and their expenditures at Home are higher than in our benchmark model. This is because optimal lobbying expenditure by firms in one country depend positively on the probability that the FTA is ratified in the other country (see equation (15)).

61 We choose quadratic costs for the sake of simplicity, though it is readily verified that the following results go through for any convex power function of lobbying expenditures.

62 More trivially, the set $\Omega_A$ could be empty, if all oligopolistic firms gain from the FTA. This is the case in the mixed market structure considered in Section A 2.1 in the Theoretical Appendix.
i.e. $P(L, B) \equiv P(L^+, B^+) \equiv \frac{\xi + B^+}{\xi + |B|}$. A pro-FTA firm maximizes

$$E[P(L, B)] \cdot E[P^*(L^*, B^*)] \cdot \Delta \Pi_f - \frac{1}{2} l_f^2 - 1_{l_f > 0} \cdot F_L.$$ (12)

Uncertainty in the direction of the government bias rules out trivial Nash equilibria where firms in both countries would choose not to lobby. Intuitively, from the perspective of a firm in the Home country, even if all firms in Foreign lobby against the ratification of the agreement, the expectation about the probability of the Foreign country ratifying the agreement $E[P^*(L^*, B^*)]$ is strictly positive, because of the uncertainty in the foreign government bias. Therefore, without loss of generality, we further assume that $E[P^*(L^*, B^*)] > 0$, i.e. firms in the Home country conjecture a non-zero expected probability of ratification by the Foreign country.

Given two random variables $X$ and $Y$, we denote the expectation of $X$ given $Y$ taking positive or negative values as follows: $E_{Y>0}[X] \equiv E[X|Y > 0]$ and $E_{Y<0}[X] \equiv E[X|Y < 0]$. The expected probability of ratification by the Home country can then be written as

$$E[P(L, B)] = P(B < 0) \cdot E_{B<0} \left[ \frac{L}{L - B} \right] + P(B \geq 0).$$ (13)

The first term is equal to the probability that the government is biased against the ratification times the probability that the FTA is ratified in that case. The second term represents the probability that the government is in favor of the FTA multiplied by $E_{B>0} \left[ \frac{L}{L - B} \right] = 1$, the probability of ratification when the government is in favor of the FTA.

The minimum probability that the agreement enters into force (i.e. in the absence of any lobbying) is $\mu \equiv P(B > 0) \cdot P(B^* > 0)$. From the point of view of a pro-FTA firm $f$, the minimum expected gain is then $\mu \cdot \Delta \Pi_f$. Given that the marginal cost of lobbying is 0 in 0, firm $f$ will choose to lobby in favor of the FTA if $F_L < \mu \cdot \Delta \Pi_f$.

We denote with $\Delta \Pi_P$ the largest gain experienced by a firm if the agreement is implemented. A sufficient condition for selection into lobbying by pro-FTA firms is then:

**Condition 2.** $F_L < \mu \cdot \Delta \Pi_P$.

This condition requires that, for at least one firm in the economy, the expected gains from the FTA must be large enough to outweigh the fixed lobbying cost. This condition is most easily satisfied for “global leaders”. These are the most productive firms in a sector in which their country has a large technological advantage, which can enjoy large profit gains in the export market and do not suffer from an increase in competition in their domestic market. Moreover, as discussed at the end of Section 5.1.4, accounting for the productivity gains of the FTA resulting from the elimination of input tariffs increases $\Delta \Pi_P$, making it easier to satisfy Condition 2.

The general insight is that the winners from trade agreements have stronger incentives to be politically organized than the losers. As discussed at the end of Section 5.1.4, the maximum gains
from the elimination of trade barriers are larger than the maximum losses. The intuition for this result is that profits are supermodular in productivity. Given that pro-FTA firms are more productive than anti-FTA firms, their stakes in the agreement are larger. This asymmetry helps to jointly satisfy Conditions 1 and 2.

We denote with $\Omega_L$ the endogenous set of lobbying firms. Condition 1 guarantees that $\Omega_L$ does not include anti-FTA firms, while Condition 2 guarantees that this set includes at least one pro-FTA firm. We can thus state the following:

**Result 1.** If Conditions 1 and 2 hold, only pro-FTA firms lobby ($\Omega_P \subset \Omega_L$).

Our model features free riding on the extensive margin. Indeed, firms in $\Omega_P$ that cannot cover the fixed cost $F_L$ will benefit from the lobbying effort of pro-FTA firms that select into $\Omega_L$, whose expenditures raise the probability that the trade agreement is ratified, generating a positive externality. Low-productivity firms in a sector $j$ may not be politically organized, but may benefit from the lobbying effort of more productive firms in the same sector. Importantly, free riding can also occur across industries: non-organized firms in one sector may benefit from the lobbying effort of firms operating in other sectors of the economy.

To characterize which pro-FTA firms belong to the endogenous set $\Omega_L$, we start by observing that, among lobbying firms, those that gain more from the FTA are also those that gain more from lobbying. We can also prove that the partition of pro-FTA firms into lobbying will feature perfect sorting. In other words, it cannot be that, at equilibrium, a non-lobbying firm with a larger payoff from the FTA coexists with a lobbying firm that expects smaller gains from the FTA. To see this, it is sufficient to notice that, if this were the case, the non-lobbying firm would get a strictly larger return by spending exactly the same amount than the lobbying firm, making it profitable to cover the fixed cost. Any admissible Nash equilibrium must therefore feature a perfect sorting of pro-FTA firms into lobbying. It can be shown that, in the absence of firm heterogeneity ($\Delta \Pi_f \equiv \Delta \Pi \forall f \in \Omega_P$), the only admissible partition would be one in which all pro-FTA firms would lobby, i.e. $\Omega_L \equiv \Omega_P$. Firm heterogeneity generates selection among pro-FTA firms, whereby $\Omega_P \subset \Omega_L$. Without specifying the functional form of the bias and the distribution of firms’ payoffs from the FTA, we cannot rule out multiple admissible sets in the equilibrium defined by $\Omega_L = \{f \in \Omega_P \mid \mathbb{E}[P(L, B)] \cdot \mathbb{E}[P^*(L^*, B^*)] \cdot \Delta \Pi_f - \frac{1}{2}l_f^2 \geq F_L\}$, where $\hat{L}$ is given by (16). However, they will all be consistent with the fact that firms which gain the most from the FTA are those who select into lobbying. Thus only the most productive firms in an economy pay the fixed cost $F_L$ and lobby in support of trade agreements. In this respect, our model is reminiscent of Bombardini (2008)’s, in which only the largest firms in a sector pay the fixed cost to be politically organized and lobby for an import tariff.

Under the assumption of symmetric countries, the existence of a symmetric equilibrium is proven

---

63 The proof of this complementarity is in Section A 2.5 of the Theoretical Appendix.
by setting $\mathbb{E}[P^*] \equiv \mathbb{E}[P]$ in (16). Total contributions are then defined implicitly by the following equation, which admits a unique and strictly positive solution (see Section A 2.4 of the Theory Appendix):

$$\mathbb{P}(B < 0) \mathbb{E}_{B<0} \left[ \frac{-B}{(\hat{L} - B)^2} \right] \left( \mathbb{P}(B < 0) \cdot \mathbb{E}_{B<0} \left[ \frac{\hat{L}}{\hat{L} - B} \right] + \mathbb{P}(B \geq 0) \right) \left( \sum_{\Omega_f} \Delta \Pi_f \right) = \hat{L}. \quad (14)$$

Summing up, our theoretical model provides a simple rationale for the empirical findings documented in Section 4 on the extensive margin of firm-level lobbying on trade agreements. First, the model explains why lobbying firms always support FTAs: if the fixed costs of being politically organized are large enough, only those firms that gain the most from the entry into force of these agreements have incentives to lobby. Second, it is consistent with the fact that lobbying on trade agreements is a rare event, even among publicly traded companies, and that lobbying firms are larger than non-lobbying firms. Third, it explains why firms that lobby on trade agreements are more likely to be involved in international trade and tend to operate in sectors in which the United States has a large comparative advantage compared to the FTA partners.

5.4 Firm Lobbying on FTAs: Intensive Margin

The optimal lobbying expenditure $\hat{l}_f$ of a pro-FTA firm is given by differentiating (12), which implies

$$\mathbb{E}[P^*] \cdot \mathbb{P}(B < 0) \cdot \mathbb{E}_{B<0} \left[ \frac{-B}{(\hat{L} - B)^2} \right] = \frac{\hat{l}_f}{\Delta \Pi_f}. \quad (15)$$

Notice that, if firms knew with certainty that the government is biased in favor of the FTA (i.e. if $B$ could only take positive values), then no firm would find it profitable to lobby in favor. However, as long as there is some uncertainty about the direction of the bias ($B$ can be positive or negative with a strictly positive probability), pro-FTA firms will find it profitable to lobby in favor of the agreement, even if $\mathbb{E}[B] > 0$.

Summing (15) over all contributors, we get

$$\mathbb{E}[P^*] \cdot \mathbb{P}(B < 0) \cdot \left( \sum_{f \in \Omega_L} \Delta \Pi_f \right) = \frac{\hat{L}}{\mathbb{E}_{B<0} \left[ \frac{-B}{(\hat{L} - B)^2} \right]}, \quad (16)$$

which shows that total contributions in Home $\hat{L}$ increase with $\mathbb{E}[P^*]$. Combining (15) and (16), we

\[\text{In the presence of uncertainty, an equilibrium in which pro-FTA firms lobby in favor of the agreement could only arise if the government was biased against it (i.e. if $B$ could only take negative values).}\]
get that the share of firm’s lobbying expenditure does not depend on $\mathbb{E}[P^*]$

$$\frac{\hat{i}_f}{\hat{\mathcal{L}}} = \frac{\Delta \Pi_f}{\sum_{f \in \Omega_L} \Delta \Pi_f},$$

so the contribution of each firm has to be increasing in $\mathbb{E}[P^*]$. We can thus state the following:

**Result 2.** *Lobbying expenditure by pro-FTA firms in Home depend positively on the probability that the FTA is ratified in Foreign.*

This interdependence between lobbying efforts across countries has already been pointed out by Cole *et al.* (2018): given that the implementation of a trade agreement require ratification by both countries, the “parallel” contests in each country are intrinsically linked.

Our model delivers two additional results about the intensive margin of lobbying. The first is related to the change in firms’ profits:

**Result 3.** *Lobbying expenditures by pro-FTA firms are proportional to their profit gains from the agreement.*

Specifically, comparing two firms $f$ and $f'$, relative lobbying expenditures are proportional to relative payoff gains from the FTA:

$$\frac{\hat{i}_f}{\hat{i}_{f'}} = \frac{\Delta \Pi_f}{\Delta \Pi_{f'}} \forall (f, f') \in \Omega_L^2,$$

(17)

As mentioned in the previous section, the model features free riding on the extensive margin. There is also free riding on the intensive margin, since each firm in $\Omega_L$ benefits from the efforts of other firms that lobby in favor of the ratification of the agreement. It can be shown that, under coordination, the endogenous set of lobbying firms would be larger ($\Omega_L' > \Omega_L$). Moreover, total expenditures by lobbying firms would be larger under coordination. In this case, pro-FTA lobbying firms would choose their expenditures as if the gains from the FTA were $|\Omega_L'|$ times larger, i.e. $|\Omega_L'| \sum_{\Omega_L} \Delta \Pi_f$ (see Section A 2.6 in the Theoretical Appendix).

The last result concerns the role of the political bias:

**Result 4.** *Lobbying expenditures by pro-FTA firms increase with the probability that politicians are against ratifying the agreement.*

To see this, we first need to define a change in the probability that politicians are against the agreement. Generally, a change in the distribution of the political bias will impact the probability of ratification in two ways. From (13), it will have an impact on the probability that a government is in favor or against the FTA, but also on the probability of ratification conditional upon the
direction of the bias. Crucially, these conditional probabilities are endogenous and depend on the overall amount of contributions.

To isolate the impact of the direction of the political bias, we consider a shift in the distribution of $B$ that leaves unchanged the conditional probability distributions of the bias conditional on it being negative. In particular, such a change in the distribution will leave unchanged the expected probability that the FTA is ratified (resp. not ratified) conditional upon the bias being negative (resp. positive). In equation (13), it means that, for a given $L$, the expected probability of ratification is then impacted only through $\mathbb{P}(B < 0)$ (or equivalently $\mathbb{P}(B \geq 0)$). These changes in the distribution of $B$ preserve the conditional expectations of the probability of ratifications, allowing us to examine how the direction of the bias alone impacts firm-level lobbying (see Section A 2.7 in the Theoretical Appendix for details).

Under this distributional shift, an increase in the probability that the government is in favor of the agreement is equivalent to a decrease in the probability that the foreign government ratifies it. This can be seen by inspecting (15) again. When the probability of being in favor of the FTA increases, i.e. $\mathbb{P}(B < 0)$ decreases, the expected marginal impact of a contribution remains unchanged so it is as if lobbying firms were facing a decrease in $\mathbb{E}[P^*]$. Thus an increase in the probability that the government is in favor of the agreement leads to a decrease in the equilibrium contributions of pro-FTA firms.

Intuitively, when legislators are more likely to be in favor of the agreement, firms tend to free ride on their political bias, decreasing their lobbying efforts in favor of ratification. In the limit case in which the political bias is deterministic and positive, pro-FTA firms would not lobby at all. When the direction of the bias becomes uncertain and the probability that the government is in favor decreases, the expected payoff of a firm becomes more dependent on the probability that the FTA is ratified under a negative bias, leading each firm to increase its lobbying expenditure.

5.5 Testable Predictions about Lobbying Expenditures on FTAs

The analysis carried out in the previous section delivers testable predictions on the intensive margin of lobbying on FTAs, which we will bring to the data in the next section.

According to Result 2, firms’ expenditures in support of a FTA should be proportional to the profit gains in case of ratification of the agreement. The extent of the profit gains increases in the productivity (and the size) of the lobbying firm. This leads to our first prediction:

P.1: Larger firms should spend more lobbying in favor of FTAs.

In the next section, we will assess the validity of this prediction by exploiting cross-firm variation in lobbying expenditures on trade agreements.

A second implication of Result 2 is that individual firms should spend more supporting trade agreements that generate larger potential benefits:
P.2: Individual firms should spend more supporting FTAs that generate larger profit gains.

To bring this prediction to the data, we will exploit within-firm variation in lobbying expenditures across trade agreements, depending on the level of pre-agreement tariffs on their final goods and intermediate inputs, the extent to which the agreement removes non-tariff barriers, as well as the size of the FTA partners in terms of export and sourcing potential.

Result [4] suggests that lobbying expenditures by pro-FTA firms should also depend on the expected political support for the agreements among legislators deciding on the ratification. Intuitively, when politicians are more likely to be in favor of the agreement, firms tend to free ride on them, decreasing their lobbying expenditures. This leads to our last testable prediction:

P.3: Individual firms should spend more lobbying in support of FTAs when US legislators are less likely to be in favor of ratification.

To assess the validity of this prediction, we will exploit variation in political support for the ratification of trade agreements across US Congresses.

6 Determinants of Lobbying Expenditures on FTA

In this section, we assess the validity of our model’s predictions about the determinants of firms’ lobbying expenditures on FTAs.

A first look at the data already shows a correlation between the size of lobbying firms and how much they spend in support of FTAs, in line with prediction P.1 (see Figures [9] and [10]).

Figure 9

The figure plots the log of Lobbying expenditure\textsubscript{f,j,a,t} against the log of Employment\textsubscript{f,t}.
The figure plots the log of Lobbying expenditure\(_{f,j,a,t}\) against the log of Sales\(_{f,t}\).

In Table 3, we more systematically examine the relationship between firm size and lobbying expenditures, focusing on all firms that lobbied on at least one FTA. We exploit variation in size across firms, regressing the log of Lobbying expenditure\(_{f,j,a,t}\) against the log of Sales\(_{f,t}\) or Employment\(_{f,t}\)\(^{65}\). In columns 1-2, we include only FTA fixed effects, to account for differences across trade agreements (e.g., distance of the FTA partners). In the remaining columns, we include industry fixed effects at the SIC1 level (columns 3-4) and SIC2 level (columns 5-6). Standard errors are clustered at the SIC1 level, but the results are robust to using broader or narrower clusters.

<table>
<thead>
<tr>
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<th>(1)</th>
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<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(Sales(_{f,t}))</td>
<td>0.257**</td>
<td>0.276**</td>
<td>0.299**</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1080)</td>
<td>(0.1140)</td>
<td>(0.1085)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>log(Employment(_{f,t}))</td>
<td></td>
<td>0.285**</td>
<td>0.351**</td>
<td>0.411***</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(0.0900)</td>
<td>(0.1249)</td>
<td>(0.1132)</td>
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<td>FTA FE</td>
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<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry FE (SIC1)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Industry FE (SIC2)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
</tr>
<tr>
<td>R(^2)</td>
<td>0.076</td>
<td>0.077</td>
<td>0.080</td>
<td>0.082</td>
<td>0.096</td>
<td>0.099</td>
</tr>
</tbody>
</table>

The table reports the coefficients of OLS regressions. The dependent variable is the log of Lobbying expenditure\(_{f,j,a,t}\), the amount that firm \(f\) producing good \(j\) spent in year \(t\) to lobby in support of the ratification of agreement \(a\). The variable Sales\(_{f,t}\) is total sales by firm \(f\) in year \(t\), while Employment\(_{f,t}\) is the total number of employees of firm \(f\) in year \(t\). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *; 10%; **; 5%; ***; 1%.

\(^{65}\) We use the log of \((1+ \text{Lobbying expenditure}_{f,j,a,t})\) to be able to include zero expenditures on some agreements.
The results confirm that larger firms spend more lobbying in favor of FTAs, in line with prediction P.1 of our model. In terms of magnitude, the coefficients reported in column 5 and 6 of Table 3 indicate that a 1 percent increase in Sales_{f,t} (Employment_{f,t}) leads to a 0.3 (0.4) percent increase in firms’ lobbying expenditures on FTAs. Put differently, as we move from the 10th percentile to the 90th percentile of log Sales_{f,t} (Employment_{f,t}), log Lobbying expenditure_{f,j,a,t} increases by around 0.909 (1.215) standard deviations.

We next assess the validity of prediction P.2, according to which firms’ lobbying expenditure on FTAs should be proportional to the potential gains they can derive from the agreements. To this purpose, in Tables 4-6, we regress the log of Lobbying expenditure_{f,j,a,t} on different variables capturing variation across FTAs in the potential gains firms can derive from the agreements. In these regressions, we always include firm fixed effects, exploiting variation in lobbying expenditures within firms across agreements.

### Table 4
Lobbying expenditures on FTAs, variation in pre-agreement tariffs

<table>
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<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(Tariff applied by FTA partners on the final good_{j,a})</td>
<td>0.360**</td>
<td></td>
<td>0.532**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0803)</td>
<td></td>
<td>(0.0794)</td>
<td></td>
</tr>
<tr>
<td>log(Tariff applied by US on inputs_{j,a})</td>
<td>2.057***</td>
<td></td>
<td>3.553***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1954)</td>
<td></td>
<td>(0.0574)</td>
<td></td>
</tr>
<tr>
<td>log(Tariff applied by US on the final good_{j,a})</td>
<td>-0.115</td>
<td>-0.191</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1218)</td>
<td></td>
<td>(0.1753)</td>
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<thead>
<tr>
<th></th>
<th>Yes</th>
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<th>Yes</th>
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<tbody>
<tr>
<td>Firm FE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>1,151</td>
<td>1,299</td>
<td>892</td>
<td>651</td>
</tr>
<tr>
<td>R^2</td>
<td>0.205</td>
<td>0.229</td>
<td>0.228</td>
<td>0.265</td>
</tr>
</tbody>
</table>

The table reports the coefficients of OLS regressions. The dependent variable is the log of Lobbying expenditure_{f,j,a,t}, the amount that firm f producing good j spent in year t to lobby in support of the ratification of agreement a. The tariff variables are constructed using pre-agreement data (for the year of the ratification of agreement a). Tariff applied by FTA partners on final good_{j,a} is the tariff applied by the partners of FTA agreement a on imports of good j from the US. Tariff applied by US on inputs_{j,a} is the average tariff applied by the US on imports from partners of agreement a of the inputs necessary to make good j. Tariff applied by US on final good_{j,a} is the tariff applied by the US on imports of good j from partners of agreement a. Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *; 10%; **: 5%; ***: 1%.

In Table 4 we examine the role of pre-agreement tariffs. Our model suggests that lobbying firms should spend more in support of FTAs when they face higher tariffs to export their final goods to

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66 The 10th percentile of log Sales_{f,t} is 8.645 and the 90th percentile is 11.685, thus (11.685-8.645)*0.299=0.909. The 10th percentile of log Employment_{f,t} is 2.665 and the 90th percentile is 11.685, thus (5.621 - 2.665)*0.411=1.215.
the FTA partners and to import intermediate inputs from them. Recall that the variable \( \text{Tariff applied by FTA partners on the final good}_{j,a} \) captures a firm’s gains in terms of improved access to the markets of the FTA partners, following the elimination of their tariffs vis-à-vis the United States. The variable \( \text{Tariff applied by US on inputs}_{j,a} \) captures instead the gains associated with the reduction in the cost of sourcing inputs from foreign suppliers, as a result of the elimination of U.S. tariffs on imports from FTA partners. Finally, the variable \( \text{Tariff applied by US on the final good}_{j,a} \) captures the potential increase in domestic competition as a result of the elimination of U.S. tariffs vis-à-vis FTA partners.\(^{67}\)

In line with our model’s predictions, we find that firms’ lobbying expenditures on FTAs increase in the tariffs they face to export their final goods to the FTA partners before the agreement (the coefficient of the variable \( \text{Tariff applied by FTA partners on final good}_{j,a} \) is positive and significant). Firms’ lobbying expenditures also increase in the tariffs they face to import their inputs from FTA partners before the agreement (the coefficient of the variable \( \text{Tariff applied by US on inputs}_{j,a} \) is positive and significant). In terms of magnitude, the estimates in column 4 imply that a 1 percent increase in the \( \text{Tariff applied by FTA partners on final good}_{j,a} \) (\( \text{Tariff applied by US on inputs}_{j,a} \)) leads to a 0.5 percent increase (3.5 percent increase) in firms’ lobbying expenditures in support of the agreement. The coefficient of the variable \( \text{Tariff applied by US on the final good}_{j,a} \) in column (3) and (4) is negative but not significant. This is also consistent with our theoretical model: Home firms gain the most from a FTA (and are thus more likely to select into lobbying) when they have a large technological advantage over Foreign firms (i.e. \( \lambda_j > \bar{\lambda}_j \)), implying that the elimination of tariffs does not affect their domestic profits.

FTAs can boost trade among member countries not only by eliminating tariffs, but also by reducing non-tariff barriers. Indeed, trade agreements often contain detailed obligations on non-tariff issues (e.g. rules on services, investment, competition, intellectual property rights).

In Table 5 we examine whether firms’ lobbying expenditures on FTAs depend on the depth of the agreements, using the measures constructed by Dür et al. (2014) and Hofmann et al. (2019). The results show that firms spend more supporting deeper agreements, which cover a larger number of provisions that go beyond tariff liberalization.

\(^{67}\)As explained in Section 3, these variables are defined as the maximum of the SIC4 Effectively Applied Tariff. In Table 4 we control for the minimum of all tariff variables and for the standard deviation of \( \text{Tariff applied by FTA partners on the final good}_{j,a} \) and \( \text{Tariff applied by US on inputs}_{j,a} \) (we cannot include the standard deviation of \( \text{Tariff applied by US on inputs}_{j,a} \), since this is constructed as a weighted average of the input tariffs). The results of Table 4 are robust to including only the means of the three tariff variables, constructed using the weighted average tariffs provided by WITS.
Table 5
Lobbying expenditures on FTAs, variation in the depth of the agreements

<table>
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<tr>
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<th>(2)</th>
<th>(3)</th>
</tr>
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<tbody>
<tr>
<td>Depth DESTA1$_a$</td>
<td>0.185*</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0789)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth DESTA2$_a$</td>
<td>4.372***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.8072)</td>
<td></td>
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</tr>
<tr>
<td>Depth World Bank$_a$</td>
<td>0.148***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0342)</td>
<td></td>
<td></td>
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</tbody>
</table>

Firm FE Yes Yes Yes
Year FE Yes Yes Yes
N 1,732 1,732 1,732
R$^2$ 0.221 0.226 0.230

The table reports the coefficients of OLS regressions. The dependent variable is the log of $Lobbying expenditure_{f,j,a,t}$, the amount that firm $f$ producing good $j$ spent in year $t$ to lobby in support of the ratification of agreement $a$. $Depth DESTA1_a$ and $Depth DESTA2_a$ measure the depth of agreement $a$ as measured by Dür et al. (2014). $Depth World Bank_a$ measures the depth of agreement $a$ as measured by Hofmann et al. (2019). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.

Another implication of prediction P.2 of our model is that firms should spend more supporting trade agreements when the FTA partners are larger, in terms of their export and sourcing potential. To verify this, we regress firms’ lobbying expenditures on different proxies for the size of the FTA partners.

The results are reported in Table 6. In column 1, we use the variable $GDP of FTA partners_a$ to capture the export and sourcing potential of the FTA partners’ markets. The positive and significative coefficient of this variable indicates that US firms spend more lobbying in support of trade agreements with larger FTA partners. The positive and significant coefficient of the variable $Export potential of FTA partners_{j,a}$ in column 2 shows that lobbying firms spend more when FTA partners are larger in terms of demand for their final goods. The positive and significant coefficient of the variable $Sourcing potential of FTA partners_{j,a}$ in column 3 indicates that firms spend more in support of trade agreement when the FTA partners are larger in terms of their ability to produce of their inputs. In terms of magnitude, the estimate implies that a 1 percent increase in $GDP of FTA partners_{j,a}$ leads to a 0.3 percent increase in lobbying expenditure. Similarly, a 1 percent increase
in Export potential of FTA partners\textsubscript{j,a} and Sourcing potential of FTA partners\textsubscript{j,a} lead respectively to a 0.25 and a 0.07 percent increase in firms’ lobbying expenditures on trade agreements\textsuperscript{68}

Table 6
Lobbying expenditures on FTAs, variation in the size of FTA partners

<table>
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<tbody>
<tr>
<td>log(GDP of FTA partners\textsubscript{a})</td>
<td>0.308***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0674)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>log(Export potential of FTA partners\textsubscript{j,a})</td>
<td></td>
<td>0.251**</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0848)</td>
<td></td>
</tr>
<tr>
<td>log(Sourcing potential of FTA partners\textsubscript{j,a})</td>
<td></td>
<td></td>
<td>0.075*</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.0385)</td>
</tr>
<tr>
<td>Firm FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>1,819</td>
<td>1,312</td>
<td>1,307</td>
</tr>
<tr>
<td>R\textsuperscript{2}</td>
<td>0.203</td>
<td>0.204</td>
<td>0.228</td>
</tr>
</tbody>
</table>

The table reports the coefficients of OLS regressions. The dependent variable is the log of Lobbying expenditure\textsubscript{f,j,a,t}, the amount that firm \textsubscript{f} producing good \textsubscript{j} spent in year \textsubscript{t} to lobby in support of the ratification of agreement \textsubscript{a}. The FTA controls are constructed using pre-agreement data (for the year of the ratification of agreement \textsubscript{a}). GDP of FTA partners\textsubscript{a} is the GDP of the partner(s) of agreement \textsubscript{a}. Export potential of FTA partners\textsubscript{j,a} is US exports of good \textsubscript{j} to the partner(s) of agreement \textsubscript{a}. Sourcing potential of FTA partners\textsubscript{j,a} is US imports of the inputs of good \textsubscript{j} from the partner(s) of agreement \textsubscript{a}. Significance levels: *; 10%; **: 5%; ***: 1%.

The results of Tables\textsuperscript{4,6} provide strong support for the first prediction of our model, according to which lobbying expenditures in support of the ratification of FTAs should increase in the potential gains that firms can derive from the agreement.

Finally, we assess the validity of the last prediction of our model, according to which pro-FTA firms should spend more lobbying on FTAs when US legislators are less likely to be in favor of their ratification. To this purpose, we regress a firm’s lobbying expenditures against the variables Share of Democrats in Congress\textsubscript{a} and Divided Government\textsubscript{a}, which capture variation in expected political support for FTA ratification\textsuperscript{69}. We also tried including a variable capturing the extent to which US firms suffer from import competition from FTA partners, measured by US imports of good \textsubscript{j} from the partner(s) of agreement \textsubscript{a}. Information to construct this variable is missing for many country-sector. When using this variable, the number of observations is reduced to less than 900 and the coefficient is not significant.

\textsuperscript{68}One may think of using variation in the outcome of ratification votes in Congress to proxy for the political bias in favor or against FTAs: although most agreements were ratified by a sizeable majority, some votes (e.g. ratification of CAFTA) were very close, and in one case (the first FTA negotiated with Columbia) the agreement did not reach the Congress floor because of lack of enough political support. However, vote outcomes reflect firms’ lobbying efforts and are thus not a good proxy for the political bias \textsubscript{B} faced by firms ex-ante (i.e. at the time of their lobbying decisions).
The results are reported in Table 7. In line with prediction P.3, the coefficients of the variable Share of Democrats in Congress, are positive and significant, confirming that firms spend more lobbying in favor of trade agreements when legislators are more likely to be protectionist. The positive and significant coefficients of the variable Divided Government indicate that firms tend to spend more on FTAs when Congress is not politically aligned with the executive and is thus less inclined to ratify trade agreements.

We have performed a series of additional estimations to check the robustness of the results reported in Tables 3-7. In particular, we have verified that these results continue to hold if we use broader (SIC Division-level) or narrower (firm-level) clusters. We have also explored another intensive margin of lobbying, i.e. the number of reports filed by firms. The results are in line with the predictions P.1-P.3: larger firms lobby more often, i.e. file more reports on the same FTA (see
individual firms file more reports when they have more to gain from the agreement, in terms of the reduction in the tariffs on their final goods and their intermediate inputs, the depth of the agreement, and the export and sourcing potential of the FTA partners (see Tables A-5 - A-9) and when US legislators are less likely to be in favor of their ratification (see Table A-10).

7 Conclusion

Recent decades have seen a proliferation of FTAs. This paper shows that large companies have contributed to this surge, spending considerable resources lobbying in favor of these agreements.

Exploitation detailed information from lobbying reports filed under the Lobbying Disclosure Act, we have constructed a unique dataset allowing us to trace all firms’ lobbying expenditures in favor or against FTAs negotiated by the United States. Using this dataset, we have uncovered new facts about firm-level lobbying on trade agreements. The more striking of these facts is that firms that lobby on FTAs are virtually always in favor of their ratification. Moreover, lobbying firms are larger, more likely to be engaged in international trade, and to operate in comparative advantage sectors, relative to non-lobbying firms.

To explain these findings, we have developed a new model on the political economy of trade agreements, in which heterogeneous oligopolistic firms choose whether to be politically organized and how much to spend lobbying in favor or against the ratification of a proposed FTA. In terms of market structure, our model accounts for both intra-industry and inter-industry trade and features selection into exporting (as in Melitz, 2003). The political structure of the model builds on the literature on lobbying/rent-seeking in contests (e.g. Tullock, 1980; Becker, 1983; Esteban and Ray, 2001; Siegel, 2009) and features endogeneous selection into lobbying.

We show that the maximum gains that can be experienced by firms following the entry into force of a FTA are larger than the maximum potential losses. If the fixed cost of being politically organizers are large enough, only those firms that experience the largest gains from the FTA select into lobby. The model thus provides a rationale for the fact that lobbying firms always support the ratification of FTAs. It can also explain why only a few very large firms lobby on trade agreements, why these firms are more likely to be involved in international trade, and why they tend to operate in sectors in which the United States has a large comparative advantage compared to the FTA partners.

The model also delivers predictions about the intensive margin of lobbying. In line with these predictions, we find that larger firms spend more supporting trade agreements, and individual firms spend more when their potential gains from the agreement are larger – in terms of the reduction in the tariffs on their final goods and their intermediate inputs, the depth of the agreement, and the export and sourcing potential of the FTA partners – and when legislators are less likely to be in favor of ratification.
Our results differ from the standard view that protectionist interests dominate lobbying on trade policy. This view is based on theoretical and empirical studies that focus on unilateral and sector-specific trade policies (e.g. Grossman and Helpman, 1994; Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000; Bombardini, 2008). By contrast, FTAs are reciprocal, and thus allow exporting firms to gain better access to consumers in foreign markets. Moreover, given that these agreements eliminate tariffs across all sectors, they can reduce the cost of importing foreign inputs for firms that have global supply chains.

Our findings resonate with Rodrik (2018)’s argument that, in contrast with the standard “political economy perspective that views import-competing interests as the most powerful and dominant architect of trade policy,” “trade agreements are shaped largely by rent-seeking, self-interested behavior of politically well-connected firms on the export side.” They are also in line with recent studies focused on unilateral and sector-specific trade policies, which show that large US firms lobby in favor of tariff reductions, to lower the cost of importing final goods from their foreign affiliates or importing intermediate inputs from foreign suppliers (Blanchard and Matschke, 2015; Kim, 2017; Mayda et al., 2018).

We see this paper as a first step in understanding how lobbying by heterogeneous firms can shape the politics of trade agreements. Our main dataset is based on all lobbying reports that explicitly mention bills for the ratification of FTAs in the US Congress. By this stage, trade agreements have already been negotiated and signed by the executive, so firms can only affect legislators’ decision on their ratification. This is consistent with our theoretical model, in which firms’ lobbying expenditures affect the probability that a proposed FTA is ratified.

An important avenue of future research is to understand the extent to which firms shape the content of trade agreements, using all lobbying reports they filed during the negotiations of FTAs. One could study whether lobbying firms are able to influence the length of the tariff phase-out period or the rules of origin (RoO) contained in FTAs. It would also be interesting to examine whether firms can shape provisions on non-trade issues (e.g. rules on intellectual property rights and investment).

Our analysis shows that lobbying on FTAs has been dominated by a few very large firms, which

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Footnotes:

70 For example, in the case of North American Free Trade Agreement (NAFTA), 23.75 percent of U.S. tariffs were already at 0 before the agreement, 52.5 percent were eliminated immediately, and the remaining tariffs were eliminated after phase out periods ranging between 5 and 15 years (Besedes et al., 2017).

71 This would require collecting detailed information on the RoO contained in each agreement, as done by Conconi et al. (2018) for NAFTA. There is some evidence that during the negotiations of NAFTA firms that were subject to strong import competition (e.g. textile producers) lobbied for stringent RoO on their inputs, while firms that were already dependent on multinational supply chains (e.g. IBM), pushed for lenient RoO (see Chase, 2003).

72 Anecdotal evidence suggests that large corporations are be able to “buy” favorable provisions in trade agreements. For example, in the first quarter of 2012, GlaxoSmithKline spent $2,120,000 lobbying on the “Trans-Pacific Strategic Economic Partnership Agreement (TPP) - provisions related to intellectual property,” among other issues. Other pharmaceutical companies spent considerable amounts lobbying on this agreement. The text of the TPP agreement seems to reflect these lobbying efforts, since it contains various provisions that are particularly favorable to drug manufacturers (e.g. strengthening patent exclusivity, providing protections against bulk government purchasing).
experience large gains as a result of the entry into force of these agreements. By contrast, losing firms have had no voice in the lobbying process, finding it too costly to be politically organized. An interesting avenue of future research is to explore the role of trade unions. As illustrated in Figure A-3, unions have systematically opposed FTAs, though their lobbying expenditures have been dwarfed by the amounts spent by large corporations in support of these agreements. This might help to explain the recent backlash against trade agreements and globalization more generally witnessed in recent years.

References


A 1  Empirical Appendix

A 1.1  Data

Figure A-1
Lobbying expenditures vs campaign contributions (all issues)

The figure reports the total amounts of lobbying expenditures and campaign contributions on all policy issues, between the 105th Congress (1997-1998) and the 114th Congress (2015-2016). The data come from the Center for Responsive Politics (see http://www.OpenSecrets.org).
Figure A-2
Ratification bills of FTAs negotiated by the United States

<table>
<thead>
<tr>
<th>FTA partner</th>
<th>Date of entry Into Force</th>
<th>Bill Number in the House</th>
<th>Bill Number in Senate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jordan</td>
<td>December 17, 2001</td>
<td>H.R.2603</td>
<td>S. 643</td>
</tr>
<tr>
<td>Chile</td>
<td>January 1, 2004</td>
<td>H.R.2738</td>
<td>S. 1416</td>
</tr>
<tr>
<td>Singapore</td>
<td>January 1, 2004</td>
<td>H.R.2739</td>
<td>S. 1417</td>
</tr>
<tr>
<td>Australia</td>
<td>January 1, 2005</td>
<td>H.R.4759</td>
<td>S. 2610</td>
</tr>
<tr>
<td>Morocco</td>
<td>January 1, 2006</td>
<td>H.R.4842</td>
<td>S. 2677</td>
</tr>
<tr>
<td>Bahrain</td>
<td>January 11, 2006</td>
<td>H.R.4340</td>
<td>S. 2027</td>
</tr>
<tr>
<td>CAFTA-DR (El Salvador)</td>
<td>March 1, 2006</td>
<td>H.R.3045</td>
<td>S. 1307</td>
</tr>
<tr>
<td>CAFTA-DR (Honduras)</td>
<td>April 1, 2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAFTA-DR (Nicaragua)</td>
<td>April 1, 2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAFTA-DR (Guatemala)</td>
<td>July 1, 2006</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAFTA-DR (Dominican Rep.)</td>
<td>March 1, 2007</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAFTA-DR (Costa Rica)</td>
<td>January 1, 2009</td>
<td>H.R.3045</td>
<td>S. 1307</td>
</tr>
<tr>
<td>Oman</td>
<td>January 1, 2009</td>
<td>H.R.5684</td>
<td>S. 3569</td>
</tr>
<tr>
<td>Peru</td>
<td>February 1, 2009</td>
<td>H.R.3688</td>
<td>S. 2113</td>
</tr>
<tr>
<td>Colombia (1)</td>
<td>-</td>
<td>H.R.5724</td>
<td>S. 2830</td>
</tr>
<tr>
<td>Korea</td>
<td>March 15, 2012</td>
<td>H.R.3080</td>
<td>S. 1642</td>
</tr>
<tr>
<td>Colombia (2)</td>
<td>May 15, 2012</td>
<td>H.R.3078</td>
<td>S. 1641</td>
</tr>
<tr>
<td>Panama</td>
<td>October 31, 2012</td>
<td>H.R.3079</td>
<td>S. 1643</td>
</tr>
</tbody>
</table>
Table A-1
Descriptive statistics on firms lobbying on FTA ratification bills

<table>
<thead>
<tr>
<th></th>
<th>Observations</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobbying expenditure$_{f,a}$</td>
<td>277</td>
<td>290,555</td>
</tr>
<tr>
<td>Number of reports$_{f,a}$</td>
<td>277</td>
<td>2.899</td>
</tr>
<tr>
<td>Firms lobbying directly$_{f,a}$</td>
<td>193</td>
<td>70.44%</td>
</tr>
<tr>
<td>Firms lobbying indirectly$_{f,a}$</td>
<td>63</td>
<td>22.99%</td>
</tr>
<tr>
<td>Firms lobbying directly and indirectly$_{f,a}$</td>
<td>18</td>
<td>6.57%</td>
</tr>
</tbody>
</table>

The variable *Lobbying expenditure$_{f,a}$* is the total amount (in US dollars) spent by firm $f$ to lobby in support of the ratification of agreement $a$. *Number of Reports$_{f,a}$* is the number of reports filed by by firm $f$ in support of the ratification of agreement $a$. The last three variables are indicators capturing different lobbying modes: *Firms lobbying directly$_{f,a}$* is equal to 1 if firm $f$ lobbies on FTA $a$ through its own lobbying department; *Firms lobbying indirectly$_{f,a}$* is equal to 1 if firm $f$ lobbies on FTA $a$ through a lobbying firm; and *Firms lobbying directly and indirectly$_{f,a}$* is equal to 1 if firm $f$ lobbies on FTA $a$ both through its own lobbying department and through a lobbying firm.
Table A-2
Descriptive statistics, lobbying vs. non-lobbying firms

<table>
<thead>
<tr>
<th></th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lobbying Firms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment$_{f,t}$</td>
<td>251</td>
<td>159.383</td>
<td>339.660</td>
<td>1.252</td>
<td>2,200</td>
</tr>
<tr>
<td>Sales$_{f,t}$</td>
<td>257</td>
<td>63,244.38</td>
<td>86,975.4</td>
<td>329.77</td>
<td>444,948</td>
</tr>
<tr>
<td>Tradable sector$_j$</td>
<td>239</td>
<td>0.678</td>
<td>0.468</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Exporter and/or importer$_{f,t}$</td>
<td>140</td>
<td>0.9928</td>
<td>0.0845</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td><strong>Non-Lobbying Firms</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employment$_{f,t}$</td>
<td>87,296</td>
<td>8.450</td>
<td>36.984</td>
<td>0</td>
<td>2,545</td>
</tr>
<tr>
<td>Sales$_{f,t}$</td>
<td>95,275</td>
<td>2,693.97</td>
<td>12,742.31</td>
<td>-15,009.33</td>
<td>470,171</td>
</tr>
<tr>
<td>Exporter and/or importer$_{f,t}$</td>
<td>21,639</td>
<td>0.7803</td>
<td>0.0845</td>
<td>0</td>
<td>1</td>
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<tr>
<td>Tradable sector$_j$</td>
<td>105,997</td>
<td>0.406</td>
<td>0.491</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Sales$_{f,t}$ is total sales (in millions of US dollars) by firm $f$ in year $t$. Employment$_{f,t}$ is the total number of employees (in thousands) of firm $f$ in year $t$. Exporter and/or importer$_{f,t}$ is a dummy variable equal to 1 if firm $f$ exports and/or imports in year $t$. Tradable sector$_j$ is a dummy equal to 1 the firm operates in a sector $j$ classified as tradable.
Table A-3
Descriptive statistics, determinants of firms’ lobbying expenditures on FTAs

<table>
<thead>
<tr>
<th>Variable</th>
<th>Observations</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lobbying expenditure$_{f,a}$</td>
<td>259</td>
<td>283,207.5</td>
<td>397,399.8</td>
<td>3,333.3</td>
<td>2,770,000</td>
</tr>
<tr>
<td>RCA$_{j,a}$</td>
<td>159</td>
<td>1472.893</td>
<td>17163.12</td>
<td>0.004</td>
<td>216470.4</td>
</tr>
<tr>
<td>Tariff applied by FTA partners on the final good$_{j,a}$</td>
<td>163</td>
<td>33.40</td>
<td>124.32</td>
<td>0</td>
<td>800.3</td>
</tr>
<tr>
<td>Tariff applied by US on inputs$_{j,a}$</td>
<td>155</td>
<td>0.145</td>
<td>0.51</td>
<td>0</td>
<td>3.94</td>
</tr>
<tr>
<td>Tariff applied by US on inputs$_{j,a}$ (unweighted)</td>
<td>155</td>
<td>3.31</td>
<td>9.70</td>
<td>0</td>
<td>70.83</td>
</tr>
<tr>
<td>Tariff applied by US on the final good$_{j,a}$</td>
<td>145</td>
<td>2.71</td>
<td>7.99</td>
<td>0</td>
<td>48.00</td>
</tr>
<tr>
<td>Depth DESTA1$_{a}$</td>
<td>224</td>
<td>6.540</td>
<td>0.526</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>Depth DESTA2$_{a}$</td>
<td>224</td>
<td>2.073</td>
<td>0.120</td>
<td>1.223</td>
<td>2.170</td>
</tr>
<tr>
<td>Depth World Bank$_{a}$</td>
<td>224</td>
<td>59.870</td>
<td>4.474</td>
<td>28</td>
<td>63</td>
</tr>
<tr>
<td>GDP of FTA partners$_{a}$</td>
<td>255</td>
<td>319,990</td>
<td>374,213.2</td>
<td>14,339.97</td>
<td>1,134,795</td>
</tr>
<tr>
<td>Export potential of FTA partners$_{j,a}$</td>
<td>192</td>
<td>4,510.58</td>
<td>5,834.76</td>
<td>0.022</td>
<td>21,719.35</td>
</tr>
<tr>
<td>Sourcing potential of FTA partners$_{j,a}$</td>
<td>155</td>
<td>39.85</td>
<td>129.66</td>
<td>0.000</td>
<td>1,403.77</td>
</tr>
<tr>
<td>Competition from FTA partners$_{j,a}$</td>
<td>141</td>
<td>268.88</td>
<td>1,618.80</td>
<td>0.001</td>
<td>17,453.33</td>
</tr>
<tr>
<td>Share of Democrats in Congress1$_{a}$</td>
<td>256</td>
<td>0.479</td>
<td>0.033</td>
<td>0.456</td>
<td>0.533</td>
</tr>
<tr>
<td>Share of Democrats in Congress2$_{a}$</td>
<td>256</td>
<td>0.482</td>
<td>0.033</td>
<td>0.460</td>
<td>0.537</td>
</tr>
<tr>
<td>Divided Government1$_{a}$</td>
<td>256</td>
<td>0.699</td>
<td>0.460</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Divided Government2$_{a}$</td>
<td>256</td>
<td>0.270</td>
<td>0.445</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

The variable *Lobbying expenditure$_{f,a}$* is the total amount (in US dollars) spent by firm $f$ in support of the ratification of agreement $a$. All the FTA variables are constructed using pre-agreement data, for the year of the ratification of agreement $a$ (with the exception of the depth measures, which are time invariant). *RCA$_{j,a}$* measures the extent to which the United States has a revealed comparative advantage in sector $isj$ relative to the FTA partner(s) of agreement $a$. *Tariff applied by FTA partners on the final good$_{j,a}$* is the maximum SIC4 tariff applied by the partners of agreement $a$ on imports of good $j$ from the US in the year of the ratification of agreement $a$. *Tariff applied by US on inputs$_{j,a}$* is a weighted average of the maximum SIC4 tariff applied by the US on imports of the top 100 inputs of good $j$ from the partners of agreement $a$ (with the IO coefficients used as weights). *Tariff applied by US on inputs$_{j,a}$ (unweighted)* is the average of the maximum SIC4 tariffs applied by the US on imports of the top 100 inputs of good $j$ from the partners of agreement $a$. *Tariff applied by US on the final good$_{j,a}$* is the maximum SIC4 tariff applied by the US on imports of good $j$ from the partners of agreement $a$. *GDP of FTA partners$_{a}$* is the GDP of the partners of agreement $a$ (in millions of US dollars). *Export potential of FTA partners$_{j,a}$* is total US exports (in millions of US dollars) of good $j$ to the partner(s) of agreement $a$. *Sourcing potential of FTA partners$_{j,a}$* is US imports (in millions of US dollars) of good $j$ from the partner(s) of agreement $a$. *GDP of FTA partners$_{a}$* is the GDP of the partners of agreement $a$ (in millions of US dollars). *Depth DESTA1$_{a}$* and *Depth DESTA2$_{a}$* capture the depth of agreement $a$ as measured by Dür et al. (2014). *Depth World Bank$_{a}$* captures the depth of agreement $a$ as measured by Hofmann et al. (2019). *Share of Democrats in Congress1$_{a}$* (Share of Democrats in Congress2$_{a}$) measures the share of congressmen belonging to the Democratic party (including independent congressmen who caucus with the Democrats) in the year of the ratification of agreement $a$. *Divided Government1$_{a}$* (Divided Government2$_{a}$) is a dummy variable equal to 1 if, in the year of the ratification of agreement $a$, one party controls the executive branch, while the other party controls at least one of the houses (both houses) of the legislative branch.
The figure reports total lobbying expenditures in favor and against FTAs by manufacturing firms and firm associations, as well as trade unions, based on all lobbying reports that mention the FTA ratification bills.
Figure A-4
Lobbying reports on US-Korea FTA

The figure reports the number of lobbying reports filed by firms related to the US-Korea FTA.

Figure A-5
Firms’ position on the US-Korea FTA (based on keywords)

The figure reports the share of observations in which firms lobbied in favor or against the US-Korea FTA, based on all lobbying reports related to the agreement filed by firms during the 2000-2011 period.
LOBBYING REPORT
Lobbying Disclosure Act of 1995 (Section 5) - All Filers Are Required To Complete This Page

1. Registrant Name:

DAIMLERCHRYSLER CORP/DAIMLER BENZ OF WASHINGTON

2. Address
1401 H ST #700, WASHINGTON, DC 20035

3. Principal place of business (if different from line 3):
City: ALBURN HILLS  State/Zip or County: MI 48325

4. Contact Name: TIMOTHY MCCRIDE  Telephone: 202-414-6736  E-mail (optional) tim6@daimlerchrysler.com

Senate ID #: 49043-12  House ID #: 34607-000

7. Client Name: ☒ Sell

TYPE OF REPORT
8. Year 2004 ☒ Midyear (January 1 - June 30) ☐ 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: Dec 30, 1999  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: ☒ => Income (nearest $20,000): _______________

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: ☒ => Expenses (nearest $20,000): 2,466,317.00

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 5033(b)(3) of the Internal Revenue Code
☒ Method C. Reporting amounts under section 162(e) of the Internal Revenue Code

Secretary of the Senate
Received: Sep 28, 2004

Clerk of the House of Representatives
Legislative Resource Center
3-106 Cannon Building
Washington, DC 20515

Secretary of the Senate
Office of Public Records
232 Hart Building
Washington, DC 20510
Registar Name: DAIMLERCHRYSLER CORP/DAIMLER BENZ OF WASHINGTON Client Name: Self

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: AUT (one per page)

16. Specific lobbying issues:

17. House(s) of Congress and Federal agencies contacted:
Defense, Dept of (DDO)
Energy, Dept of
Environmental Protection Agency (EPA)
HOUSE OF REPRESENTATIVES
Interior, Dept of (DOI)
National Highway Traffic Safety Administration (NHTSA)
SENATE
Transportation, Dept of (DOT)

18. Name of each individual who acted as a lobbyist in this issue area:
Name: CRAVEN, WILLIAM
Covered Official Position (if applicable): N/A
Name: DAY, BRENDA
Covered Official Position (if applicable): N/A
Name: FELRICE, BARRY
Covered Official Position (if applicable): N/A
Name: FITZGIBBONS, DENNIS
Covered Official Position (if applicable): N/A
Name: MCBRIDE, TIMOTHY
Covered Official Position (if applicable): N/A

19. Interest of each foreign entity in the specific issues listed on line 16 above.
DaimlerChrysler Corporation is a wholly-owned subsidiary of DaimlerChrysler AG which is incorporated in Germany.

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 (one per page)

16. Specific lobbying issues:

17. House(s) of Congress and Federal agencies contacted:
Commerce, Dept of (DOC)
HOUSE OF REPRESENTATIVES
SENATE
State, Dept of (DOS)
U.S. Trade Representative (USTR)

18. Name of each individual who acted as a lobbyist in this issue area:
Name: KISSEL, MARIE
Covered Official Position (if applicable): N/A
Name: MCBRIDE, TIMOTHY
Covered Official Position (if applicable): N/A
Name: MOLINAR, YANCY
Covered Official Position (if applicable): N/A

19. Interest of each foreign entity in the specific issues listed on line 16 above.
DaimlerChrysler Corporation is a wholly-owned subsidiary of DaimlerChrysler AG which is incorporated in Germany.

Signature: ON FILE  Date: Sep 20, 2004
Printed Name and Title: JAKE JONES - SENIOR MANAGER - LEGISLATIVE AFFAIRS
Figure A-7
Lobbying Report (Example 2)

| 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 |


LOBBYING REPORT

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

1. Registrant Name  Organization/Lobbying Firm  Self Employed Individual
PMI Global Services Inc.

2. Address
Address 1  700 13th Street, NW
Address 2  Suite 325
City  Washington  State  DC  Zip Code  20005  Country  USA

3. Principal place of business (if different than line 2)
City  New York  State  NY  Zip Code  10017  Country  USA

4a. Contact Name  Ms. Beverly Mckittrick
b. Telephone Number  2024952661
c. E-mail beverly.mckittrick@pmintl.com

5. Senate ID#: 400265213-12

7. Client Name  Self  Check if client is a state or local government or instrumentality

PMI Global Services Inc.

6. House ID#: 401470000

TYPE OF REPORT
8. Year: 2008
9. Check if this filing amends a previously filed version of this report
10. Check if this is a Termination Report
11. No Lobbying Issue Activity

Termination Date

INCOME OR EXPENSES - YOU MUST complete either Line 12 or Line 13

12. Lobbying
INCOME relating to lobbying activities for this reporting period was:
- Less than $5,000
- $5,000 or more

Provide a good faith estimate, rounded to the nearest $10,000, 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
EXPENSE relating to lobbying activities for this reporting period were:
- Less than $5,000
- $5,000 or more

EXPENSE: $1,020,000.00

14. REPORTING 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

Signature  Digitally Signed By: Beverly Mckittrick, Director, U.S. Government Affairs
Date  10/20/2008

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. Add additional page(s) as needed.

15. General issue area code TRD

16. Specific lobbying issues

HR 5724/S 2830 - United States-Colombia Trade Promotion Agreement Implementation Act; To implement the United States - Colombia Trade Promotion Agreement; enactment of entire bill

17. House(s) of Congress and Federal agencies  Check if None

U.S. SENATE, U.S. HOUSE OF REPRESENTATIVES

59
Figure A-8
Lobbying Report (Example 3)

LOBBYING REPORT

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

1. Registrant Name: Organization/Lobbying Firm
   UNITED STATES STEEL CORPORATION
   Self Employed Individual

2. Address
   Address1: 901 K Street, NW
   Address2: Suite 1250
   City: WASHINGTON
   State: DC
   Zip Code: 20001
   Country: USA

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

4a. Contact Name
    b. Telephone Number
    c. E-mail
    Mr. Thomas M. Snearinger
    2027836333
    jwlinsey@usa.com

5. Senate ID# 71553-12

7. Client Name
   ✔ Self
   ✔ Check if client is a state or local government or instrumentality
   UNITED STATES STEEL CORPORATION

6. House ID# 35804000

TYPE OF REPORT
8. Year 2011
   Q1 (1/1 - 3/31) ☐
   Q2 (4/1 - 6/30) ☐
   Q3 (7/1 - 9/30) ☐
   Q4 (10/1 - 12/31) ☒

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 Issue Activity ☐

INCOME OR EXPENSES - YOU MUST complete either Line 12 or Line 13

12. Lobbying

   INCOME relating to lobbying activities for this reporting period was:
   Les than $5,000 ☐
   $5,000 or more ☒ $

   Provide a good faith estimate, rounded to the nearest $10,000, 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

   EXPENSE relating to lobbying activities for this reporting period were:
   Less than $5,000 ☐
   $5,000 or more ☒ $800,000.00

14. REPORTING 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(c) of the Internal Revenue Code

Signature
Digitally Signed By: Thomas M. Snearinger, Managing Director - Federal Governmental Affairs
Date: 10/14/2011

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. Add additional page(s) as needed.

15. General issue area code TRD

16. Specific lobbying issues

   Implementation and enforcement of U.S. trade laws as follows: H.R.639, Currency Reform for Fair Trade Act
   S.126, Currency Reform for Fair Trade Act
   H.R.1259, Congressional Made in America Promise Act of 2011
   S.1619, Currency Exchange Rate Oversight Reform Act, entire bill.
   H.R.3080, United States - Korea Free Trade Agreement, entire bill.

17. House(s) of Congress and Federal agencies ☐ Check If None

U.S. HOUSE OF REPRESENTATIVES, U.S. SENATE

60
## A-2 Robustness Checks

### Table A-4

Number of reports on FTAs, variation in firm size

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log ((Sales_{f,t}))</td>
<td>0.035*</td>
<td>0.039*</td>
<td>0.040**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0174)</td>
<td>(0.0189)</td>
<td>(0.0151)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>log ((Employment_{f,t}))</td>
<td>0.042**</td>
<td>0.053**</td>
<td>0.058***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0135)</td>
<td>(0.0201)</td>
<td>(0.0131)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FTA FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Industry FE (SIC1)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Industry FE (SIC2)</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
<td>1,731</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.074</td>
<td>0.075</td>
<td>0.078</td>
<td>0.080</td>
<td>0.099</td>
</tr>
</tbody>
</table>

The table reports the coefficients of OLS regressions. The dependent variable is the log of \(Reports_{f,j,a,t}\), the number of reports filed by firm \(f\) producing good \(j\) in year \(t\) to lobby in support of the ratification of agreement \(a\). The variable \(Sales_{f,t}\) is total sales by firm \(f\) in year \(t\), while \(Employment_{f,t}\) is the total number of employees of firm \(f\) in year \(t\). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.

### Table A-5

Number of reports on FTAs, variation in pre-agreement tariffs

<table>
<thead>
<tr>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(Tariff applied by FTA partners on the final good (j,a))</td>
<td>0.054***</td>
<td>0.084*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0060)</td>
<td>(0.0166)</td>
<td></td>
</tr>
<tr>
<td>log(Tariff applied by US on inputs (j,a))</td>
<td>0.422***</td>
<td>0.678***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0154)</td>
<td>(0.0510)</td>
<td></td>
</tr>
<tr>
<td>log(Tariff applied by US on the final good (j,a))</td>
<td>-0.008</td>
<td>-0.010</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0192)</td>
<td>(0.0398)</td>
<td></td>
</tr>
<tr>
<td>Firm FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>1,151</td>
<td>1,299</td>
<td>892</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.188</td>
<td>0.207</td>
<td>0.213</td>
</tr>
</tbody>
</table>

The table reports the coefficients of OLS regressions. The dependent variable \(Reports_{f,j,a,t}\), is the number of reports filed by firm \(f\) producing good \(j\) in year \(t\) to lobby in support of the ratification of agreement \(a\). The tariff variables are constructed using pre-agreement data (for the year of the ratification of agreement \(a\)). \(Tariff\) applied by FTA partners on final good \(j,a\) is the tariff applied by the partners of FTA agreement \(a\) on imports of good \(j\) from the US. \(Tariff\) applied by US on inputs \(j,a\) is the average tariff applied by the US on imports from partners of agreement \(a\) of the inputs necessary to make good \(j\). \(Tariff\) applied by US on final good \(j,a\) is the tariff applied by the US on imports of good \(j\) from partners of agreement \(a\). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.
Table A-8
Number of reports on FTAs, variation in the depth of the agreements

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depth DESTA1_a</td>
<td>0.024**</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0083)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth DESTA2_a</td>
<td>0.622***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1046)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depth World Bank_a</td>
<td>0.021***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0053)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Firm FE     Yes  Yes  Yes
Year FE     Yes  Yes  Yes
N           1,732 1,732 1,732
R\(^2\)      0.198 0.202 0.205

The table reports the coefficients of OLS regressions. The dependent variable is the log of \(\text{Reports}_{f,a,t}\), the number of reports filed by firm \(f\) in year \(t\) to lobby in support of the ratification of agreement \(a\). \(\text{Depth DESTA1}\_a\) and \(\text{Depth DESTA2}\_a\) measure the depth of agreement \(a\) as measured by Dürr et al. (2014). \(\text{Depth World Bank}\_a\) measures the depth of agreement \(a\) as measured by Hofmann et al. (2019). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.
### Table A-9
Number of reports on FTAs, variation in the size of FTA partners

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(GDP of FTA partners&lt;sub&gt;a&lt;/sub&gt;)</td>
<td>0.049***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0108)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>log(Export potential of FTA partners&lt;sub&gt;j,a&lt;/sub&gt;)</td>
<td></td>
<td>0.041*</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0158)</td>
<td></td>
</tr>
<tr>
<td>log(Sourcing potential of FTA partners&lt;sub&gt;j,a&lt;/sub&gt;)</td>
<td></td>
<td>0.012</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0068)</td>
<td></td>
</tr>
</tbody>
</table>

| Firm FE | Yes | Yes | Yes |
| Year FE | Yes | Yes | Yes |
| N       | 1,819 | 1,312 | 1,307 |
| R<sup>2</sup> | 0.176 | 0.186 | 0.203 |

The table reports the coefficients of OLS regressions. The dependent variable is the log of \( Reports_{f,j,a,t} \), the number of reports filed by firm \( f \) producing good \( j \) in year \( t \) to lobby in support of the ratification of agreement \( a \). The FTA controls are constructed using pre-agreement data (for the year of the ratification of agreement \( a \)). \( GDP \) of FTA \( a \) is the GDP of the partner(s) of agreement \( a \). \( Export \) potential of FTA \( j,a \) is US exports of good \( j \) to the partner(s) of agreement \( a \). \( Sourcing \) potential of FTA \( j,a \) is US imports of the inputs of good \( j \) from the partner(s) of agreement \( a \). Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *; 10%; **; 5%; ***; 1%.
<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of Democrats in Congress1(a)</td>
<td>2.606***</td>
<td>2.733***</td>
<td>0.214***</td>
<td>0.303***</td>
</tr>
<tr>
<td></td>
<td>(0.7153)</td>
<td>(0.7044)</td>
<td>(0.0539)</td>
<td>(0.0576)</td>
</tr>
<tr>
<td>Divided Government1(a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.214***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0539)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Divided Government2(a)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.303***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0576)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Firm FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Year FE</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>N</td>
<td>1,821</td>
<td>1,821</td>
<td>1,821</td>
<td>1,821</td>
</tr>
<tr>
<td>R(^2)</td>
<td>0.097</td>
<td>0.098</td>
<td>0.110</td>
<td>0.111</td>
</tr>
</tbody>
</table>

The table reports the coefficients of OLS regressions. The dependent variable is the log of \(Reports_{f,j,a,t}\), the number of reports filed by firm \(f\) producing good \(j\) in year \(t\) to lobby in support of the ratification of agreement \(a\). \(Share\ of\ Democrats\ in\ Congress1_{a}\) (\(Share\ of\ Democrats\ in\ Congress2_{a}\)) measures the share of congressmen belonging to the Democratic party (including independent congressmen who caucus with the Democrats) in year \(t\) (the year in which US congressmen have voted on the ratification of agreement \(a\)). \(Divided\ Government1_{a}\) (\(Divided\ Government2_{a}\)) is a dummy variable equal to 1 if in year \(t\) one party controls the executive branch, while the other party controls at least one of the houses (both houses) of the legislative branch. Standard errors in parenthesis clustered at the SIC1 level. Significance levels: *: 10%; **: 5%; ***: 1%.
A 2 Theoretical Appendix

Figure A 2
Distribution of Productivity of Home Firms in Sector \( j \)

A 2.1 Mixed Market Structure

Our benchmark model features heterogeneous oligopolistic firms. In this section, we show that our main results continue to hold if we consider a mixed market structure, in which a few large (oligopolistic) firms coexist with a continuum of small (monopolistically competitive) firms.

This alternative market structure is characterized by two key features. First, oligopolistic firms have mass and can thus affect both market and policy outcomes, while monopolistically competitive firms have no mass and are thus inconsequential. As a result, only oligopolistic firms have incentives to select into lobbying. Second, the fringe of monopolistically competitive firms absorbs the negative impact of FTAs due to the increased competition in the domestic market. As a result, oligopolistic firms always gain from trade agreements (their domestic profits are unaffected and their foreign profits increase). In this setting, the endogenous set of lobbying firms will only contain winners from the FTA (i.e., \( \Omega_P \subset \Omega_L \)), even in the absence of fixed lobbying costs.

A mixed market structure can thus rationalize our main empirical findings that virtually all firms lobbying on FTA support their ratification (Fact 1). It can also rationalize our findings that lobbying firms are larger and more likely to be involved in international trade than non-lobbying firms (Facts 2 and 3). Finally, using mixed market structure delivers the same predictions about the intensive margin of lobbying (Predictions P.1-P.3), for which we find strong empirical support in Section 6.

65
Closed Economy

As in our benchmark model, the economy involves an homogeneous good produced under constant returns to scale and perfect competition and multiple $J$ sectors characterized by a mixed market structure. In what follows, we focus our analysis on one of these sectors.

In each sector $j$, there are $N_j$ large firms with mass $\omega_{ji}$ and a continuum of small, monopolistically competitive, firms $M_j$, so that the (weighted) mass of varieties is $|V_j| \equiv \sum_{i=1}^{N_j} \omega_{ji} + M_j$. We will interpret a large firm as a producer of a single-variety $i$, which enters consumers’ utility with a mass point (as in Shimomura and Thisse, 2012)\(^73\).

Firm $i$ faces a linear inverse demand\(^74\)

$$p_{ji} = \alpha - \beta x_{ji} - X_j$$

where

$$\int_{V_j} x_{ji}di = \sum_{i=1}^{N_j} \omega_{ji}x_{ji} + \int_0^{M_j} x_{jm}dm.$$

Large firms may differ in their marginal cost of production $c_{ji} \leq c_j$ where $c_j$ is the marginal cost of production of small firms in sector $j$. Firms pay a fixed per-period production cost $F$ for their product. This cost is negligible for large firms (i.e., of mass zero in their overall cost) reflecting their economies of scope. Firms are assumed to be quantity-setters and compete in a Cournot-Nash fashion\(^75\).

Large and small firms maximize their profits given respectively by $\Pi_{ji} = (p_{ji} - c_{ji})\omega_{ji}x_{ji}$ and $\pi_{jm} = (p_{jm} - c_j)x_{jm} - F$.

The pricing rule of small firms is identical to the one in Melitz and Ottaviano (2008):

$$p_{jm} - c_j = \frac{1}{2}(\alpha - X_j - c_j).$$

Large firms on the other hand internalize their impact on $X_j$ leading to

$$p_{ji} - c_{ji} = \frac{1}{2}(\alpha + Q_{ji} - X_j - c_{ji}), \quad \text{with} \quad Q_{ji} = \omega_{ji}x_{ji}.$$

Note that, if $c_{ji} = c_j$, then a large firm would set a higher price, generating more value-added per output. This is because large firms can afford to set higher markups since they have a non-negligible market share. More productive firms (i.e. $c_{ji} < c_j$) may set a lower price if their cost-advantage

---

\(^73\)Since the endogenous determination of the product scope of a large firm is not of primary interest here, we consider large firms as single-product firms facing a demand with positive mass. Alternatively, we could interpret a large firm as a multi-product firm supplying a continuum of products of mass $\omega_{ji}$ (as in Parenti, 2018).

\(^74\)We can obtain the same results under alternative demand functions (see extensions to directly additive preferences (including CES) in Parenti, 2018).

\(^75\)The results continue to hold if firms compete in prices rather than quantities. Under Bertrand competition, the value of total demand remains constant, since it is still pinned down by the free-entry condition of small firms of equation (19). Under linear demand, the game remains aggregative in firms’ strategic variables (i.e. prices).
offsets their larger markup.

Total output of firm $i$ in sector $j$ is given by

$$Q_{ji} = \frac{\omega_{ji} (\alpha - c_{ji} - X_j)}{2\beta + \omega_{ji}},$$

while output of small firms is

$$q_{jm} = \frac{\alpha - c_j - X_j}{2\beta}.$$

Large firms make strictly positive profits $\Pi_{ji} \equiv \left(\frac{\omega_{ji}}{2\beta + \omega_{ji}}\right)^2 (\alpha - c_{ji} - X_j)^2$ while small firms’ equilibrium profits are driven down to zero by the free-entry condition:

$$\pi_{jm} = (p_{jm} - c_j) x_{jm} - F = 0. \quad (19)$$

Small firms thus act as a buffer: they adjust to competition through entry and exit, so that their profits are always equal to zero. Condition (19) determines the aggregate consumption in sector $j$:

$$X_j = \frac{\alpha - c_j - \sqrt{4BF}}{2}. \quad (20)$$

**Open Economy**

Firms in one country can serve consumers in the other country, but face fixed cost $F_X$ and per-unit tariffs $\tau_j$ to export.

The presence of these trade frictions generates selection into exporting. In particular, the fixed exporting costs $F_X$ imply that only large firms — for which these costs are negligible (i.e., mass zero in their overall cost) — find it profitable to export. Profits of a large firm of mass $\omega_{ji}$ are then given by

$$\Pi_{ji} = \left(\frac{\omega_{ji}}{2\beta + \omega_{ji}}\right)^2 \left((\alpha - c_{ji} - X_j)^2 + (\alpha - c_{ji} - \tau_j - X_j)^2\right). \quad (21)$$

A reduction in industry’s $j$ tariffs $\tau_j$ always benefits large firms, particularly firms with a larger mass (higher $\omega$) or a higher productivity (lower $c$):

$$\frac{\partial \Pi_{ji}}{\partial \tau_j} = -2 \left(\frac{\omega_{ji}}{2\beta + \omega_{ji}}\right)^2 (\alpha - c_{ji} - \tau_j - X_j). \quad (22)$$

Denoting $\Delta \Pi_{ji}$ the change in the overall profits of a large firm $i$ in sector $j$ resulting from a FTA, we can see that larger and more productive firms benefit more from a given FTA ($\Delta \Pi_{ji}$ increases in $\omega_{ji}$ and decreases in $c$). Moreover, a given firm benefits more from a FTA the higher is the pre-agreement tariff ($\Delta \Pi_{ji}$ increases in $\tau_j$) and the larger is the foreign market ($\Delta \Pi_{ji}$ increases in $\alpha$).

Using a mixed market structure can thus provide a rationale for the empirical findings documented in Section 4. Large firms always benefit from trade agreements and thus always lobby in
favor of FTA ratification. By contrast, small firms do not lobby, since their individual actions have no impact on policy outcomes.

A 2.2 Monopolistic Competition

In this section, we consider the case of a single sector, with a monopolistically competitive market structure featuring heterogeneous firms à la Melitz (2003). We make two additional assumptions: first, when they decide to enter, firms do not anticipate the trade agreements that will be negotiated in the future; second, the distribution of firm productivity has an unbounded right tail (e.g. Pareto, lognormal).

For all firms in the Home country, selling a variety domestically comes at a fixed cost $F_D$, while exporting it to Foreign requires a fixed cost $F_X$ and variable trade costs which consist of an ad-valorem tariff $t$.

Consumers have quasi-linear CES preferences, with the lower tier given by

$$U(x) = \frac{\sigma}{\sigma - 1} \ln \left( \int_V x_i^{\frac{\sigma - 1}{\sigma}} \, di \right),$$

where $\sigma > 1$ is the elasticity of substitution. We assume that $F_X > F_D(1 + t)^{1-\sigma}$, implying that only the most productive firms export, even in the absence of tariffs. We focus on the case in which the two countries are symmetric in terms of demand and distribution of firms, though the extension to asymmetric countries is straightforward under quasi-linear preferences. Each firm $i$ set its (f.o.b.) price

$$p_i = c_i / \rho \quad \text{where,} \quad \rho = \frac{\sigma - 1}{\sigma}$$

and its profits are given by

$$\Pi_i = \frac{1}{\sigma} \left( \frac{\rho P}{c_i} \right)^{\sigma - 1} - F_D + \left( \frac{1}{\sigma} \left( \frac{\rho P}{c_i (1 + t)} \right)^{\sigma - 1} - F_X \right) 1_X(i), \quad (23)$$

where $P$ denotes the price index at home and abroad $P = (\int_V p_i^{1-\sigma} \, di)^{\frac{1}{1-\sigma}}$ and $1_X(i) = 1$ if firm $n$ decides to export.

The above equation defines cutoffs $c_D(t)$ and $c_X(t)$, which denote the marginal costs of the least productive domestic and exporting firms, respectively.

The Impact of a Trade Agreement

The intensity of competition is entirely captured by the price index $P$, which is itself pinned down by the free-entry condition:

$$E[\Pi_i] = F_E.$$
By the envelope theorem, a decrease in $t$ unambiguously decreases the price index, leading to an increase in the intensity of competition in both markets.

A FTA leads to the elimination of tariffs, i.e. $t = 0$. Non-exporting firms unambiguously lose from the trade agreement, with the maximum loss incurred by the most productive domestic firm. In the standard case (in which $c_X$ is a decreasing function of $t$), this is identified by the cutoff $c_X(1)$, implying that the largest loss is incurred by the most productive domestic firm after the entry into force of the FTA:

$$\Delta \Pi_L \equiv \frac{F_D^2}{F_X} (1 + t)^{\sigma-1} \left( 1 - \left( \frac{c_D(1 + t)}{c_D(1)} \right)^{\sigma-1} \right) < 0.$$ 

As expected, the higher is the initial tariff $t$, the higher the loss.$^{76}$

By contrast, exporting firms always gain from the entry into force of a FTA. For these firms, the negative effect of the trade agreement resulting from the increase in competition in the domestic market is more than offset by the increased access to the foreign market. Formally, $P^{\sigma-1} (1 + (1 + t)^{1-\sigma})$ is a decreasing function of $t$.$^{77}$

## The Political Game and Selection into Lobbying

In the subsection above, we have shown that in a standard model of monopolistic competition more productive firms select into trade and gain from a FTA, while less productive firms serve only the domestic market and lose from the agreement.

Lobbying requires paying a fixed cost $F_L$. Each firm chooses its lobbying expenditure $l_f$ to maximize the following objective function:

$$\mathbb{E}[P(1, B)] \cdot \mathbb{E}[P^*(1^*, B^*)] \cdot \Delta \Pi_f - \frac{l_f^2}{2} - 1_{l_f > 0} \cdot F_L,$$  \hspace{1cm} (24)

where $P$ and $P^*$ are the probabilities that the FTA is ratified in the Home and Foreign country, which depend on firms’ lobbying expenditures and on the political bias in each country (see equation [9]). Risk neutral firms maximize the expected payoff from lobbying, taking into account the expected probability that the agreement enters into force.

Assuming a continuum of firms, as in standard models of monopolistic competition like Melitz (2003), implies that each individual firm has no impact on the probability that the agreement is ratified. Formally, the probability of Home ratification in the presence of a continuum of firms can

$^{76}$To get closed-form solutions, one can assume that firm productivities are drawn from a Pareto distribution so

$$G(\varphi) = 1 - \left( \frac{\varphi_{\text{min}}}{\varphi} \right)^k,$$

where $\varphi_{\text{min}} > 0$ and $k \geq 1$.

$^{77}$Only firms that start exporting following the entry into force of the agreement may be hurt from its ratification, since they have to incur the fixed exporting costs (see Melitz and Redding, 2014).
be written as

$$P(l, B) = \frac{\int_{\Omega_p} l f df + B^+}{\int_{\Omega_p} l f df + \int_{\Omega_A} l f df + |B|},$$

(25)

where $\Omega_p$ and $\Omega_a$ represent the set of lobbying firms respectively in favor and against the agreement. Notice that, in this setting, individual firms are inconsequential, since their lobbying expenditures are negligible in the aggregate, leaving $P(l, B)$ unchanged.

To rationalize lobbying by individual firms, we could assume that the continuum is only an approximation and that firms do internalize their impact on the probability of ratification. However, this assumption would imply that firms are somewhat “schizophrenic”, i.e. they take into account their impact on political outcomes (the probability of FTA ratification), but do not internalize their impact on market outcomes (the price index). If instead they do internalize their impact on market and political outcomes, we are back to the pure oligopoly model considered in our benchmark model.

If we allow this schizophrenic behavior to retain the tractability of the standard Melitz model, we can rationalize the empirical finding that lobbying firms are always in favor of FTA ratification (Fact 1), if the fixed cost of lobbying are large enough. The following condition guarantees that firms that lose from the FTA do not lobby:

$$P'_1(L) \approx \frac{B^-}{(L + |B|)^2} > 0.$$

Among the firms that gain from the agreement, it is clear from (24) that firms who benefit the most from the ratification are those who have the highest willingness to lobby. There is a perfect sorting of firms along their productivity (or equivalently, size or profits) into lobbying.\(^{78}\)

We can denote by $c_L < c_X$ the marginal cost of production of the smallest firm that chooses to lobby. We need to prove that such a partition $[0, c_L]$ of firms into lobbying can be an equilibrium. Because the overall equilibrium contributions $L$ increases in the mass of firms who lobby (as shown in the baseline model), the expected probability that the FTA is ratified is an increasing function of the cutoff $c_L$, while the expected gains for the cutoff firm $c_L$ is decreasing. Since $E[P]$ is bounded between $\left[ E \left[ \frac{B^+}{|B|} \right] ; 1 \right]$, and under the assumption that the right tail of the distribution of firm productivities is unbounded, the expected returns to lobbying can be arbitrarily large. Given that the payoff of the marginal firm is continuous in $c_L$, the existence of an equilibrium is guaranteed.\(^{79}\)

To summarize, a monopolistically competitive market structure can only rationalize lobbying by individual firms on trade agreements if we are willing to treat firms differently in the market place and in the political arena. In the words of Neary (2016), we would need to assume that firms

\(^{78}\) Under the assumption of monopolistic competition, the proof is trivial. With a discrete number of firms: if a firm finds it profitable to lobby, then a firm which is more productive finds it also profitable to lobby as its contribution raises the profit of the incumbent. Because it is more productive, its return to lobbying is necessarily higher than the one of the incumbent and therefore above the fixed cost of lobbying.

\(^{79}\) The expected return to lobbying depends on the functional form of the distribution of the bias $B$ and does not need to be monotonic in the cutoff (i.e. there might be more than one equilibrium partition of firms).
are “small in the small” (at the sectoral level), but “big in the big” (at the economy-wide level).

A 2.3 Microfoundations of Contest Success Function

The probability that the FTA is ratified can be micro-founded using a discrete choice model in which firms choose between two alternatives – lobbying in favor or against the ratification of a FTA. The outcome is not deterministic, however, because there is some noise associated to each side’s performance (Jia et al., 2013). The effectiveness of lobbying is captured below by \( \varepsilon_a \) and \( \varepsilon_p \) respectively (which are i.i.d. and follow a type 1 extreme value distribution). To this standard approach, we add that the government may be biased towards one group. This bias is not known by each group and is captured by a random variable \( B \). When the government has a positive bias \( B \), it is as if the overall contribution of the group in favor of the FTA was augmented by \( B \). On the contrary, when the bias is negative, it increases the contribution of the other group by \( B - |B| > 0 \).

Overall, the probability that the FTA is ratified in one country conditional on the bias \( B \) is then given by

\[
P(l, B) = P \left( \ln \left( \sum_\Omega l_i + B^+ \right) + \varepsilon_p > \ln \left( \sum_\Omega l_i + B^- \right) + \varepsilon_a \right) = \frac{\sum_\Omega l_i + B^+}{\sum_\Omega l_i + \sum_\Omega l_i + |B|}.
\]

A 2.4 Proof of Existence of Symmetric Equilibrium

We have shown that the total amount of contributions in the domestic country is given by

\[
P(B < 0) \mathbb{E}_{B < 0} \left[ \frac{-B}{\left( \sum_\Omega \hat{l}_f - B \right)^2} \right] \cdot \mathbb{E}[P^*] \cdot \left( \sum_\Omega \Delta \Pi_f \right) = \sum_\Omega \hat{l}_f.
\]

By symmetry, the overall amount of contributions in the Foreign country can be expressed as follows

\[
P(B^* < 0) \mathbb{E}_{B^* < 0} \left[ \frac{-B^*}{\left( \sum_\Omega \hat{l}_f^* - B^* \right)^2} \right] \cdot \mathbb{E}[P^*] \cdot \left( \sum_\Omega \Delta \Pi_f^* \right) = \sum_\Omega \hat{l}_f^*.
\]

Expanding the expectation terms \( \mathbb{E}[P^*] \) and \( \mathbb{E}[P] \) leads to:

\[
P(B < 0) \mathbb{E}_{B < 0} \left[ \frac{-B}{\left( \hat{\lambda} - B \right)^2} \right] \cdot \left( \mathbb{P}(B^* < 0) \cdot \mathbb{E}_{B^* < 0} \left[ \frac{\hat{\lambda}^*}{\hat{\lambda}_* - B^*} \right] + \mathbb{P}(B^* \geq 0) \right) \cdot \left( \sum_\Omega \Delta \Pi_f \right) = \hat{\lambda},
\]

Bernard, Redding and Schott (2011) consider a model of monopolistic competition with large multi-product firms, which supply a continuum of products. There is, however, a continuum of such firms, so their individual actions would still have no impact on political outcomes.
\[ P(B^* < 0) \mathbb{E}_{B < 0} \left[ \frac{-B^*}{(\hat{L}^* - B^*)^2} \right] \cdot \left( P(B < 0) \cdot \mathbb{E}_{B < 0} \left[ \frac{\hat{L}}{\hat{L} - B} \right] + P(B \geq 0) \right) \cdot \left( \sum_{\Omega_f} \Delta \Pi_f \right) = \hat{L}^*. \]

A first remark is that \((0, \hat{L}^*)\) or \((\hat{L}, 0)\) cannot be equilibria so if an equilibrium exists, it features a strictly positive amount of overall contributions in both countries, i.e. \((\mathcal{L}, \mathcal{L}^*)\) are strictly positive. Second, from these two equations it can be seen that the aggregate best-responses are strategic complements: the larger the total contributions abroad, the larger the domestic contributions will be overall.

The assumption of symmetric countries with the same distribution of the bias implies that \(P(B < 0) = P(B^* < 0)\) and \(\mathbb{E}_{B < 0} \left[ \frac{\hat{L}}{\hat{L} - B} \right] = \mathbb{E}_{B^* < 0} \left[ \frac{\hat{L}}{\hat{L} - B^*} \right] \). We can then prove that a symmetric equilibrium exist. Setting \(\hat{L} = \hat{L}^*\) in the above equations leads to

\[ P(B < 0) \mathbb{E}_{B < 0} \left[ \frac{-B}{(\hat{L} - B)^2} \right] \left( P(B < 0) \cdot \mathbb{E}_{B < 0} \left[ \frac{\hat{L}}{\hat{L} - B} \right] + P(B \geq 0) \right) \left( \sum_{\Omega_f} \Delta \Pi_f \right) = \hat{L}. \]

The left hand side is a function of \(\hat{L}\) that takes on a strictly positive value in 0, is continuous, positive on \(\mathbb{R}_+\) and converges to zero asymptotically. It must intersect at least once the right hand side, which proves the existence of a symmetric equilibrium.

### A 2.5 Complementarity between Returns to Lobbying and Gains from the FTA

For simplicity, we set \(\alpha_f = \Delta \Pi_f \mathbb{E}[P^*(\mathcal{L}^*, B^*)]\) and \(f(\mathcal{L}) = P(B < 0) \mathbb{E}_{B < 0} [P(\mathcal{L}, B)]\). At equilibrium, each firm’s lobbying expenditure is given by \(\hat{l}_f = \alpha_f f'(\hat{L})\) so that the net return to lobbying for firm \(i\) is given by \(\alpha_f \left( f(\hat{L}) + P(B > 0) \right) - \frac{\alpha^2 f'(\hat{L})^2}{2}\).

This is increasing between \([0, \alpha^*]\) where \(\alpha^* = \left( f(\hat{L}) + P(B > 0) \right) / f'(\hat{L})^2\). Comparing firms \(f\) and \(f'\) such that \(\alpha_f < \alpha_{f'} \leq \alpha^*\), it is then clear that firm \(f'\) net return to lobbying at equilibrium is larger, since its gain from the FTA \(\Delta \Pi_{f'}\) is higher.

To conclude the argument, we simply need to show that \(\alpha_f \leq \alpha^*\ \forall f \in \Omega_f\). Now, because \(f(\mathcal{L})\) is increasing, and concave with \(f(0) = 0\), we have

\[ f(\hat{L}) > \hat{L} f'(\hat{L}). \]

Combining this inequality with the first-order condition for a lobbying firm \(f\), i.e. \(\alpha_f f'(\hat{L}) = \hat{l}_f < \hat{L}\), ends the proof.
A 2.6 Lobbying Expenditures under Coordination

If pro-FTA lobbying firms were able to coordinate to maximize their joint surplus, their objective function would become

\[ E[P(L,B)] \cdot E[P^*(L',B')] \cdot \sum_{\Omega_L'} \left( \Delta \Pi_f - \frac{i_f^2}{2} \right). \]

Notice that the endogenous set of lobbying firms \( (\Omega_L') \) is larger than when firms lobby individually \( (\Omega_L) \), since under coordination more firms can afford to pay the fixed cost \( F_L \).

Since the opportunity cost of lobbying is the same across firms, optimal contributions are necessarily equalized across firms \( \hat{l}_f = \frac{\hat{L}}{|\Omega_L'|} \). Maximizing the above function with respect to the overall amount of contributions \( L \) leads to

\[ \mathbb{P}(B < 0) \mathbb{E}_{B < 0} \left[ \frac{-B}{(L - B)^2} \right] \cdot \mathbb{E} [P^*] \cdot \left( \sum_{\Omega_L'} \Delta \Pi_f \right) = \frac{\hat{L}}{|\Omega_L'|}. \]

This yields a direct comparison with the non-cooperative case given by equation (14), where total profits are replaced with \( |\Omega_L'| \left( \sum_{\Omega_L'} \Delta \Pi_f \right) \).

A 2.7 Shifts in the Distribution of the Political Bias

A distributional shift that leaves unchanged the distribution of the political bias when it’s negative can be achieved through various means, but for simplicity, it may be useful to think of right truncations at strictly positive values on the distribution of \( B \). Specifically, if the support of \( B \) is \( (\bar{b}, \tilde{b}) \), the new political bias is described by \( \tilde{B} \) which is a truncation of \( B \) defined on \( (\bar{b}, \tilde{b}) \) where \( \tilde{b} < \bar{b} \). By construction, the conditional expected probabilities that the FTA is ratified are the same whether the political bias is \( B \) or \( \tilde{B} \). Indeed, conditional on \( \tilde{B} > 0 \), the expected probability of ratification remains equal to 1. Conditional upon \( \tilde{B} < 0 \), the expected probability of ratification remains equal to \( \mathbb{E}_{B < 0} \left[ \frac{C}{L - B} \right] \equiv \mathbb{E}_{\tilde{B} < 0} \left[ \frac{C}{L - B} \right] \forall L > 0 \). Consequently, only the probability that the bias is positive (or negative) impacts the expected probability of ratification for a given \( L \).

\(^{81}\) Notice that the assumption of joint surplus implies transfers from large to small firms. Effective payments made by larger firms will be larger than the payments of smaller firms.