

Lobbying Behind the Frontier

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Abstract

This chapter investigates the non-market response of firms to international trade shocks increasing the level of competition in U.S. industries. Lobbying expenditures increase as a consequence of import changes related to the China shock. The effect on lobbying is not homogeneous across firms and it concentrates particularly in those producers which are behind the technological frontier. We discuss theoretical mechanisms driving lobbying of firms away from the technological frontier: not only the cost-benefit trade-off between innovation and lobbying is relatively less appealing for low productivity firms, but the collective action ability of low productivity firms improves after a competitive shock.

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1 Introduction

This chapter focuses on the political economy of creative destruction. Indeed, political economy considerations are essential to capturing the full extent of the implications of the Schumpeterian approach developed by Philippe Aghion and Peter Howitt ([Aghion and Howitt 1992, 2008](#)), to which this book is devoted.

As specified in many parts of this volume, the process of creative destruction revolves around the clear identification of winners and losers in the unfolding of economic development. Within this framework, antagonist groups of incumbents and challengers are granular and non-atomistic, and therefore they carry the ability to not only affect market outcomes, but also to substantially influence politics.

An important aspect of studying the market-government interactions that arise as a consequence of heightened competitive forces within the Schumpeterian perspective is lobbying activities. This will be the specific subject of analysis of our chapter, particularly focused on U.S. Federal lobbying activities. We will then abstract from considerations on revolving doors, campaign donations ([Stratmann 2005, Bombardini and Trebbi 2011](#)), strategic advocacy through charitable giving ([Bertrand et al. 2018, 2020](#)), or grassroots organizations and umbrella coalitions. Although this omission is clearly a shortcoming of our analysis, we conjecture that the phenomena illustrated below would become even starker in terms of magnitude and direction were these omitted dimensions to be taken into consideration. Conversely, the advantage of employing lobbying expenditures is that lobbying expenditures represent quantitatively an important channel of political influence. Annual lobbying reports display amounts at least ten times larger than federal campaign contributions totals in dollar terms. A second advantage is that we know the issues targeted by lobbyists, while we do not know why Political Action Committees (PAC's) monetary contributions are given to politicians, for example. Therefore, we can directly isolate the amount of lobbying expenditures by sector targeting trade policy or other policies ([Bombardini and Trebbi 2012](#)) differently from other avenues of political influence studied in the political economy literature.

Our analysis takes its starting point from the important work on the relationship between competition and innovation developed in [Aghion et al. \(2005\)](#), where the phenomenon of a non-linear relationship between these two equilibrium outcomes was first clearly illustrated. [Aghion et al. \(2009\)](#), furthermore, showed how foreign competition and entry may induce an “escape-competition” effect, stronger for “frontier” firms/sectors that are able to separate from the pack of lower productivity followers. Within the Schumpeterian framework, firms that are able to innovate and differentiate from the competition will do that when competitive pressures reach certain levels, such as the ones induced by Chinese import penetration

following the country's accession to the World Trade Organization in 2001.

Empirical validation of this intuition has spurred a lively debate in international trade and productivity studies, not without some nuance. For instance, [Autor, Dorn, Hanson, Pisano and Shu \(2016\)](#) find a decline in the patenting activity of all publicly traded firms in the United States in industries more exposed to competition from Chinese firms imports. Positive effects of competition on innovation and productivity are reported for the U.S. case by [Hombert and Matray \(2018\)](#), for the E.U. by [Bloom et al. \(2016\)](#), and within China itself by [Brandt et al. \(2017\)](#). In addition, [Bombardini et al. \(2017\)](#), [Fieler and Harrison \(2018\)](#) have also produced supporting evidence highlighting the presence of the innovative push at the top of the productivity distribution (i.e. at the technological frontier).¹

It is within this debate that the main research question at the core of this chapter lies. If support to [Aghion et al. \(2009\)](#) logic is granted and an escape-competition effect (i.e. a positive effect of a foreign competitive shock on domestic innovation) is strong for firms closer to the frontier, the question is what happens to firms that do not have the know-how to innovate or for whom innovation may not be profitable – those behind the frontier.

The answer, this chapter will show, is: they lobby the government. relatedly, this article contributes to the extant Political Economy literature by empirically answering the following complementary questions: Do firms use political influence tools, i.e. lobbying, to curb foreign competition in the event of a negative competitive shock? Which firms tend to lobby more in response to large foreign competition shocks? Did the China shock increase lobbying activity as an avenue to escape competition over the last thirty years in the U.S.?

A vast literature on special interest politics ([Grossman and Helpman 2001](#), [Baumgartner et al. 2009](#), [Drutman 2015](#)) clearly identifies escape-competition objectives, particularly from foreign competition within an international trade context, as one of the goals of lobbying and political influence activities. It is not by chance that one of the first and most influential pieces of research on lobbying within the Economics discipline was exactly about protection from foreign competition ([Grossman and Helpman 1994](#)) and quid-pro-quo politics.² Several subsequent empirical studies have validated and extended this discussion ([Gawande 1998](#), [Goldberg and Maggi 1999](#), [Gawande and Bandyopadhyay 2000](#)) and this represents today

¹For a comprehensive review of this literature see also [Shu and Steinwender \(2020\)](#).

²A quid-pro-quo approach to lobbying focuses on the payment for policy from a firm to a politician. This is the mechanism at the core of seminal special interest work in Economics ([Grossman and Helpman 1994](#)). However, original contributions such as [Potters and Van Winden \(1992\)](#), [Austen-Smith \(1993\)](#), [Austen-Smith and Wright \(1994\)](#), and [Bennedsen and Feldmann \(2002\)](#), etc. focus on issues of asymmetry of information and of expertise between firms and politicians. See [de Figueiredo and Richter \(2014\)](#), [Bombardini and Trebbi \(2020\)](#) for comprehensive discussions of the differences in these interpretations of non-market strategies. For the core message of this chapter it will not be necessary taking a stance on whether a quid-pro-quo or informational mechanism or both are at work.

an active area of research at the intersection of international trade and political economy.

Employing the most complete U.S. Federal lobbying information available ([Kim 2018](#)) and state-of-the-art statistical identification approaches to measure the causal effect of heightened competitive pressures from China ([Autor et al. 2013](#)) over the period 1999-2017, we report a set of novel empirical findings in line with the Aghion-Howitt logic, yet augmenting it in one important respect: losers from competition engage in non-market activities to escape competition more.

This chapter shows that in the U.S. the “China Shock” produced an average increase in lobbying activities across all issues (i.e. not only on trade issues, but also budget, taxes and all issues pertinent to funding and appropriation of subsidies and trade restrictions) of substantial economic importance. The average increase in imports during the 1999-2017 period is shown to induce an increase in lobbying of approximately 31 percent using industry-level data.

Furthermore, focusing on Compustat firm-level information, it is the firms behind the frontier who increase lobbying after foreign competition increases. The increase in lobbying activities as a consequence of the China Shock appears concentrated in the subset of firms below the sample mean for sales, employment, or Research and Development expenditures. Our results are robust to several modifications of our main variables and time sampling approaches in the construction of the panel data used in this study.

To conclude, the article discusses, but does not explicitly formalize the potential mechanisms behind our findings. A complete formalization is offered in [Cutinelli-Rendina \(2021\)](#), which is also the original reference for the heterogeneity results in this chapter and to which we refer for additional detail. We conjecture here that two different drivers of our findings may be at work simultaneously. First and more directly, in the presence of heightened competition from China, it is too costly to innovate for firms that are far from the productivity frontier, while lobbying may be a relatively cheaper tool for them. A second, more subtle, mechanism is that competition improves collective action effort among productivity laggards, as a consequence of the logic of [Olson \(1965\)](#). Innovative frontier firms pull ahead through innovation, leaving behind in the densely contested original product space the pack of firms behind the frontier. Contemporaneously, as result of the heightened competition, the extremely low productivity firms outright exit the market, due to loss making in the presence of entry from foreign competitors. Therefore, within a sector, there is a simultaneous exit of the very top and of the very bottom productivity firms. The result is to create within the original product space a more concentrated group of medium/low productivity firms (those behind the frontier but not the absolute worse ones). In this remaining group, the incentive to free ride in lobbying is lower and lobbying activities are shown to increase both in terms

of per firm spending and total aggregate industry spending.

We believe this chapter offers a contribution to the political economy literature that has recently displayed an increasing interest in lobbying and non-market strategies. Examples within Economics include [Bombardini and Trebbi \(2012\)](#), [Blanes i Vidal et al. \(2012\)](#), [Bertrand et al. \(2014\)](#), [Kang \(2016\)](#), [Bombardini and Trebbi \(2020\)](#), [Bertrand et al. \(2020\)](#) and an even larger footprint can be found in Political Science.³ More importantly, this chapter shows how the intuition of [Aghion et al. \(2009\)](#) produces clearly implications beyond markets, yet of potentially vast economic policy importance.

Our work also connects to another strand of Schumpeterian research, the one on productive and unproductive entrepreneurship. [Baumol \(1990\)](#) may be considered the seminal reference in Economics and Management Studies in this respect.⁴ His extensive body of work on unproductive entrepreneurs is a contribution that planted the seed of many subsequent investigations into the misallocation of fixed entrepreneurial resources from productivity-enhancing to rent seeking activities, as function of time-varying factors (one of which could be foreign competition, as in our instance) in the process of economic development. From Baumol's work we also borrow a more qualitative approach, documenting a few relevant case studies in the next section of the article.

Relatedly, this chapter directly contributes to the discussion of lobbying efforts exerted by economic losers ([Hillman 1982](#), [Cassing and Hillman 1986](#), [Baldwin and Baldwin 1996](#), [Brainard and Verdier 1997](#), [Baldwin and Robert-Nicoud 2007](#)). This specific literature focuses on groups sustaining concentrated losses as the result of some form of foreign competition and documents their non-market response. The papers in this area are clear that the response through activation of political ties may then take the form of information about the political consequences of the policy or direct electoral support, both likely at play also within our context.⁵

In complementary work, [Akcigit et al. \(2018\)](#) (in addition to the chapter in this volume by the same authors) explore a similar aspect of the Schumpeterian framework: the protection on the part of incumbent firms of their positional rents. They provide empirical evidence of this regularity based on detailed data on political connections and effort to innovate in a representative sample of Italian firms. Within the framework postulated by [Akcigit et al. \(2018\)](#), incumbents attempt to “ring fence” their rents through political protection. As incumbents may happen to be the relatively lower productivity firms in the Italian context, this logic is not only perfectly conformant to the one we study in this article, but, by focusing

³See [Drutman \(2015\)](#) and [de Figueiredo and Richter \(2014\)](#) for recent reviews.

⁴For a qualitative discussion, see [Litan and Hathaway \(2017\)](#).

⁵See also [Bombardini and Trebbi \(2011\)](#) for a discussion of these channels.

on another country than the U.S., provides external validity to our empirical findings and ultimately to the Aghion-Howitt logic.

Finally, this chapter connects to a political economy literature emphasizing different modes of interactions with the political environment for industries at different distance from the technological frontier. [Aghion et al. \(2007\)](#) is an example with reference to the differential role of democratic institutions and innovation for industries closer to the world technological frontier where openness and entry characteristically associated to liberal democracy matter more. [Acemoglu et al. \(2005\)](#) emphasize the role of economic losers in slowing down the process of institutional evolution. The evidence in this chapter obviously points to lobbying as one such mechanism through which this may manifest.

The chapter is organized as follows. Section 2 presents a series of motivating case studies to frame the subsequent empirical analysis. Section 3 describes the data and the construction of the variables used in our main tests. Section 4 presents our empirical strategy and approach to inference. Section 5 reports our main results on both the average effect of the competition shock and heterogeneity by high and low productivity firms. The last section concludes.

2 Case Studies

Before discussing our data and empirical strategy in a more targeted statistical analysis of the U.S. case, we begin our analysis by providing a modicum of qualitative evidence motivating our broader interest in the phenomenon of lobbying behind the frontier. This section is therefore aimed at briefly illustrating different forms of lobbying and political influence by economic laggards, which are indeed pervasive in both high and low income countries, framing more broadly the phenomenon investigated in this study.

2.1 Zombie Firms

To illustrate the reasons why non-frontier firms may revert to non-market strategies when exposed to adverse market shocks a particularly stark case can be made through the example of zombie firms. The OECD ([McGowan et al. 2017](#)) defines zombie companies as “*old firms that have persistent problems meeting their interest payments*”, essentially incumbent firms surviving in the market only because of forbearance on the part of their creditors. Furthermore, the OECD study attributes to the presence of such zombies a major and increasingly heavier drag on total factor productivity in high income countries since the mid 2000’s.

Related to our work, observers have directly linked the mechanics of the zombie firms

phenomenon to special interest politics and “lobbying by economic losers”. In commenting the OECD report cited above, The Economist magazine for instance reports that “*Governments tend to back existing firms, since they have the power to lobby; small start-ups don’t get a hearing*”⁶ and that “*Which companies are most likely to get protected? The obvious answer is incumbent groups that possess lobbying clout.*”⁷ These are essentially the mechanisms that we analyze.

In the persistent Japanese crisis Caballero et al. (2008) have shown convincingly that zombie banks (i.e. insolvent financial institutions) have played a prominent role in depressing growth. The authors trace back their survival to similar mechanism as zombies in other industries: close ties with the government and regulatory incentives to issue bad loans. Similarly, it is indicative that the Macmillan Dictionary defines a zombie bank as: “*A bank that is worth less than nothing, but continues to operate because its debt is supported by the government*”,⁸ where the role of the government is explicitly remarked.

It is important to further clarify here that zombie companies may gain political access not just through outright qui-pro-quo politics and bribes, but because these firms represent sizable voter blocs, valuable to politicians in future elections (Stratmann 1992, Bradford 2003, Bombardini and Trebbi 2011). For example, in the U.K. instance during both the Brexit and the COVID-19 crises, the prevalence of the zombie phenomenon (supported by outright government-backed credit guarantees) has been often remarked and rationalized by market observers, at least in part, as a politically motivated move.⁹

2.2 Senescent Industries

The 1980s and 1990s saw for the U.S. simultaneously a stark decline in manufacturing production and increasing lobbying for protection from international competition. These facts stimulated a vast literature on the political economy of senescent and declining industry trade protection, most clearly encapsulated by the theoretical discussions in Cassing and Hillman (1986), Braillard and Verdier (1994), Brainard and Verdier (1997), Baldwin and Robert-Nicoud (2007). All these contributions draw attention to both the persistence of tariffs over time in Western economies (for example, through the various rounds of GATT negotiations) and the declining productivity dynamics within manufacturing sectors (shoes,

⁶The Economist, “Attack of the zombie firms”, by Buttonwood, Jan 12th 2017.

⁷The Economist, “Industrial policies mean cossetting losers as well as picking winners”, by Buttonwood, Jan 19th 2017.

⁸See also Admati (2017).

⁹Bloomberg “One in Five U.K. Firms Can Barely Cover Debt-Interest Payments” By Alex Morales, September 10, 2020. Financial Times “Zombies are the least of Britain’s small business problems” By Jonathan Ford, July 19, 2020.

apparel, steel production, shipbuilding, etc.), highlighting the shift away from costly technological innovation towards political influence activities. This theme is central to the point that much of the debate among contributors was about the exact technology of lobbying and the degree of sensitivity of political response functions to sector employment (Brailard and Verdier 1994, Brainard and Verdier 1997). Brainard and Verdier, for example, state that “*the empirical evidence that declining industries receive a disproportionate share of protection in countries such as the US would be better explained by a bias in the political process than by pure economic differences.*”

In fact, the “Buy American” provisions implemented by both of the two most recent U.S. administrations have strong roots in lobbying efforts on the part of declining industries, such as steel, an industry in steady decline since the early 1960s in the U.S.¹⁰ Steel federal lobbying has substantially increased from \$4.8 million in 2000 to \$12.18 million in 2018 for instance, while production has remained roughly constant over the same period.¹¹ Figure 1 reports the complete available time series of aggregate U.S. lobbying spending for steel producers, as available from the Center for Responsive Politics which employs the same data as Kim (2018).¹² This speaks directly to the statistical analysis in the following sections of this chapter.

2.3 China’s State Owned Enterprises

The case of Chinese State Owned Enterprises (SOEs) is perhaps one of the most emblematic examples of the use of government connections for unproductive firms in shielding them from market competition in low income countries. SOEs in China are an important political element of the Chinese Communist Party (CCP) patronage architecture, as they are used as tools to solidify factional ties and to allocate rents to political cadres.¹³

Brandt et al. (2020) report that “*SOE priority status has survived decades of under-performance. During 1978-2007, the state sector “contributed essentially zero to aggregate growth in total factor productivity.” Additional evidence confirms the deleterious impact of state ownership on growth, profitability, and structural change.*”

Maybe more worryingly, the economic role of such political connections in enabling bad companies to expand (particularly through acquisition via “*politically-connected investor*”

¹⁰The Wall Street Journal, “Bill’s ‘Buy America’ Provision Sets Up Potential Clash for GOP, Donald Trump” By Brody Mullins and Kristina Peterson, December 2, 2016. The Wall Street Journal, “Biden’s ‘Buy American’ Plan Eyed Warily by Other Countries” By Yuka Hayashi January 24, 2021.

¹¹See The Wall Street Journal “Big Steel, a Tariff Winner, Steps Up Its Spending in Washington” By William Mauldin, February 12, 2019

¹²Available at <https://www.opensecrets.org/federal-lobbying/industries/summary?id=N14> Last accessed June 2021.

¹³For a related discussion, see Bai et al. (2020).

or using a “*protective umbrella*”, to use the Chinese terms) has been increasing between 2000 and 2020, as recent analysis has shown, for example in [Bai et al. \(2020\)](#). In China the costs in terms of economic performance are clear. [Bai et al. \(2020\)](#) report that “*capital productivity of firms owned by the directly connected private owners are on average 40% lower than those firms owned by unconnected private owners.*” Productivity gains from reforms associated to the screening out of large swats of unproductive SOEs between 1998 and 2007 ([Hsieh and Song 2015](#), [Berkowitz et al. 2017](#)) also appear reversed in recent times.

3 Data

Our baseline measure of political activity will be the sum of annual expenses in lobbying at the firm level for U.S. firms over the period 1999-2017. Thanks to the legal framework built in the U.S. Lobby Disclosure Act of 1995 and amended and strengthened by the Honest Leadership and Open Government Act of 2007, there exists an exhaustive and public database where all federal lobbyists in activity ought to be registered, declare their activities and issues petitioned, and report payments received from clients – the firms under analysis in our paper. Although the primary data is available from the Senate Office of Public Records (SOPR), [Kim \(2018\)](#) offers a much cleaner organization of this data, supplementing information about each firm and its industry, linking lobbying reports to unique identifiers enabling the cross-reference of the SOPR data set to other important firm-level databases (such as the gvkey identifier for the Compustat database or the bvdid for the Orbis data – more on this below), and correcting faulty or incomplete entries.

From the [Kim \(2018\)](#) database, we collect information on: 1) the name (and gvkey if relevant) of the firm paying for lobbying services; 2) the amount spent by the client for these lobbying services; 3) the issue lobbied (out of a predefined list of 76 issues listed in the lobbying reports); and 4) the firm’s industry. The data is available from 1998, and we collect all the entries until 2017. We start our analysis in 1999 to be sure all the firms lobbying at the federal level are actually registered.

To give a sense of the magnitudes involved, total U.S. federal lobbying spending oscillated between 3 and 3.5 billion dollars per year for the past ten years, starting from 1.5 billions in 1998, with about 12,000 registered lobbyists operating across all federal agencies each year.

Because we are looking to study both the intensive and the extensive margin of the lobbying response to an increase in foreign competition, we cross reference the lobbying dataset to Compustat data and keep all the firms in industries that have received imports from China, even if they never see any lobbying activity. Compustat is a standard repository of balance sheet level information for publicly traded and large corporations and a routine

reference data set for research in Financial Economics. It has to be noted that the focus on Compustat data per se induces a strong element of selection in our analysis. Compustat firms are typically large and complex organizations and are only representative of the right tail of the size distribution of all U.S. firms. It is also known that such large business entities may be more prone to lobbying activities, due to the inherent fixed costs of government interaction and the retention of specialized advocacy personnel, as illustrated for example in [Kerr et al. \(2014\)](#). While less than representative, we believe Compustat is actually an appropriate sample for our analysis as it identifies the sample of firms for which lobbying decisions are actionable in practice.

Trade data between China and the US is obtained from the UN Comtrade Database for the period 1999-2017 ([Comtrade 2020](#)). This data gives the value of the bilateral trade at the six-digit HS level, which we map into six-digit Naics codes using the [Schott \(2008\)](#) concordance tables. When an HS code is mapped into multiple Naics codes, we report the corresponding value of imports to all the industries.

We use measures of sales, employment R&D expenses from Compustat North-America. The number of patent applications comes from the USPTO database ([Graham et al. 2013](#)). Missing a common identifier between our database and the USPTO one, we use a fuzzy matching on names to link patent applications to their filing firms.

4 Empirical Strategy

Our empirical strategy is organized around two main reduced-form equations. We first estimate the impact of changes in industry exposure to import competition on lobbying expenditures at the firm level. The main empirical model we estimate is in first differences:

$$\Delta Lobby_{i,j,\tau} = \alpha_\tau + \beta_1 \Delta Imp_{j,\tau} + \gamma X_{j,t} + e_{i,j,\tau} \quad (1)$$

where $\Delta Lobby_{i,j,\tau}$ is the relative change in lobbying expenditures of firm i , in industry j over time period τ and is defined as $\Delta Lobby_{i,j,\tau} = \log(Lobby_{i,j,t}) - \log(Lobby_{i,j,t-1})$. All null lobbying expenses are replaced by 1. ΔImp is the relative change in imports and is defined analogously. $X_{j,\tau}$ are industry characteristics controlling for the factor intensity at the beginning of the period. In particular, we control for the industry level of investment, capital over the value-added, employment, and wage bill. For robustness we also use the difference in imports over a period divided by the average of the two periods ([Davis et al.](#)

2006), i.e.:

$$\Delta Imp_{j,\tau} = \frac{Imp_{j,t} - Imp_{j,t-1}}{0.5Imp_{j,t} + 0.5Imp_{j,t-1}}.$$

The explicit focus on first differences within firm i in our empirical analysis is driven by the need of focusing on identifying variations not driven by firm-specific fixed observed or unobserved characteristics, such as size or industry of operation of the firm. These extraneous dimensions may cloud the analysis in that it is well established that very large firms able to overcome the fixed costs involved in initiating federal lobbying activities or firms in regulated industries (such as utilities, pharmaceuticals or banking) lobby considerably more.¹⁴

The second main specification will extend equation (1) to an heterogeneity analysis allowing us to focus on firms behind the frontier through a split sample approach.

In our analysis of equation (1) standard errors are clustered at the industry-period level. We define five periods of time, that are 1999-2002, 2002-2006, 2006-2010, 2010-2014 and 2014-2017. We also explored “long” differences over the two periods 1999-2010 and 2010-2017 to assess robustness of our findings.

All the firms identified in Compustat appear during their registration period. However, we make here an effort to go beyond the register and include firms before/after their presence in the register. To this goal, we use the USPTO database to asses if the firm existed before (after) its entry (exit) in the the register/Compustat. Missing years between two years with information are filled with zero expenses in lobbying, as the firm is shown to exist, but it is in fact not lobbying.

The main concern about estimating our baseline regression (1) as an OLS is that we could capture the increase in the U.S. demand, and not a supply-shock from China. Following [Autor et al. \(2013\)](#), we instrument U.S. imports change from China by the change in imports of eight different countries, during the same period. These countries are Australia, Denmark, Finland, Germany, Japan, New Zealand, Spain and Switzerland. We refer to this new variable as $\Delta OImp$ and define it in the following way: $\Delta OImp = \log(OImp_t) - \log(OImp_{t-1})$, where $OImp$ denotes the total imports from these eight countries. [Autor et al. \(2013\)](#) provide a discussion and evidence in support of the validity of this identifying assumption, which is that the demand import shocks of these eight developed economies are orthogonal one to another. We do not discuss this identification strategy further, in the interest of space, just noting here that our approach is, by now, fairly standard in this literature. We refer the reader interested in the debate about the econometrics of the China Shock and its recent developments to [Autor, Dorn and Hanson \(2016\)](#).

¹⁴See [Kerr et al. \(2014\)](#) for evidence and an extensive discussion.

4.1 Other Sampling and Data Considerations

As we have now specified all main variable of interests, we present here a brief discussion of the summary statistics in Table 1, to provide some context to readers not familiar with lobbying data.

Our dataset is composed of 3,212 individual firms among which 1,142 also appear at least once in the SOPR data set with strictly positive lobbying expenses. The average lobbying expenses, considering all the observations and including firms that do not lobby, is of 217,000 dollars, and the total lobbying expenses in our dataset goes from around 240 million dollars in 1999 to 300 million dollars in 2017. These are figures congruent with the ones reported in [Bertrand et al. \(2014\)](#). Furthermore, the order of the magnitudes surpasses by far campaign contributions, as illustrated in [Bombardini and Trebbi \(2020\)](#). We conjecture here that adding other political tools to our analysis would only increase, both in direction and in magnitude, the effects that we report below based on lobbying expenditures alone. This rationale is based on a reduction in attenuation due to measurement error.

Firms are spread across 241 industries and we observe in the data a positive average and median change in imports over industries and periods. The same can be said about lobbying expenses. Focusing on firms that lobby at least once, we can observe that the mean difference in lobbying expenses is very close in magnitude to the equivalent measure for imports.

Trade and tariff issues together represent in total amount 9 percent of all the lobbying expenses in our dataset and are the second federal lobbying issue receiving the most money, right after the taxes issue. We decide not to focus solely on the expenses targeting officially trade laws, because other laws (such as product regulations or public subsidies) might indirectly raise new barriers to foreign entry, even if not falling necessarily under the trade issue umbrella.

5 Main Results

This section reports our main empirical findings for this chapter. We begin by studying the response of firms in terms of their lobbying activity as the result of heightened foreign competition over the entire period of analysis 1999-2017.

Table 2 presents the estimation results for our baseline model in equation (1). The coefficients on the difference in imports are all positive and significant across specifications. Column (1) shows that there is a positive and statistically significant correlation between the change in imports and the change in lobbying expenses at the firm level. Column (2) presents the corresponding Instrumental Variable estimate based on the China Shock eight

countries IV. Further, in columns (3) and (5) we respectively control first for the period, and then for both the period and the industry fixed characteristics. Recalling that our analysis already operates in first differences, the latter are to be interpreted as controls for time trends in a linear specification. The effect of the China Shock remains significant across all specifications and the order of magnitude of the estimated coefficient stable, indicating that omitted dimensions may not be a prominent concern in terms of misspecification in our analysis.

We note that the coefficients tend to be larger in the IV specifications (even columns in Table 2) than in the OLS one (odd columns) in terms of magnitudes. This may be linked to a plausible reverse causality issue in the OLS specification, due to the fact that lobbying expenses could have had a negative impact on Chinese imports to the U.S., by stifling them as predicated by our analysis, thus naturally biasing OLS coefficients downwards.

In terms of quantitative interpretation of our estimates, these effects appear economically meaningful. Given an average difference in log imports during this period of 0.62, the coefficient of 0.43 from column (6), which represents the causal effect of the China Shock in our more conservative specification, implies that lobbying expenditures as a consequence of the industry-level foreign competition shock increase, on average, by 31 percent each period.

5.1 Who Lobbies?

In this subsection we show that viewing the question of the relationship between competition and lobbying through a Schumpeterian prism allows us to further interpret the heterogeneity of the response that we detect in the data.

As a premise, an important part of the lobbying literature focuses on how firms within an industry organize against foreign competition. Beginning from the seminal theoretical model in [Grossman and Helpman \(1994\)](#), various papers have studied empirically how local firms within an industry organize for protection in an international trade context. Examples include [Goldberg and Maggi \(1999\)](#), [Gawande and Bandyopadhyay \(2000\)](#), [Stoyanov \(2009\)](#). Our baseline result in Table 2, stating that firms facing an increasing competition from foreign firms tend to increase their lobbying activity, appears in line with the “protection for sale” line of thought.

However, extant related research also emphasizes within industry heterogeneity in lobbying activities as relevant ([Bombardini 2008](#), [Bombardini and Trebbi 2012](#), [Kim 2017](#)) and in this section we exploit such heterogeneity within industry. Such margin of heterogeneity is immediately suggested by the Aghion-Howitt framework. Recall that [Aghion et al. \(2005\)](#) predicts that competitors in a same industry will mainly innovate to escape competition

when they are “neck-and-neck”. When firms are technologically very far one from another, the laggard firm will be discouraged and will not attempt to catch-up through investment in innovation. Extreme laggards may outright exit the market and other non-frontier firms now facing productive international competitors may stop innovating. In fact, we know that the massive decrease in patenting in the U.S. caused by the China Shock can be traced back to the relatively smaller and less innovative firms (Autor, Dorn, Hanson, Pisano and Shu 2016).

It is in this environment that non-frontier firms may resort to non-market strategies to preserve their profits. The hypothesis here is that when innovation over the technological frontier becomes too expensive, some firms turn to lobbying, which has become relatively cheaper, rather than innovation. It is non-frontier firms that attempt to escape from competition through lobbying the government.

In order to test this hypothesis, we separate our sample within industries according to measures of size and productivity. Our measures of size are sales, employment, and R&D expenditures, while our measures of productivity are sales per employee, R&D expenses per employee, and the number of patent applications filed, all variables considered at the beginning of the period τ . We split the sample according to the industry mean for all variables, except for patents, where we form one group with firms that did not file a patent application with the USPTO in the year starting the period, and one group with firms that did file at least one patent application. As our sample of firms is composed by the firms in Compustat, we can then only focus on frontier firms, and the ones just behind the frontier. Our results should be understood as focusing on a subset of the very large firms, and not on all firms in an industry.

Tables 3 and 4 present our main results for size and productivity heterogeneity, respectively. We will discuss these estimates jointly, as a synoptic reading of the findings provides a better sense of their robustness.

The intuition behind the findings in Tables 3 and 4 is similar across all specifications: it is always and only the firms below the industry mean that increase their lobbying expenses following the adverse competitive shock due to Chinese import penetration. In essence, the finding is that it is firms behind the frontier that are the ones responding to heightened competition through lobbying. Indeed, these firms’ response is so strong that we detect the entire industry average lobbying activity increasing in Table 2.

Especially for the measures of sales and R&D expenses (in levels and per employee) the magnitude of the effect of the China Shock on lobbying activity for non-frontier firms is much larger than in the baseline regression of Table 2. Coefficient estimates hover around 0.80-1.28, twice as large as the one reported in column (6) of Table 2, 0.43.

Differently, we notice that for frontier firms, the coefficient is negative in four out of six specifications, even if they are always not statistically distinguishable from zero. These firms are most likely responding to increased competition by innovating and moving into products that cannot be easily challenged by foreign competitors.

5.2 Discussion of the Mechanisms

The preceding section’s findings can be rationalized using a model where lobbying and innovation are instruments available to firms facing increases in competition. [Cutinelli-Rendina \(2021\)](#) explicits a stylized model based on [Fieler and Harrison \(2018\)](#), where firms face a nested CES demand and choose between producing two versions of a variety: a more differentiated version or a less differentiated one. All less differentiated varieties in a sector share the same “nest”, while each more differentiated variety has its own nest. Less differentiated varieties have a higher price elasticity of demand, but lower fixed costs. Firms choosing more differentiation can then impose a higher markup and benefit higher profits in their nest. Differentiation is here intuitively interpreted as innovation.

Firm i also has the possibility to invest individually an amount λ_i to lobby for industry protection. The lobbying efforts of all the firms at the sector level are imperfect substitutes and are aggregated following the technology:

$$\Lambda = \left(\sum_i \lambda_i^\rho \right)^{\frac{1}{\rho}} .$$

The marginal cost of foreign competitors is then increased by $F(\Lambda)$, where F is the lobbying success function satisfying simple assumptions (the function must be differentiable, increasing, and concave – all standard assumptions in politico-economic models of special interest politics). While this black-box approach to the special interest politics dimension of the model may feel reductive, we highlight here that the literature in quid-pro-quo lobbying tends to successfully achieve good empirical fit with such theoretical simplifications.¹⁵

Similarly, as in [Fieler and Harrison \(2018\)](#), a competition shock decreasing the marginal cost of (foreign) competitors is going to have two impacts on the production decisions of the firms sharing the less differentiated nest: differentiation and exit will both increase. Intuitively, this is because the markup of firms that remain less differentiated will decrease. The novelty here is the introduction of the lobbying option and the prediction that lobbying will increase at the sector level, even if some firms leave the nest where lobbying takes place. Differentiation on the part of high productivity firms and exit of the least productive set of

¹⁵Examples include [Bombardini and Trebbi \(2011\)](#), [Kang \(2016\)](#) and [Huneus and Kim \(2018\)](#).

firms explain the concentration of the lobbying activity among fewer actors.

Two mechanisms drive the increase in lobbying at the sector level: the first, and more intuitive, is that firms for which differentiation is too expensive will naturally increase their lobbying effort in proportion to the threat of competition. The second mechanism is more subtle and linked to an improved collective action coordination in the undiversified “nest”. With a reduced number of firms in the nest (some moving out to a new nest and others outright exiting the market due to loss making), there is more concentration and less free-riding per standard [Olson \(1965\)](#) logic, increasing incrementally each individual firm’s lobbying effort for the stayers.¹⁶ These combined two mechanisms induce sector-level increases in lobbying under standard parameterizations.¹⁷

While there might be other, more complex reasons why the change in lobbying due to import competition may be most pronounced in relatively less productive/smaller firms (for example, due to the differential mobilization of voting blocs of employees or other electoral channels), we believe that the two mechanisms highlighted in this section are likely deserving of attention due to their simplicity and plausibility.

6 Conclusions

Competition may stimulate innovation among high-performance firms, especially in the presence of persistent shocks, such as in the case of entry of Chinese exporters post WTO accession in the early 2000s.

However, the work of [Aghion and Howitt](#) clearly postulates the emergence of both winners and losers ([Aghion et al. 2009](#)), with the latter group facing a different set of incentives than high-performance winning firms in the former group.

It turns out that these two groups take on completely different strategies in responding to foreign competition. While high productivity firms may respond via innovation, in this chapter we show that the response to the China Shock from U.S. firms behind the productivity frontier comes in the form of a non-market activity: they lobby the U.S. government more. Less productive firms focus on maintaining or erecting new barriers to entry in the form of regulation, carve-outs, domestic subsidies, rather than in the form of innovation and diversification.

In the data we report economically meaningful responses in terms of lobbying to import penetration from China by employing the state-of-the-art China Shock identification strategy of [Autor et al. \(2013\)](#) and therefore causally linking increases in within sector competition

¹⁶This second element is reminiscent of effects also discussed in [Baldwin and Robert-Nicoud \(2008\)](#).

¹⁷See analysis in [Cutinelli-Rendina \(2021\)](#).

and lobbying effort of domestic firms.

The postulated rationale behind the non-market response of non-frontier firms is because innovation is relatively more costly for those behind the frontier, but also because collective action becomes easier in the aftermath of a competitive shock. Extremely unproductive firms exit and highly productive firms break away from the industry pack, leaving the remaining set of actors in a more concentrated environment where lobbying is easier and there is lower free riding.

The “lobbying behind the technological frontier” phenomenon that we have uncovered in this chapter appears a logical extension of the Schumpeterian framework developed by Philippe Aghion and Peter Howitt over the last three decades and one of the many important Political Economy offshoots of their oeuvre. To provide further perspective, this chapter also offers a brief discussion of a few, salient case studies focused on the political efforts of economic laggards.

Future work should extend our systematic statistical analysis to cases outside the U.S., where non-market strategies of firms might be as effective as in Washington DC, if not more. The case of Brussels and European Union lobbying comes to mind.

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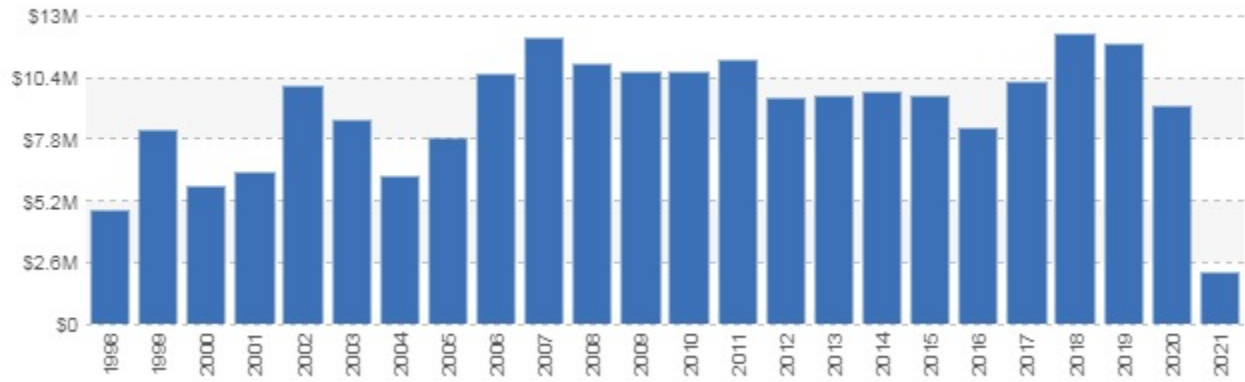
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Figure 1: U.S. Steel Producers Total Federal Lobbying (by year)



Notes: Source Opensecrets.org. Data for year 2021 is incomplete.

Table 1: Summary Statistics

	Mean	Median	Min	Max	Sd	Count
All firms						
Lobby exp.	216,702	0	0	32,680,098	1,257,910	13,036
Δ Lobby exp.	0.301	0	-13.98	15.7	3.6	8,719
Lobbying firms						
Lobby exp.	545,984	18	0	32,680,098	1951251	5174
Δ LogLobbying	.670	0	-13.98	15.7	5.4	3921
Import changes						
Δ LogImports	.623	.502	-5.37	6.647	.930	1029
Δ LogOtherImports	.592	.513	-5.09	7.66	.79	1029

Table 2: The average effect of competition on lobbying

Dependent variable: $\Delta Lobby$						
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta Imports$	0.175** (0.072)	0.404*** (0.121)	0.137+ (0.090)	0.335* (0.178)	0.131+ (0.088)	0.431** (0.217)
First-stage F-stat		40.84		20.95		12.37
Observations	8574	8574	8574	8574	8562	8562
Model	OLS	2SLS	OLS	2SLS	OLS	2SLS
Period controls	No	No	Yes	Yes	Yes	Yes
Industry controls	No	No	No	No	Yes	Yes

Table 3: Heterogeneity: Lobbying from Behind the Frontier

	Dependent variable: $\Delta Lobby$					
	< Ind	\geq Ind	< Ind	\geq Ind	< Ind	\geq Ind
	Mean	Mean	Mean	Mean	Mean	Mean
	(1)	(2)	(3)	(4)	(5)	(6)
	Sales		Employment		R&D Exp.	
$\Delta Imports$	0.822*** (0.274)	-0.265 (0.482)	0.626*** (0.216)	-0.206 (0.516)	1.092*** (0.361)	-0.181 (0.526)
First-stage F-stat	7.87	21.47	8.64	16.88	6.77	19.94
Observations	5615	1628	6678	1632	4634	1319
Period, industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: Heterogeneity: Measures Scaled by Employment Levels

Dependent variable: $\Delta Lobby$						
	< Ind	\geq Ind	< Ind	\geq Ind	No	Yes
	Ind Mean	Mean	Mean	Mean		
	(1)	(2)	(3)	(4)	(5)	(6)
	Sales/Emp		R&D/Emp		Patents	
Δ Imports	0.803*** (0.309)	0.200 (0.382)	1.281*** (0.392)	-0.099 (0.348)	0.662** (0.316)	0.012 (0.349)
First-stage F-stat	8.85	13.23	8.17	8.63	12.17	11.20
Observations	3879	2770	3689	1813	5481	3180
Period, industry FE	Yes	Yes	Yes	Yes	Yes	Yes