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Empirical Models of Lobbying

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Abstract

This article offers a review of the recent empirical literature on lobbying within political economy. In surveying extant research, we emphasize quid pro quo and informational issues in special interest politics and highlight crucial open questions in both. The two main unresolved methodological issues remain (*a*) how to account for the impact of lobbying on which equilibrium policies are chosen and advanced and (*b*) how distorted those equilibrium policies are relative to the social optimum. Of the principal open questions within political economy, a comprehensive, quantitative assessment of the welfare effects of lobbying remains one of the most elusive.

1. INTRODUCTION

The objective of this article is to provide a useful organization of the most recent empirical literature on lobbying in political economy. Starting from a definition of lobbying, we focus on the process of political influence by corporations and other business interests on the adoption, retention, or amendment of public policy through selective communication of information and material exchange (e.g., campaign contributions or employment opportunities) with political officials (for less recent research and a perspective more oriented toward political science, see de Figueiredo & Richter 2014; for an earlier review of research on campaign contributions and money in politics more generally, see Stratmann 2005).

To the reader approaching this topic for the first time, the immediate first-order research question is clear: Is lobbying, and more generally the direct or indirect interaction between business interests and the government, welfare enhancing or welfare distorting? Is lobbying a valid political mechanism to, as the National Institute for Lobbying and Ethics asserts, "petition the government for a redress of grievances" (see **https://lobbyinginstitute.com/what-is-lobbying/**)? Or is it a tool that distorts public policy away from the social optimum, a crucial mechanism for the transformation of concentrated economic power into political heft and corruption?

To most laypeople facing these questions, the answer is straightforward and unequivocal. In three surveys conducted by the Pew Research Center between September 2018 and March 2019 (Rainie & Perrin 2019), 53% of respondents considered the role of lobbyists and special interest groups (SIGs) in Washington to be a "very big problem"; for comparison, 38% had the same response for illegal immigration. A majority of respondents to the Gallup Annual Survey of Honesty and Ethics in Professions ranked the honesty and ethical standards of lobbyists as "low" or "very low" in every year from 2007 to 2017, with a low point in 2008 of 64% and a high point in 2013 of 56% (see **https://news.gallup.com/poll/1654/honesty-ethics-professions.aspx**). For comparison, the worst such number for bankers across this period was a trifling 33%, which occurred in 2009 during the throes of a financial crisis.

In stubborn contrast to common wisdom, to the researchers in economics, political science, and sociology working in this area, the answer is often far from clear. Indeed, given the variety and depth of the studies reviewed in this article and the nuanced nature of some of the results we discuss, we fear that this article will resolve little of this uncertainty. We anticipate that the reader interested only in an answer to the question of whether lobbying is bad or good will find little satisfaction here. Rather, our aims are both to organize a key subset of the work researchers have done thus far and to introduce researchers unfamiliar with the area to the progress made and the challenges that remain.

For clarity of exposition, we refer, when not excessively simplistic, to the interactions of a representative firm F with a government political official P, which may occur directly between F and P or indirectly through an external lobbyist L. This distinction between direct and intermediated interactions between F and P was overlooked in the early empirical literature on special interest politics, particularly in the context of lobbying for trade policy (e.g., Goldberg & Maggi 1999, Gawande & Bandyopadhyay 2000, Gawande et al. 2012), but is now understood to be crucial to the empirical assessment of the welfare consequences of lobbying (e.g., Blanes i Vidal et al. 2012, Bertrand et al. 2014).

This interaction among the players F, L, and P typically revolves around F's demand for a certain policy and P's ability to supply it. Defining and empirically circumscribing P's policy supply curve and, in particular, estimating the counterfactual policy that would have been implemented by P, absent intervention by F, are the crux of the empirical literature that we study.

In general, measuring what F obtains from lobbying is one of the most complex dimensions of empirical research in this area. The reason for this complexity is rather transparent. What F

demands may be extremely specific, possibly buried in pages of regulatory rulemaking or multiple statutes (Yackee & Yackee 2006, Bertrand et al. 2018a), and heterogeneous—often incomparable across firms within the same industry, much less across firms from different sectors.[1]

Complicating matters further, a policy demand by F may be expressed as a negative, in the form of blocking or stopping a specific legislative or administrative proposal, for the advantage of an incumbent corporate beneficiary (Baumgartner et al. 2009, Drutman 2015). This is typically the case for safety regulation (e.g., gun control) and extant trade subsidies (e.g., nontariff and tariff barriers) or tax exemptions (e.g., the Farm Bill). As a consequence, what F obtains from lobbying may be invisible to the researcher: a continuation of the status quo, with no discernible change in the law.[2]

We emphasize that while our terminology of supply and demand for policy may seem to necessitate a material exchange between F and P—which in special interest politics is called the quid pro quo perspective, and in lay terms may be described as corruption—this need not be the case. Indeed, while much of the economic literature on lobbying, starting from the seminal theoretical contributions of Grossman & Helpman (1994, 1996), has centered on quid pro quo lobbying, this is not the standard perspective in other disciplines, such as political science and sociology. By contrast, these fields take an informational perspective on lobbying.

Under this informational perspective, instead of focusing on payment for policy from F to P, scholars such as Potters & van Winden (1990, 1992), Austen-Smith (1994, 1995), Austen-Smith & Wright (1996), and Bennedsen & Feldmann (2002) have focused on the asymmetry of information and expertise between F and P (an asymmetry possibly filtered through L's strategic intermediation). The informational perspective is also the one taken by the National Institute for Lobbying and Ethics on behalf of its members: American lobbyists. It states:

> Lobbying is a legitimate and necessary part of our democratic political process. Government decisions affect both people and organizations, and information must be provided in order to produce informed decisions. Public officials cannot make fair and informed decisions without considering information from a broad range of interested parties. (**https://lobbyinginstitute.com/what-is-lobbying/**)

From an informational perspective, additional empirical complications arise from the immaterial nature of what is transacted: information and messages, rather than material goods or services. Information is hard to quantify and measure, compounding the difficulty of assessing the degree of bias and measuring the incentives to lie for F or for any strategic intermediary L.

To conceptually organize the empirical research discussed herein, this review utilizes this simple dichotomy between empirical models focused on quid pro quo and informational models of lobbying. As we make clear below, a natural skewness within the empirical political economy literature has arisen, with a relative abundance of quid pro quo over informational models. This is not because empirical quid pro quo models are considered better descriptors of reality but rather because, as we have alluded to, data on the informational needs of agents and evidence of the transmission of expertise are extremely difficult to obtain. Thus, empirical models of lobbying displaying informational effects are rare.

As in many empirical politico-economic problems, we also try to highlight how the key to statistical identification of structural parameters can come from exploiting shocks to F's policy demand

[1] Kang (2016), in one of the few empirical papers in the literature addressing the complexity of mapping policy demand from textual components of US House of Representatives statutes, provides an excellent example of the intricacy of such an exercise and produces a detailed blueprint for how to handle it.

[2] We also observe how specific approaches to lobbying, such as in the case of all-pay auctions (Baye et al. 1993, Che & Gale 1998) or tournament approaches, will face a similar measurement complication, as payment and exertion of lobbying efforts will not necessarily be met by policy rewards coming the way of F.

curve (e.g., regulatory encroachment on the markets F participates in) to pin down parameters governing policy supply, or from shocks to P's policy supply (e.g., reelection or retirement of P, changes in the policy oversight portfolio of P) to identify the parameters governing firm behavior. Finally, some sources of variation may arise from exogenous changes affecting technology related to the ability of L to intermediate between F and P.

In Section 2, we describe several empirical tools available to special interests in influencing policy makers, and as we describe the data available in the context of each tool, we also discuss what information they can provide in the study of special interest politics and lobbying. This step is useful because it immediately disabuses the reader of the notion that lobbying proper (i.e., as defined by the Lobbying Disclosure Act of 1995, or LDA) encompasses the entirety of special interest politics or is even the bulk of the arsenal of influence tools available to and employed by corporations. Finally, for reasons of higher data quality, amplitude of disclosure requirements, and advantageous sample size and coverage, we emphasize the US context, although we address a limited amount of empirical research on Canada and lobbying in the European Union in Section 5.

In terms of the methodological approaches that we review in this article, the spectrum is wide. An interesting feature of the empirical literature on lobbying is the variety of empirical methodologies brought to bear to the study of special interest politics. The research described in this article ranges from standard observational studies and regression analysis to quasi-experimental approaches to structural econometric approaches. We separate quid pro quo structural models from reduced-form approaches. We hope the reader finds in the variety of empirical angles discussed in Sections 2–4 a sense of the plasticity of the topic, borrowing from several fields within economics.[3]

The remainder of this review is organized as follows. Section 2 presents an overview of lobbying data, their coverage, and their limitations and links them to the specific uses made of them in the literature. Section 3 reviews research focused on identification of relevant dimensions of the political influence process that emerge from quid pro quo approaches. It does so by focusing on both structural econometric and reduced-form applications. Section 4 focuses on recent evidence pertinent to informational models. Section 5 offers a brief perspective on empirical analyses focused on non-US lobbying. Section 6 concludes.

2. TOOLS AND DATA: AN OVERVIEW

Many of the empirical analyses of lobbying and special interest politics focus on the United States. The reason is simple: data. US jurisprudence has been at the frontier of transparency and data availability since the 1970s. The Federal Election Campaign Act of 1971 and its subsequent amendments have imposed progressively detailed requirements for campaign finance disclosure on the side of both donors and recipients. Since its creation in 1974, the Federal Election Commission has been the primary source of data on campaign contributions by individuals and political action committees (PACs), although some notable recent efforts by nonprofit organizations, chiefly the Center for Responsive Politics (CRP), have made the data much easier to access and

[3]Special interest politics is an area where intuition from industrial organization is useful to study the interaction among multiple strategic special interest groups (Kang 2016), where intuition from structural and reduced-form labor economics may be relevant in tracing the career choices of lobbyists or politicians (see, e.g., Diermeier et al. 2005, where lobbying is an important outside option of a congressional career), where the asymmetric informational complexities of regulation may speak directly to environmental economics, and where the financial gains from political connections or the costs from policy uncertainty may touch on themes relevant to financial economists (see Gutierrez & Philippon 2019 on lobbying and misallocation).

interpret. PACs and individual campaign contributions have been the topic of the bulk of empirical research in lobbying since the 1990s (e.g., Snyder 1989). However, in the last 10 years, empirical researchers have turned their attention to a measure of interest group activity that is quantitatively much larger: lobbying expenditures.[4] What is behind the most exciting development on the data availability front is the LDA, modified by the Honest Leadership and Open Government Act of 2007. The Senate Office of Public Records (SOPR) is the primary source of the data, although CRP usefully organizes the data by industry and links them to other political activities of firms. CRP makes the quantitative comparison of PAC and lobbying expenditures easy. Total lobbying spending has oscillated between $3 and $3.5 billion for the past 10 years, starting from $1.5 billion in 1998, whereas yearly PAC donations to candidates during the same period varied between $200 and $250 million.[5]

As emphasized by Milyo et al. (2000), corporate PAC data have received a disproportionate amount of attention in the empirical literature due to the early availability of these data. We therefore concentrate on LDA data, which are the focus of much ongoing research. However, before we do so, we briefly describe two phenomena that are growing in size and that have not been the subject of close academic scrutiny. The first is the rise of so-called super PACs, created in the wake of the 2010 landmark US Supreme Court case *Citizens United v. Federal Election Commission*. Firms and other organizations can now contribute unlimited amounts to these independent expenditure groups, as long as those groups do not coordinate with a specific candidate's campaign. There were only 83 super PACs in 2010, for a total expenditure of $60 million, whereas in the 2018 electoral cycle close to 2,400 groups raised $1.5 billion and spent just above $800 million. The second, even harder to study and partially overlapping phenomenon is the increasing use of what is referred to as dark money. Social welfare groups organized under section 501(c)4 of the Internal Revenue Code can engage in political spending as long as it is not the majority of their activity.[6] Importantly, these groups are not required to disclose their donors. CRP reported a peak of almost $320 million spent by such groups in 2012. Although quantitative research in this area is inherently difficult to perform, investigative reporting has made these entities hard to ignore (Mayer 2017).

2.1. Facts About Lobbyists

According to the LDA rules, lobbyists and lobbying firms[7] are required to file an initial registration for each client they serve as well as quarterly reports whenever their lobbying-related income exceeds $3,000 (in 2019). These quarterly reports indicate the name of the lobbying firm or lobbyist, the client's name, the total amount paid by the client, the names of the lobbyists who worked on behalf of the client, and the issues they worked on (from a list of 79 predetermined codes, as of 2019, and specific bill numbers).

Bertrand et al. (2014) document that during the period 1999–2008 approximately 37,000 individual lobbyists were active. CRP lists an average of 12,537 unique lobbyists per year between 1998 and 2019, varying from 10,417 in 1998 to a peak of 14,825 in 2007. As of 2018, the number has declined to 11,654.

[4]The observation that lobbying expenditures dwarf PAC spending was made forcefully by Milyo et al. (2000).
[5]Note that committee fundraising and expenditures are much higher if we take into account independent expenditures and independent expenditure–only committees (i.e., super PACs): The amount raised yearly varies between $600 million and $1.5 billion.
[6]Other organizations, such as 501(c)5 and 501(c)6 (business groups), are also subject to similar regulation, while tax-exempt 501(c)3 organizations are not allowed to engage in political spending.
[7]An individual is defined as lobbying on behalf of a client if the activity involves more than 20% of her time and she has more than one lobbying contact per disclosure period.

The SOPR data also classify lobbyists according to whether they are in-house (internal lobbying) or whether they work for a lobbying firm that represents another organization (external lobbying). Bertrand et al. (2014) show a decline over time in the share of in-house lobbyists, from nearly 60% at the beginning of the sample period to less than 40% by the end. Growth in lobbying expenses over the sample period (an approximately 30% increase) is almost entirely due to the growth of external lobbying, which doubled over the period 1999–2008.

Another important source of information to determine lobbyists' policy alignment and the existence of political connections through past employment (e.g., as congressional staff members) is the website **https://www.washingtonrepresentatives.com**. The data originally derived from the Washington Representatives directory and are currently maintained by Columbia Books and Information Services. The website is presently the most comprehensive source of information on the background of federal lobbyists. Bertrand et al. (2014) find that approximately 14,000 of the 37,000 active lobbyists had a profile on the website. Among those active lobbyists, 11% had some association with the Republican Party and 10% with the Democratic Party. Around 1% of the lobbyists were former Members of Congress, while 2% of the biographies mentioned some experience in the White House. Former aides were 11% of the sample.

2.2. Facts About Lobbying Clients

The LDA explicitly requires that the registrant file a separate report for each client, which can be a firm, a noncorporate organization, or an individual. The CRP led the effort to homogenize and aggregate lobbying expenditures by clients, facing the difficulty of often misspelled client names.

CRP reports that in 2018 the greatest spending was by industry associations, such as the US Chamber of Commerce (almost $94 million), the National Association of Realtors, and the Pharmaceutical Research and Manufacturers of America, along with the 501(c)4 organization Open Society Policy Center and large corporations such as Blue Cross Blue Shield ($24 million), Alphabet Inc., and AT&T. The economics literature has focused on lobbying by firms and business interests in general because these entities tend to focus on nonideological issues and policies such as tariffs, subsidies, banking regulations, and taxation, which have a key impact on the allocation of resources in the economy.

One of the first efforts to match firms to their political activity by using Compustat North America was that by Grier et al. (1994).[8] Bombardini & Trebbi (2012) link lobbying records to Compustat's corporations, but only for the subset of firms involved in lobbying for trade issues. Richter et al. (2009) and Kerr et al. (2014) perform a more comprehensive linking exercise covering a large portion of Compustat's firms' lobbying on all issues. For linking of lobbying records of public firms to standard Compustat identifiers, such as GVKEYs (global company keys), which allow the researcher to link other firm-level balance-sheet variables, the state-of-the-art source is the website **https://www.LobbyView.org**, described in detail by Kim (2018). This data set is notably employed by Huneeus & Kim (2019), discussed below.

Kerr et al. (2014) and Huneeus & Kim (2019) offer interesting stylized facts about the lobbying behavior of public firms. First, lobbying is rare and is positively related to firm size.[9] According to Huneeus & Kim (2019), in 2017, 766 of 7,646 US public firms engaged in lobbying. Lobbying firms have revenues that are almost four times those of firms that do not lobby. Huneeus & Kim

[8] Bombardini (2008) undertook a similar effort for more recent PAC data.

[9] Unsurprisingly, this is also the case for PAC contributions, as reported by, among others, Grier et al. (1994) and Bombardini (2008).

(2019) show that, conditional on lobbying, the elasticity of lobbying expenditure to total firm sales is around one, suggesting that size affects lobbying at both the intensive and the extensive margin. Second, lobbying is persistent. Kerr et al. (2014) report that 92% of firms that lobby in a given year also lobby in the next year.[10] Such persistence is explained by the presence of large sunk costs in setting up political presence.

Firms are not the only business-related entities that engage in lobbying. Smaller firms are likely to participate through their membership in industry-wide organizations. Bombardini & Trebbi (2012) cover this phenomenon in depth, showing that industries with lower industry concentration and lower product differentiation tend to spend a higher share of their lobbying expenditure through trade associations. Using more recent figures, however, Huneeus & Kim (2019) show that individual firm lobbying is more prevalent than lobbying by industry-wide organizations.[11]

3. QUID PRO QUO LOBBYING

3.1. Structural Econometric Approaches to Quid Pro Quo Lobbying

Taking a structural approach to the empirical analysis of lobbying offers several important advantages. First, structural models require an explicit definition of the full set of theoretical assumptions at the basis of the analysis. They force the researcher to spell out precisely all relevant features of the research problem, starting from its primitive parameters and data generating process. In this sense, the structural approach requires clarity on what both F and P gain from their exchange (quid pro quo). Second, the structural econometric approach requires a rigorous consideration of theoretical assumptions, which require empirical validation to deliver sensible parameter estimates and in-sample fit. Most assumptions in empirical models must, in addition to passing intuitive or qualitative scrutiny, fit the data without inducing nonsensical estimates along any dimension of the parameter space. Assumptions face immediate discipline by the data (individually or jointly) and often can be verified and rejected. Finally, structural approaches in political economy are not exclusively useful for counterfactual analysis or out-of-sample prediction but can deliver certain structural parameter estimates that may be of independent research interest. These parameters include, for example, the latent returns to lobbying and the unobserved fixed costs of political participation for a special interest. We present a few notable examples in this section.

Kang (2016) offers one of the rare instances in which equilibrium policy success, multiple lobbying decisions by SIGs in favor of or against each policy dimension (the quid in quid pro quo), and economic returns to lobbying are all simultaneously modeled within the same econometric framework. The author accomplishes this nontrivial feat by presenting a detailed measure for the outcome of the lobbying process in the context of the US energy sector: the approval or rejection of a specific policy proposal (e.g., a solar energy production subsidy) identified through the application of natural language processing (NLP) tools to congressional bill texts. We underscore several key features of this analysis. First, to keep the policy proposals relatively comparable with one another, the author focuses on energy policy, which limits the analysis to an important but tightly circumscribed industry. Second, to obtain a complete picture of failing and succeeding proposals, the author focuses further on a single legislative term, the 110th US Congress. Finally, to precisely trace the ultimate fate of each policy, Kang decouples policies from the various

[10] Drutman (2015) also focuses on persistence of lobbying and its consequences.

[11] Bombardini & Trebbi (2012) report an average share of lobbying by individual firms of 67%, with a median of 96%. Huneeus & Kim (2019) report lobbying by business associations to be less than a quarter of all lobbying expenses.

legislative bills carrying those policy proposals.[12] The author studies 538 policies included in 445 bills, requiring extensive NLP preanalysis.

Kang (2016) frames the lobbying game as a series of contests among multiple special interests for the policies adopted by one P. The set of Fs consists of $i = 1, \ldots, 4$ coalitions representing four different areas of economic interest (i.e., coal, oil and gas, nuclear, renewables). Kang further assumes that within each coalition collective action issues (Olson 1965) have been solved.[13]

Using lobbying reports, Kang (2016) links each SIG to each policy, measuring whether each F lobbies P on each policy and whether F supports or opposes it. Interestingly, policies that are not associated with lobbying activity tend to be enacted rarely (1% of cases). Policies in which two or more players lobby are much more likely to pass (24%), and differentially so, depending on whether or not all Fs are on the same side of the issue, implying substantial selection in the data. Overall, only 8% of all policies are eventually enacted.

Lobbying has no informational role in the model, and the game played has complete information. Conditional on lobbying expenditures $(s_1, \ldots, s_4)$, this enactment probability is modeled as a modification of the standard Tullock (1967) contest function, which is normally in the form $p_i = (s_i)^\beta / \Sigma_j (s_j)^\beta$ for generic nonzero expenditures (otherwise, $p_i = 1$ if $s_{j \neq i} = 0$ and $s_i > 0$) (see also Baik 2008). The modifications to the context function applied by Kang allow for additional group parameters modeling the effectiveness of lobbying against or in favor of a policy, as well as for a baseline probability of enactment different from one, absent competition from other Fs.[14]

Under these assumptions, the subgame spending phase equilibrium where the vector $(s_1, \ldots, s_4)$ is determined is unique given entry. The entry decision phase, instead, displays multiplicity. Generally, Kang (2016) knows only that at least one mixed-strategy equilibrium of the game exists. As is necessary in the structural estimation of models with multiple equilibria, the author imposes a selection argument and focuses on the equilibrium that maximizes the sum of all the players' payoffs as her criterion. Focusing on this specific equilibrium, Kang aims to recover influence, baseline enactment probabilities, and cost parameters so as to maximize the likelihood of observing the empirical policy enactment, lobbying participation, and total lobbying expenditures recorded in the data. Because several equilibrium objects do not have a closed-form representation, simulation methods are required.

With parameter estimates at hand, Kang (2016) can simulate the equilibrium enactment probability and baseline passage probability in a scenario without lobbying for each policy, conditional on the observable characteristics of the policy and lobbying coalitions. This is a crucial counterfactual of the paper, aiming to answer the key questions of what the effects of lobbying are. The difference between the enactment probability with lobbying and that without lobbying can be thought of as a dimension of the (model-dependent) effect of lobbying. This exercise is therefore extremely important.

Surprisingly, Kang (2016) finds the lobbying effect to be extremely small, between 0.021% and 0.415% relative to a baseline of 8% enactment probability. While intuition could suggest that

[12] For instance, Kang (2016) reports several instances in which policies Q1 and Q2 are part of the same bill and the bill fails, but then policy Q2 is carved out and added to a new bill, which then passes. Omitting this refinement of the data and focusing only on bill passage would likely lead to severe mismeasurement of the effects of lobbying. In essence, only the preparatory data effort by Kang (2016) is substantial, and attention to institutional detail becomes crucial. Political science researchers, such as Baumgartner et al. (2009), and authors of other, more qualitative studies of lobbying in Congress often make similar considerations.

[13] This may not always be an appropriate assumption, even for specific issues such as trade policy (see Bombardini & Trebbi 2012 and Kim 2017 for discussion).

[14] To further simplify the game, Kang (2016) excludes issues of budget constraints for each SIG (realistically assumed to have deep pockets) in order to focus on the subgame perfect Nash equilibria of each policy/lobbying game independently of the others, essentially treating them as independent games.

lobbying efforts in favor of and against enactment may be canceling each other out à la Becker (1983), part of the problem is in the extreme insensitivity of the success likelihood at the margin, which might indicate a form of model misspecification.[15] Kang also estimates average returns to lobbying to be in the range between 137% for renewables and 152% for oil and gas, which are, conversely, very high. This result emerges from an estimated average monetary value of each policy of more than $500 million, possibly another indication of some form of misspecification.

Beyond Kang (2016), however, excessive political returns on political investments are common in this literature. Another special interest politics paper, which follows a structural approach, offers a possible explanation for this specific puzzle. Bombardini & Trebbi (2011) present a quid pro quo model of policy influence that is structurally estimated on campaign contributions for Members of Congress. The authors present a model of multilateral bargaining across multiple heterogeneous special interests F and a single politician P. The authors emphasize that SIG donations interact nonlinearly with the electoral bloc of votes associated with that special interest, under the assumption of some alignment of interests between workers and owners of capital (which is typically the case through profit sharing or job security motives).

The authors' first intuitive contribution is to highlight how special interest influence may be the result of multiple tools employed simultaneously and with specific patterns of substitution between them. In their analysis, the authors show how large special interests who carry a substantial employment presence in a congressional district (and therefore have the power of potentially swaying elections for members of the House of Representatives through the mobilization of their employees) may not be as compelled to employ campaign contributions to obtain the same policy benefit as electorally smaller groups. The mechanism the authors propose is that SIGs with employees in a Congressional Member's district can wield this power to potentially sway elections for or against said Member through the mobilization of their employees: P will either deliver the policy preferred by F or face being unseated by angry constituents.

The evidence of access by large employers to local representatives is overwhelming and lines up with research on incentives for access and politics (Austen-Smith 1995, Fouirnaies & Hall 2018). However, Bombardini & Trebbi (2011) report systematic inverse-U-shaped relationships between the amount of total campaign spending by sector in a congressional district and employment in a district by industry (peaking at around 18,000 industry employees). The same relationship also holds within industry, where total campaign spending across congressional districts concentrates in areas where industry employment presence is neither too large nor too small.

Such nonmonotonic relationships could be illustrated through simple nonparametric reduced-form evidence. Here, however, Bombardini & Trebbi (2011) show the benefit of a structural approach by recovering from the first-order conditions of political spending an estimate of the marginal rate of substitution of campaign donations per vote acquired.[16] This approach explicitly determines a dollar-per-vote estimate between $200 and $400, depending on the specific district and media market. The authors then use such costs to determine the total economic value to the politician of the special interest's support and to recover a precise estimate of the average rate of returns on political spending.

[15] According to the structural estimates, 40% of the lobbying expenditures cancel out, so this cannot explain the null enactment probability effect. Furthermore, the effect of lobbying expenditures is small even when no opposing interventions are present. By highlighting the dimensions along which the structure of the problem produces counterintuitive estimates, Kang (2016) narrows the spectrum of issues needing further investigation. This is a benefit of the quantitative approach followed by Kang, rather than a weakness.

[16] More precisely, convinced through campaign spending. Bombardini & Trebbi (2011) rely on the intuition from Baron (1994) that a fraction of voters are susceptible to persuasion (or "uninformed," in Baron's terminology).

The magnitude of such returns has been extensively debated. Ansolabehere et al. (2003) ask why there is so little money in American politics relative to the returns that one could infer from the economic magnitude of the discretionary policy programs implemented by the US government. Essentially, low amounts of campaign contributions and the fact that federal campaign donation caps are very seldom binding would appear to fly in the face of the large economic consequences from government intervention. These huge implied rates of return seem to suggest entry barriers and limits to arbitrage, a phenomenon known in the literature as Tullock's puzzle (from the original discussion in Tullock 1972).

A typical example is the US Farm Bill. In 2000, it included $22 billion in subsidies to the US agribusiness lobby and yet prompted less than $3.7 million in campaign contributions from agribusiness SIGs (PACs) during that electoral cycle. From a simple accounting perspective, this amounts to $6,000 of subsidies for every $1 of political contributions and a rate of return of 600,000%. This should strike the reader as obviously not economically reasonable. Competition in the political market should arbitrage away these rents.

The quantitative analysis by Bombardini & Trebbi (2011) shows that a possible reason for this discrepancy is that the Ansolabehere et al. (2003) approach typically counts observable political contributions as the only channel of influence, while in fact there may be multiple less-observable channels in effect. For instance, if the electoral weight of a SIG (i.e., its number of employees in a given congressional district) is as important a channel of influence as campaign donations and the cost of buying a vote is relatively high, implied returns for F appear much more reasonable when this channel is included.[17]

Even with political return estimates from Kang (2016) or Bombardini & Trebbi (2011), one is still short of a welfare assessment or even policy efficiency considerations. The question remains: What are the distortions induced by these special interests' activities relative to a counterfactual where lobbying is absent?

Huneeus & Kim (2019) recently offered an answer to this question by studying input misallocation due to political influence activity in the United States. The authors focus on whether lobbying, which may be employed by specific firms with different intensity, may be a relevant quantitative mechanism for the creation of wedges between marginal return and marginal cost of input (specifically capital), inducing politically influential firms to grow larger. This is a crucial question in the study of special interest politics, as the accumulation of political influence may feed into economic distortions and rent creation. The acquisition of rents fostered by lobbying further feeds back on the resources available for political influence and regulatory capture, in a vicious cycle where profits, anticompetitive pressures, and political clout self-reinforce and perpetuate (Gutierrez & Philippon 2019).

Huneeus & Kim (2019) present a general equilibrium model augmented by a structural framework to allow for a precise estimate of the magnitudes of these distortions. This structural approach is based on a model with heterogeneous firms, which have to pay a fixed cost to play a political influence game and subsequently invest a continuous amount in lobbying on the basis of their expected policy returns. The heterogeneity of firms is governed by a multidimensional vector of productivity and lobbying capacity draws (more precisely, a Hicks-neutral productivity term,

[17] Mobilizing the four million farmers and agribusiness-connected voters in 2000 surely had a political value. Under this perspective, the rate of return to political activity of the agricultural special interest is $22 billion / ($3.7 million + $400 × 4 million) = $13.7 for every dollar of political contributions at the margin. While still a high figure, it already appears to be a more reasonable estimate for the case of agriculture (i.e., not $6,000). In fact, Bombardini & Trebbi (2011) provide evidence from simulations of average returns to political donations in the range of 10% to 20% per year. Note that these considerations are a clear benefit of structurally modeling lobbying because they are based on estimated primitives from the theory.

a lobbying productivity term, and an exogenous wedge-type draw). First, the estimator is implemented by having a subset of parameters normalized and calibrated. Then, the model is simulated for a certain parameter vector value, including the fixed costs, the variances and covariances of the type distribution, and the returns to lobbying (these are the parameters to be estimated). Drawing from the data generating process, the model produces a series of simulated moments that then can be matched to the data. The empirical moments include the share of firms that lobby for each industry; the dispersion of firm sales within industry (which relates to productivity dispersion); and the relationship between lobbying spending and firm size, which is identified through congressional committee shocks. As is typical in this literature, a minimum distance estimator based on the difference between simulated and actual moments is employed. Although theoretical identification (uniqueness of the parameter vector minimizing the criterion) is not assured (and it should be probed by Monte Carlo simulations), the solution proposed by Huneeus & Kim (2019) appears stable.

Methodologically, as firms' lobbying activities are endogenous to an entire roster of other economic activities, the authors focus on identifying a credible shock to lobbying productivity to ascertain its effect. It is necessary to emphasize that structural methods are dependent on solid identifying variation as much as on reduced-form approaches; therefore, this first step is essential. Huneeus & Kim (2019) rely on policy supply shocks: the idiosyncrasies of congressional committee assignments, which vary the specific value of a local political representative to a firm. This form of identification strategy is common in this literature (see the discussion in the following subsection and Powell & Grimmer 2016) and relies on the fact that many of the committee membership changes happening in the US Congress are related to party seniority; majority party status; and other, presumably exogenous determinants with respect to firm decisions.[18]

Using this identification strategy, Huneeus & Kim (2019) show that a 10% increase in lobbying produces a 3% increase in revenue. Note that the exact measurement of which policies are distorted and by how much is not provided. Nonetheless, the estimated model can ultimately be tweaked to answer the counterfactual questions, including shutting down the availability of lobbying altogether and recomputing the model's equilibrium choices and firm size distributions. Firms' federal lobbying is estimated to induce a 22% reduction in aggregate productivity in the United States. This is a large, negative general equilibrium effect. In addition, 59% of this reduction is determined by misallocation of resources to lobbying firms (which are less productive) and 41% is due to lack of entry of new, more productive firms. According to Huneeus & Kim (2019), the answer to the question of whether lobbying is welfare diminishing is a clear yes. In addition, its distortions appear extremely large.

3.2. Reduced-Form Econometric Approaches to Quid Pro Quo Lobbying

A quid pro quo approach to lobbying frames the problem essentially as an exchange of political resources for policy adoption. All the structural papers mentioned in the previous section need to

[18]To be more precise, first Huneeus & Kim (2019) connect large public firms and their employment base to certain politicians (US Senators representing states where firms have their headquarters). Then they consider the set of policy issues relevant to those firms among the set of their connected politicians and use shocks to this set to obtain variation in the productivity of lobbying for each firm. Such shocks include how issues relevant to firms (e.g., liability issues for tobacco manufacturers) vary over time relative to the set of politicians to whom the firm may have an electoral connection (e.g., a local senator sitting on the House Committee on the Judiciary) and how the set of politicians to whom the firm is electorally relevant vary as Members of Congress move into or out of congressional committees relevant to those firms' policy issues (e.g., the value of the same senator moving from the Judiciary to Armed Services).

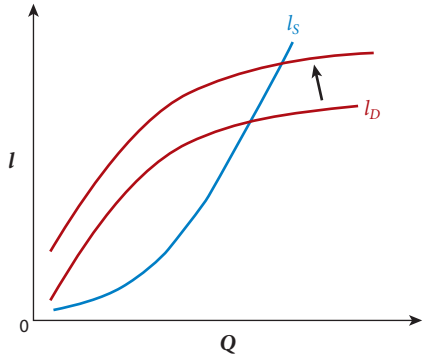

Figure 1

Demand (l_D) and supply (l_S) for policy variable Q.

specify explicitly what F demands from P and at what cost, as well as what P is willing to supply to F and to what personal benefit.

This coincidence of policy demand and supply need not be resolved through a competitive political market where prices are posted, and most likely it is not.[19] Sacrificing realism, it is nonetheless useful to present a minimal framework of supply and demand akin to a standard partial equilibrium setting to clarify the different perspective taken by the reduced-form papers that we discuss in this section. Much of the research on reduced-form empirical lobbying that we discuss below focuses either on shocks to F, which drive up or down the demand for policy, or on shocks to P, which determine the supply of policy for every dollar of lobbying spent.

Let us assume a stylized functional form for the demand for a policy objective $Q_D = Ap^{-\varepsilon}$ by F and its supply $Q_S = Bp^{\eta}$ by the policy maker P, assuming linear pricing and that p is a per unit price of the policy. Typically, this price p is not a variable that the econometrician observes, so we need to transform this demand system into a system of revenue (or political expenditure) and quantity.

Let us define by $l = pQ$ the total amount spent on lobbying, which is the variable we normally observe in federally disclosed reports. We can simply derive demand and supply equations in terms of l and Q: $l_D = CQ^{1-1/\varepsilon}$ and $l_S = GQ^{1+1/\eta}$. It is easy to verify that, if $\varepsilon > 1$ (i.e., the elasticity of demand is larger than one), then both schedules will be upward sloping (**Figure 1**).

Using this framework, it is straightforward to reinterpret, for example, policy demand shifters as useful sources of identification to measure $\partial Q_S/\partial l_S$. This is consequential because it allows us to answer the question of how much policy an extra dollar of lobbying buys. Such an estimate is, of course, also closely related to the parameter η, since an extremely low value of η implies that policy is essentially not for sale and that $(\partial Q/\partial l) \times (l/Q) = \eta/(1+\eta)$ approaches zero.

Figure 1 shows that an increase in the demand for policy, caused by a shift in the parameter C, helps identify parameters of l_S. Such identifying variation is clearly related to the policy needs of firm F (such as the demand of protection from foreign competition in presence of adverse technological or financial shocks; e.g., Adelino & Dinc 2014, Faccio et al. 2006). Similarly, reduced-form papers related to the demand of lobbying services (ultimately related to the demand of policy l_D) can be identified by shifts in l_S. Shocks to politicians P (such as sudden jumps in the ability of a

[19]In fact, some of the early approaches to policy for sale were designed as menu auctions (Grossman & Helpman 1994), and other quid pro quo models rely on bargaining (Goldberg & Maggi 1999, Bombardini & Trebbi 2011).

local representative to deliver pork to his constituency) will be the key to identification along this other dimension.

3.2.1. Policy supply and identification through shocks to F. The concept of identifying policy supply conditions through firm demand shifters is exemplified by de Figueiredo & Silverman (2006), who study the process by which universities (special interests that, for all intents and purposes here, are considered equivalent to F) lobby to obtain federal earmark grants. The authors specify a policy demand side in which universities decide how much to invest in lobbying expenditures on the basis of their expected productivity in obtaining grants. In fact, the authors set out to estimate a parameter of the production function for earmarks, namely the productivity of lobbying expenditures. As anticipated above, one can reinterpret this parameter as a policy supply characteristic, in that it is related to the inverse of the supply slope (i.e., $\partial Q_S/\partial l_S$) and to the effect of an additional dollar of lobbying the amount of earmark grants won by the university.

To obtain identification, de Figueiredo & Silverman (2006) exploit the fact that different universities face different overhead rates. High overhead rates make grants more valuable for a university, because the institution retains a higher percentage of the grant to cover university-wide costs. Therefore, higher overheads induce a shift in the demand for the policy, which can then be used to estimate how public policy responds to lobbying. In a first-stage regression, lobbying expenditures are significantly predicted by overhead rates. According to a second-stage regression, the authors cannot reject the hypothesis that an extra dollar of lobbying yields a one-dollar increase in earmarks for those universities without any representation in the Senate or House Appropriations Committee (i.e., without a politician representing the electoral constituency in which the university is located). For universities with connections to the Appropriations Committees, the extra dollar spent on lobbying yields between $4.52 and $5.24 in additional earmarks, suggesting that the supply of earmarks is not independent of lobbying efforts.

A similar pattern of behavior is found in the lobbying activity of US cities set to obtain additional federal funding. Goldstein & You (2017), for instance, study cities with a population greater than 25,000 in the period between 1999 and 2012. As their identifying variation, the authors rely on the mismatch in terms of political control between the city and the corresponding state budgetary authority (e.g., a Democratic-controlled city in a Republican-controlled state, possibly at odds with each other). Such a political mismatch appears to induce a substantial underprovision of funding for local public goods supply. Lobbying the federal government, then, is the result of the city government trying to compensate for such a funding deficit through access to discretionary federal grants and earmarks. It is unclear whether this political influence effort on the part of municipal governments is entirely successful, unlike the case of universities. Goldstein & You (2017) use an instrumental variable[20] to estimate that the approximate return for $1 spent on lobbying is $1.02 for earmarks and $0.47 for 2009 Economic Recovery Act grants, the two outcome measures they consider.[21]

However, we note a specific issue raised by Goldstein & You (2017): Federal lobbying in this case may be benign and efficiency enhancing, in the sense that it is actually effective at rebalancing the distortions induced by the political opposition between city and state government. This is an

[20]Goldstein & You (2017) employ geographic distance from Washington, DC, as their instrumental variable. This is a common identification approach, used for similar instances by Igan et al. (2009) and Lambert (2019), but arguably is subject to criticism from the standpoint of exclusion restriction.

[21]A cumulative measure of total federal transfers to the municipality should be employed to precisely estimate the effective rate of return to lobbying and the supply elasticity. Unfortunately, Goldstein & You (2017) do not consider this measure.

issue if, for instance, the equilibrium absent lobbying is further from the social optimum due to distortions from partisan frictions.[22]

In a similar vein, Kerr et al. (2014) describe a shock to the demand side of policy in the specific context of work visa caps. They exploit the predetermined expiry of a temporary H-1B visa cap to study the reaction in the lobbying effort by firms differentially affected by the cap reduction. Firms are classified as dependent on high-skill immigration on the basis of the ethnic composition of their innovators and their past filings of labor condition applications[23] with the Department of Labor.

Kerr et al. (2014) find that, after the visa cap reduction, F's lobbying focused on high-skill immigration doubles as a share of total lobbying. Firms classified as dependent on high-skill immigration under the authors' criteria increase their lobbying, and the effect is much stronger for those firms that lobbied in the past on any issue (not only immigration). The authors attribute this persistency to a large initial fixed cost for firms to start lobbying, compared with the fixed cost of lobbying on a specific issue such as immigration. As discussed in Section 2, such fixed costs appear to be a realistic dimension of the data.[24]

3.2.2. Policy demand and identification through shocks to P. Shocks to the ability of P to deliver policy favorable to F are ideal sources of identification for tracing the profile of F's policy demand function. In addition, as firms demand policy favors and because policy favors require lobbying efforts, firms will demand services by lobbyists, L. This section presents a few reduced-form applications that operate in this space and shows the identification role of shocks to P in this case. It also shows how information on the market for L may be ultimately useful for learning about l_D.[25]

Among the papers estimating the effects of shocks to political targets P on lobbying, that by Blanes i Vidal et al. (2012) is remarkable for its simplicity and sharpness. The authors investigate the value of political connections in lobbying by estimating the revenue loss experienced by former Senate staffers-turned-lobbyists when the senator for whom they worked exits politics. More precisely, the authors evaluate how ex–government officials convert their acquired political connections into lobbying revenues and thereby infer the market valuation for political connections by corporate clients.[26] The econometric framework is extremely terse: a difference-in-differences setting where the exit of the politician is considered exogenous to the revenue dynamics of ex-staffers. Essentially, those lobbyists who lost a political connection are being compared with ex-staffers who did not. We note that Blanes i Vidal et al.'s (2012) working assumption is that the events driving the exit of senators being orthogonal to the fortunes of their connected lobbyists, a strong assumption if one considers that senators may strategically retire whenever their party's fortunes are turning.

[22] Such frictions can take many forms, including inefficient policy enactment or lack of response to crises (see also Mian et al. 2010, 2013 for how electoral constituencies may not be effective in preventing this).

[23] A labor condition application is necessary to hire a worker under the H-1B visa program.

[24] More generally, these results also have important implications for the dangers of policy hysteresis and lack of representation in a system where entry costs are prohibitive for a large fraction of the entities affected by policy.

[25] We note that the use of shocks to P may also be useful for detecting more subtle and opaque forms of political influence. Bertrand et al. (2018b) present evidence that this may be the case for political charitable giving by S&P and Fortune 500 corporations, for example, based on the changes in the direction of their grants. The authors estimate approximately $2.9 billion of political charitable giving per year.

[26] As is standard, revenues generated by lobbyists from each client are obtained from reports compiled by CRP from SOPR. The directory at **https://www.washingtonrepresentatives.com** is instead used to obtain lobbyists' career history and other observable characteristics (gender, education, etc.), while the data on former staffers are from the congressional staffer salaries database maintained and published by LegiStorm in 2012.

In a key finding, revolving-door lobbyists (i.e., former aides turned lobbyists) experience a persistent 24% drop in lobbying revenues when a connected senator exits office. Furthermore, ex-staffers are less likely to become lobbyists if their patron exits the Senate. Losses in lobbying revenue vary intuitively with the political power of the senator: Lobbyists connected to a senator in the powerful Finance and Appropriations Committees or the Ways and Means Committee have bigger drops in revenues at exit, while lobbyists with connections outside these committees have statistically insignificant drops in revenues.[27]

Political shifters are also useful in answering broader special interest politics questions about the market for L. "What exactly do lobbyists do?" is one of these questions. As mentioned in Section 1, some believe that lobbyists mainly provide the firms and other special interests they represent with access to politicians in their circle of influence and essentially help facilitate vote buying. Others believe that lobbyists' main role is to provide information and expertise to Members of Congress to guide the legislative decision-making process (at the very least, lobbyists trade associations promote this view). Bertrand et al. (2014) evaluate the relative economic importance of these two views of lobbying. Their main empirical approach consists of asking whether L mainly sticks to P, as a political connection à la Blanes i Vidal et al. (2012), or whether L mainly sticks to specific policy issues. If lobbyists provide companies with access to politicians within their circle of influence, one would expect lobbyists' job assignments to be determined mostly by the identity of P, independently of the specific issues being decided upon. A logical implication is then that a lobbyist should follow a closely connected Member of Congress as she or he moves from one committee assignment to another. In contrast, if L mainly provides expertise, one would expect L to be much more strongly attached to specific issues of competence (and, hence, specific committees or subcommittees), independently of which Ps populate them or whether P moves.

Bertrand et al. (2014) find evidence of lobbyists taking up new issues as the politicians they have been in contact with in the past change committee assignments, which is consistent with a relationship-based view of lobbying. Similarly, they find that the return premium to being an expert on an issue does not increase when the issue becomes more relevant in Congress. These facts point toward an economic dominance of political access motives over expertise.[28]

When further subsampling the data, Bertrand et al. (2014) find that lobbyists for whom access should be relatively more important in the political market (e.g., former Members of Congress turned lobbyists) are more likely to follow their politicians. Moreover, when a new politician is assigned to a congressional committee, it appears that the lobbyists who are active on that committee take steps to gain access to this new politician (particularly in the form of contributions to the politician's campaign), which is inconsistent with a pure expertise view of lobbying.

Another paper focusing on political shifts to assess influence is that by Dellavigna et al. (2016). These authors examine an indirect channel of lobbying to curry favor from conflicted politicians.

Silvio Berlusconi, a politician and media tycoon, was the Prime Minister of Italy for three terms during the period 1994–2011. His fluctuating political fortunes and movement into and out of office represent the identifying variation at the basis of Dellavigna et al.'s (2016) article. In the terminology coined by the authors, regulated firms employ "market-based lobbying" by shifting their advertising spending onto TV channels of the Mediaset firm (owned by Berlusconi), and away from others' avenues of commercial advertising, during Berlusconi's periods in office. P, in this application, transitions into and out of power, and so do Mediaset advertising revenues.

Dellavigna et al. (2016) conjecture that the strategic channeling of advertising spending underlies a quid pro quo in exchange for regulatory lenience. In fact, they establish that the strategic

[27] Surprisingly, such effects are also insignificant for staffers-turned-lobbyists in the House of Representatives.
[28] This is not to say that Bertrand et al. (2014) do not find evidence of a market value for expertise, which is in fact precisely estimated in the data (see also Section 4).

shifting of ad spending is observed only for firms in heavily regulated industries. Moreover, the large amounts of advertising spending by F, running to hundreds of millions of euros, make for an economically relevant channel.[29]

This discussion about market-based lobbying connects to a broader literature on identifying the value of political connections for firms. This empirical literature is vast; among its earliest and most striking applications are papers by Fisman (2001), Khwaja & Mian (2005), and Faccio (2006). Pertaining more closely to lobbying, Borisov et al. (2015) focus on the negative shock originating from the 2006 Jack Abramoff legal scandal and the loss of value for corporations engaged in lobbying around that event.

4. INFORMATIONAL LOBBYING: THEORY VERSUS MEASUREMENT

Relative to the quid pro quo approaches described in Sections 2 and 3, an area of research that has seen slower progress is the one measuring and providing evidence in favor of informational lobbying. The starting point for this approach is a view dear to interest groups and lobbyists themselves, which is that policy making is complicated and, therefore, P can benefit from receiving information from F, even though such entities have an incentive to skew the information transmitted to the policy maker. There is a rich and nuanced theoretical literature providing a variety of mechanisms that find a positive role played by communication between F and P. After summarizing these theories, we address the thornier question of whether the data support the predictions of these theories. The short answer is that the evidence points to some form of information being supplied, but not all the evidence lines up with the type of information that is beneficial to the public at large.

Models of informational lobbying start from the premise that the policy maker P is less informed than the interest group F, but at the same time P understands that she cannot take the information that F passes to her at face value because it will always tend to distort the information in its favor. There are two broad categories of models addressing this problem: cheap talk models and costly lobbying models. In cheap talk models, some information can be credibly revealed only in a rough way (Crawford & Sobel 1982). An interest group can rarely communicate exactly the value of some important variable, but it can communicate whether such a value lies in a given range.[30] The boundaries of such a range are given by the group's incentive to lie. The more aligned its preferences are with the policy maker's, the more precise the information communicated will be (Grossman & Helpman 2001, Krishna & Morgan 2001). In the presence of multiple interest groups, this theory predicts a welfare-enhancing role of groups with opposite biases relative to policy-maker preferences, because it induces a less coarse information transmission.[31] We return to this result below.

In contrast, theories of costly lobbying are essentially money-burning models in which lobbying expenditures signal the underlying state of the world to the politician. Potters & van Winden (1992) show that such lobbying costs are fixed and exogenous, but Grossman & Helpman (2001) illustrate how the logic easily extends to lobbying costs that are chosen by the interest group: The higher the cost chosen is, the more extreme must be the underlying variable that the policy maker

[29]To the skeptical reader, we note that to curry favor in such a not-so-subtle fashion is paradoxically legal in Italy because of the lack of a conflict-of-interest statute (often debated by parties in opposition to Silvio Berlusconi during his periods in power, but never enacted).

[30]Full revelation is easier to achieve if information and the policy space are multidimensional (as in Battaglini 2002), but there are exceptions. We do not discuss this voluminous literature here.

[31]The intuition is that each interest group can credibly communicate in a separate section of the underlying variable, so the information becomes more detailed.

needs to learn about. The important prediction of these models is that welfare can be higher for all parties involved, even when lobbying is an inherently wasteful activity. This welfare result carries through to more sophisticated hybrid models, where talk is cheap but there is a fee for access that can coarsely signal the otherwise unknown preference of the interest group (Austen-Smith 1987, 1995; Lohmann 1995; Cotton 2009). A related but distinct theory of lobbying is offered by Hall & Deardorff (2006), who hypothesize that information plays the role of a subsidy to otherwise resource-strapped legislators.[32]

We now turn to whether this potentially virtuous interaction of interest groups with policy makers is supported by the available empirical evidence. Obviously, it is inherently difficult to measure information exchanges in which what is said by firms to politicians is often not known. This scarcity compounds the above-cited difficulties common to quid pro quo studies in measuring policy outcomes (i.e., the output of the lobbying process). It is because of these difficulties that the evidence we have so far about the extent of informational lobbying is very indirect.

One way in which researchers had to creatively circumvent these availability and measurement issues is to look elsewhere for clues about informational lobbying. One example is the intermediary of much lobbying activity, namely the lobbying industry. The papers described in the next paragraph are interesting in their own right because they address the presence of an intermediary that finds no role in the established literature on informational lobbying. But by looking at how the intermediaries behave, they also shed some light on what their clients and their targets are exchanging.

The role assigned to the lobbying industry by recent papers (e.g., Groll & Ellis 2014, Ellis & Groll 2017, Hirsch et al. 2019) is essentially one of information verification. This role adds one more layer to the information transmission by inserting a middleman who, either through reputation or through shared preferences, is credible to the politician and can verify or filter some of the information. Because Hirsch et al. (2019) offer nice empirical support for the theory, we focus on their paper here. The data combine newly collected and available information on contacts between 219 lobbyists representing foreign interests and Members of Congress during the 110th and 111th US Congress. The Foreign Agents Registration Act makes reporting requirements for these lobbyists stricter compared with the LDA. In particular, reports must include the identity of the Member of Congress (or her staffer) contacted. Hirsch et al. (2019) explore the relationship between ideological closeness and lobbying contacts by supplementing these data with measures of ideology based on party affiliation,[33] DW-NOMINATE (dynamic, weighted nominal three-step estimation) scores, and campaign finance–based scores from DIME (Database on Ideology, Money in Politics, and Elections) (Bonica 2016). The most interesting empirical regularities that emerge are that (*a*) the presence of any lobbying contact is more likely for lobbyists who are more ideologically aligned with politicians and (*b*) conditional on the lobbyist having any contact with the politician, she brings him fewer clients when her ideology is more similar to the politician's and when she has a prior connection to a Member of Congress.

The first empirical finding echoes the familiar pattern that interest groups tend to lobby friendly legislators (Salisbury et al. 1989; Snyder 1990, 1991, 1992), a fact that has often been invoked in the theoretical literature as a validation of the common prediction that communication is credible only if the preferences of sender and receiver are sufficiently aligned (Grossman & Helpman 2001, chapter 5). The second empirical result is more nuanced and is partially explained

[32]Their theory explains why lobbyists appear to lobby friendly legislators and questions the persuasion role of the process. Schnakenberg (2017) revives the persuasive role of lobbying by postulating that the information provided by interest groups to friendly legislators can be used to persuade their less friendly colleagues.

[33]Party affiliations are from **https://www.washingtonrepresentatives.com**.

by the model. Lobbyists who are ideologically closer[34] or connected through past employment to politicians set a higher certification threshold: The case brought to them by the interest group has to be more favorable to the politician in order to gain representation from the lobbyist. We return to the difference between these two findings after reviewing another set of results that speak to the informational view of lobbying presented by Bertrand et al. (2014). As discussed above, these authors aim to distinguish between connections and expertise as a source of returns to lobbying. Although their main message is that connections seem to be driving a lot of the patterns of mobility and returns to lobbying, the authors do not rule out that information was still important in the activity of lobbyists. Let us, again, point to two specific results. First, whenever politicians do have contacts with those lobbyists that we classify as experts (based on how concentrated their lobbying work was on a specific topic), those lobbyists have a more balanced distribution in terms of party affiliation than the nonexperts. This result indirectly validates one of the key predictions of informational lobbying models with multiple senders (Krishna & Morgan 2001, Battaglini 2002). In those models, listening to senders with opposing biases generates a better-informed P. Second, the returns to lobbyists affiliated (through past employment as staffers, for example) with a given party move with the party's fortune in terms of control of both the two chambers of Congress and the presidency.

We believe that these findings point to a subtle but important distinction between the two types of information. While one type of information leads to overall better policy for the general population, the other is particularly beneficial to a specific politician or her constituency. Although some of these findings can be reconciled with a view in which lobbying is a vehicle for communicating information that is useful to maximize general welfare (the first finding from Bertrand et al. 2014, discussed above), it seems that lobbyists accumulate reputation not only by communicating the truth but also by filtering the dimensions of a given policy proposal that are more salient for a specific politician's (electoral) success. It is otherwise hard to justify why connections are so important in the paper by Bertrand et al. (2014) and why more politically aligned lobbyists are more selective in that by Hirsch et al. (2019).

We conclude this section with a discussion of recent research using one of the few comprehensive data sources in which the content of messages sent to the policy maker is available to researchers. The Administrative Procedure Act of 1946 (APA) formalized the rulemaking process in the United States by dictating that all federal agencies publish a preliminary version of all rules "designed to implement, interpret, or prescribe law or policy" on the Federal Register and allow time for comments by interested parties. The APA also prescribes that agencies address these comments when formulating the final version of the rules. Earlier research on the subject (Yackee & Yackee 2006) employed the content of comments to 40 rules by four agencies to detect the tendency of those agencies to incorporate changes advocated by businesses relative to nonbusiness commenters. Bertrand et al. (2018a) recently exploited advances in NLP to automate and extend the analysis to a large share of the comments made publicly available by 150 US federal agencies. Although the focus of their study is the relationship between firms' commenting patterns and those of nonprofit recipients of the firms' philanthropic giving, Bertrand et al. (2018a) demonstrate the potential of the use of NLP in the study of informational lobbying. For example, by using latent semantic analysis,[35] the authors find that the similarity between the content of comments by a nonprofit and the content of comments by its benefactor increases immediately after a donation.

[34]The model actually predicts that selectivity increases as the ideological distance between the interest group and the lobbyist increases, but such a fine prediction is difficult to map to the data.

[35]Latent semantic analysis is an established technique that reduces a body of text to a vector of word frequencies and measures the distance between texts after further reducing the dimensionality of the vectors via singular value decomposition.

They use a similar technique to show how such cocommenting is associated with an increase in similarity between the firm's comments and the agency's discussion of the final rule. While it is hard to pinpoint the welfare effect of these messages, or even the exact degree to which policy is affected by these messages, this area promises to be a fruitful means of exploring information transmission.

5. LOBBYING OUTSIDE OF THE UNITED STATES: CANADA AND THE EUROPEAN UNION

5.1. Lobbying in Canada

Canada passed its Lobbyist Registration Act in 1989, amended by the Lobbying Act of 2008, which strengthened revolving-door provisions and instituted more severe punishment for violations. The Registry of Lobbyists, overseen by the Office of the Commissioner of Lobbying of Canada, has been active since 1996. The Registry reports similar data to the US LDA database, with information on clients, registrants, and topics discussed. However, the Registry imposes disclosure of the public officials contacted, a feature common to the EU registry but different from that in the United States. Another major difference is the lack of data on fees paid to lobbyists, a feature that makes comparisons with the United States in terms of overall activity difficult. The number of lobbyists engaged offers a comparable dimension. The Commissioner's 2017–2018 annual report counts 9,000 lobbyists, of which just over 1,000 are external lobbyists and the rest in-house. This is in stark contrast with the more developed external lobbying industry in the United States, discussed above. The sheer number of lobbyists, however, is comparable to the 11,654 count in the United States for the same year.

A very small number of academic papers has made use of Registry data in the context of specific policy issues, such as international trade (Stoyanov 2009). An exception is a paper by Hickey (2014), who finds that connections in Canadian lobbying are much less important compared with findings by Bertrand et al. (2014), as only 6% of Canadian lobbyists tend to follow ministers who are reshuffled to different Cabinet positions.[36]

5.2. Lobbying in the European Union

Individual European countries have almost no systems to record the activity of lobbyists. According to Transparency International (Mulcahy 2015), of the 19 countries examined, only 7 (Austria, France, Ireland, Lithuania, Poland, Slovenia, and the United Kingdom) have laws or regulations specifically regulating lobbying activities. Although those seven countries plus the European Commission have a registry, none has a mandatory registration requirement, and there is no strict enforcement mechanism or oversight. The only measures that appear with some frequency in individual countries are revolving-door provisions aimed at reducing public officials' incentives to direct policies in directions favorable to future prospective employers.

Arguably the most important effort in improving the public's knowledge of the organizations trying to influence EU-level policy decisions is the registry set up by the Interinstitutional Agreement between the European Commission and the European Parliament in 2011. The voluntary Transparency Register, managed by the Joint Transparency Register Secretariat, has seen a steady increase in registrants, from 5,431 in 2012 to 11,901 in 2018. Although the registry is voluntary, there are incentives to register in order to have access both to the European Parliament's premises

[36]The lesser importance of connections in Canada may be because, in a parliamentary system like Canada's, parties tend to be more important and personal connections to individual ministers may not be a key asset.

and to meetings with commissioners, cabinet members, and directors general. As of spring 2019, a mandatory version of the registry has been under discussion.

In analogy to SOPR data, the Register collects reports (albeit less frequently filed) by registrants, which can be lobbyists or law firms working on behalf of clients or the organizations themselves. It reports lobbying expenditures less precisely (in bins, rather than listing specific amounts) and has a space for the topics and legislation object of lobbying, as well for the names of the lobbyists with formal accreditation. The Register also includes a record of the firms or organizations on whose behalf a lobbying firm works. An important difference, relative to US data, is that the Register, similarly to its Canadian counterpart, reports a list of meetings with commissioners and other public office holders.

The amounts are substantial. The Register reports, for example, that in 2018 Apple spent €2–2.25 million to lobby the European Commission and the European Parliament and employed 3.8 full-time equivalents. By comparison, it spent $6.7 million in the United States. Royal Dutch Shell spent €4.5–4.75 million, while it spent almost $9 million in the United States. Similarly to the United States, firms can lobby either directly or through a lobbying firm. The largest registrant in terms of lobbying expenditure is FTI Consulting Belgium, a subsidiary of a K Street firm, which in 2018 reported close to €7 million in lobbying costs, quite far from the top lobbying firm, Akin Gump Strauss Hauer & Feld LLP, which declared $37 million in revenues in 2018. These numbers show that although the institutionalization of lobbying activities may be slow, the value of the lobbying activities in the EU is considerable.

Due to the voluntary nature of the Transparency Register and the lack of historical data, academic empirical research on lobbying using EU lobbying reports has been scarce.[37] Dellis & Sondermann (2017) recently undertook the task of matching the lobbying activity of firms in the Register with other balance-sheet and industry affiliations from the Orbis database from Bureau van Dijk. The authors found around 2,000 firms in Orbis, which we note covers more than publicly traded firms (unlike Compustat). Therefore, it is not obvious how to compare, in terms of the frequency of lobbying, the nearly 800 firms from Compustat identified as lobbying by Huneeus & Kim (2019) and this sample.

6. CONCLUSIONS

This review offers a brief political economy overview of recent empirical approaches to the study of special interest politics and lobbying. After a substantial amount of theoretical effort in the 1990s and 2000s on the role and effects of lobbying, careful data work is now advancing the research frontier.

After presenting the main sources of available information and the crucial data disclosure issues, we organize the research as either quid pro quo or informational. In the context of quid pro quo approaches, we try to emphasize the few research applications where both policy supply and demand are resolved simultaneously—our preferred perspective to the study of the political behavior of firms. We discuss how some of the approaches reviewed in this article allow one to explicitly tackle counterfactual policy outcomes under no lobbying. Ultimately, the welfare effects of lobbying and corporate advocacy should be studied under this perspective. Yet, it seems fair to say that they are still only partially understood, and some of the structural models display symptoms of misspecification.

[37] Greenwood & Dreger (2013) provide an early description of the data and show that the majority of lobbying entities are businesses or trade associations, with a small fraction of professional lobbyists relative to the United States.

The benefits of studying lobbying are high. Income and wealth inequality have been increasing over time within Western democracies, and so have political polarization and capture in the eyes of the median voter. The reader interested in how economic concentration translates into policy inefficiency and into political distortions is advised to invest effort in the study of lobbying and political influence (for a related perspective, see Esteban & Ray 2006). These nonmarket activities appear to be the main cog in a mechanism through which such economic differences ossify, perpetuate over time, and further amplify inefficiencies in public policy.

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