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Revisiting the link between PAC contributions and lobbying expenditures

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ABSTRACT

Data on campaign contributions of PACs (political action committees) in the US does not contain the PACs' issues of concern. Additionally, while recent US lobbying data details the issues of concern for an interest group, it does not detail the Congressional representatives lobbied by the interest group. Expanding the time-frame of earlier work, I confirm that PACs engaging in lobbying and campaign contributions account for the majority of such political money despite representing a small minority of all PACs. I show how this allows the construction of a novel dataset that decomposes representative-specific contributions across issues as well as issue-specific lobbying expenditures across representatives. This decomposition can qualitatively affect results regarding the relationship between political money and Congressional voting behavior on trade policy.

1. Introduction

The empirical political economy literature has long studied how money flowing from interest groups to political actors affects policy outcomes. Such studies often consider how campaign contributions by PACs (political action committees) in the US affect Congressional voting behavior on a particular bill. Surveying the literature, Ansolabehere et al. (2003, p. 113) list 36 such studies in economics and political science with international trade policy a common area for analysis (for additional recent examples see Baldwin and Magee, 2000; Magee, 2010; Fredriksson et al., 2011; Conconi et al., 2012a). In addition to studies focusing on Congressional voting behavior, the empirical international trade policy literature has also seen data on PAC contributions play an important role in analyzing the "protection for sale" model of Grossman and Helpman (1994) (e.g. Maggi and Goldberg, 1999; Gawande and Bandyopadhyay, 2000).

However, as discussed in the empirical protection for sale literature (e.g. Maggi and Goldberg, 1999 and Gawande and Bandyopadhyay, 2000) and more recently by Bombardini and Trebbi (2012), studies linking PAC contributions to policy outcomes face an important limitation: PAC contributions data does not include issues of concern to the PAC (e.g. international trade, environment, health care and immigration.). Thus, the data on a PAC's contributions effectively aggregate contributions over the PAC's various issues of concern. To this end, the recent availability of US lobbying data (due to the 1995 Lobbying and Disclosure Act) and the dis-

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closure therein of the interest group's issues of concern has led authors to study the link between lobbying and policy outcomes with international trade policy again occupying a central area of analysis (e.g. Ludema et al., 2011; Bombardini and Trebbi, 2012).[1,2] Nevertheless, the lobbying data does not divulge which Congressional representatives are lobbied and thus does not allow researchers to link issue-specific lobbying expenditures to Congressional voting behavior on particular bills.

The main contribution of this paper is a novel dataset that deals with these data limitations by decomposing an interest group's issue-specific lobbying expenditures across Congressional representatives and an interest group's representative-specific PAC contributions across issues. To do so, I exploit a theoretical and empirical link between PAC contributions and lobbying expenditures.

A popular theory linking PAC contributions and lobbying expenditures is that contributions provide access to legislators and this access allows the PAC to influence the legislator via lobbying (e.g. Austen-Smith, 1995; Wright, 1996). However, empirical evidence accumulated by the early 2000s painted a dim picture of this "access view". Empirical wisdom held that most interest groups who engage in PAC contributions do not lobby and that most interest groups who lobby do not engage in PAC contributions (see, e.g., Schlozman and Tierney, 1986; Wright, 1989; Nownes and Freeman, 1998; Gais, 1998) and that PAC contributions seek to change the composition of the legislature rather than affect the policy of the elected legislature (see, e.g., Wright, 1985; Grenzke, 1989). However, Ansolabehere et al. (2002) (AST, hereafter) showed that this empirical evidence was heavily misleading (Milyo, 2002): while confirming earlier evidence that the vast majority of PACs that contribute do not lobby and vice-versa, AST found strong support for the access view because those PACs engaging in contributions and lobbying ("access groups" hereafter) account for 70% of all such money ("political money" hereafter).

Before constructing the dataset, I extend the sample period of AST from the single Congressional cycle ("cycle" hereafter) of 1997–98 to all cycles between 1997–98 and 2011–12 and confirm that the insight of AST is a systematic feature of the US political system. Specifically, access groups account for the majority of political money over the entire sample period. That is, the majority of political money in the data flows from interest groups for whom the data divulges the composition of their contributions across Congressional representatives and the composition of their lobbying expenditures across issues. This allows me to decompose the majority of an interest group's PAC contributions across issues and the majority of their lobbying expenditures across representatives with only small residual "unallocated" categories. While the primary purpose of verifying the AST result is a preliminary step enroute to the decomposition, two subsidiary results emerge: i) the extent that access groups account for the majority of political money in the 1997–98 cycle of AST was somewhat of an anomaly, and ii) the composition of contributions and the nature of groups that contribute has changed dramatically in recent cycles.

Having confirmed the empirical linkage between PAC contributions and lobbying expenditures, I present a simple and intuitive decomposition of i) PAC contributions across issues, even though the data does not tie contributions to issues, and ii) issue-specific lobbying expenditures across representatives, even though the data does not tie lobbying expenditures to representatives. I present this decomposition for the House Speaker and House Minority Leader on seven important issues in the 2011–12 cycle. The complete dataset is available in the supplementary material and contains issue-specific contributions and lobbying expenditures for each House representative and each of the 79 issues (of the 1995 Lobbying Disclosure Act) for each cycle between 1999–2000 and 2011–12.

Having representative-issue specific contributions and lobbying expenditures represents a clear advantage for researchers if the observation of Ansolabehere et al. (2003) regarding the surprisingly tenuous link from PAC contributions to Congressional voting behavior derives from researchers' inability to link contributions to bill relevant issues. Indeed, I illustrate this advantage for Congressional voting behavior on Free Trade Agreements (FTAs). The literature analyzing Congressional voting behavior on trade policy has typically used PAC contributions by business and labor groups to proxy, respectively, the pro- and anti-trade influence of interest groups (e.g. Baldwin and Magee, 2000; Im and Sung, 2011; Conconi et al., 2012a, 2014). Using estimation techniques employed in the recent trade policy literature (e.g. Ludema et al., 2011; Conconi et al., 2012b, 2014), I analyze the votes on all FTAs in the House of Representatives since 1998. Using the standard PAC contribution variables, there is no statistically significant relationship between political money used by either business or labor groups and voting behavior. However, using representative-trade specific contributions and lobbying expenditures by business groups (instead of PAC contributions by business groups) and labor groups (instead of PAC contributions by labor groups), there is a statistically significant relationship between trade-related political money used by business groups and the likelihood that a representative votes in favor of an FTA. This finding highlights the benefit of having representative-issue specific measures of contributions and lobbying expenditures.

A key issue addressed in this paper – how to construct measures of representative-issue specific lobbying expenditures – is related to recent work by Bertrand et al. (2011) and Vidal et al. (2012). These papers also attempt to uncover relationships between lobbying and representatives. However, rather than attempting to decompose an interest group's issue-specific lobbying expenditures across representatives, they focus on whether interest groups pay premiums for lobbyists who are more connected with representatives and, indeed, find evidence of such premiums.[3] These results suggest that the value that an interest group places on a dollar paid to a lobbyist depends on the connectedness of the lobbyist to representatives who can influence the interest group's issues of concern. In particular, Bertrand et al. (2011) show that lobbyists tend to focus on issues relevant to the committee assignment of the representatives to whom they are most connected even when these representatives switch committee assignments and hence deal with a different

[1] Additional examples outside of international trade policy include Bertrand et al. (2011), Facchini et al. (2011) and Kang (2014).

[2] Rather than use lobbying data to tie international trade issues and political money, Gawande (1997) and Gawande and Bandyopadhyay (2000) take an alternative approach. They regress PAC campaign contributions on trade related variables such as import penetration and interpret predicted values using the trade-related variables as trade-related contributions (the former paper) and industries with positive import penetration coefficients as politically organized for the purposes of international trade (the latter paper).

[3] Bertrand et al. (2011) interpret connectedness based on personal campaign contributions from lobbyists to representatives while Vidal et al. (2012) interpret connectedness based on former Congressional staff appointments held by lobbyists.

set of issues. Thus, the work of Bertrand et al. (2011) and Vidal et al. (2012) explicitly deals with the nature of the intermediary role played by lobbyists, as a conduit between interest groups and representatives, whereas I treat this role as a black box.

2. Relationship between contributions and lobbying

All contribution and lobbying data comes from the Center for Responsive Politics (CRP).[4] The PAC contributions data covers the 1997–2012 period.[5] The lobbying data covers the 1998–2012 period. Table 1 of AST presents their key insight that access groups (i.e. interest groups that engage in lobbying and campaign contributions) contribute the vast majority of political money (i.e. lobbying expenditures plus campaign contributions). Table 1 here presents this information for cycles between 1997–98 and 2011–12. Three features stand out.

First, AST's insight is a systematic feature of the data. Access groups (i.e. those that engage in lobbying and contributions) account for 56–64% of political money despite accounting for only 10–15% of interest groups. A few potential reasons explain my 56–64% figure vis-a-vis AST's 70% figure. AST (p. 153) describe using numerous sources to determine whether an interest group contributed and lobbied. However, I merely merge the contributions and lobbying datasets. Moreover, the raw lobbying dataset contains many duplicate reports because either i) a revised/updated report was subsequently filed, ii) firms using both in-house lobbyists and lobbying firms file reports including total lobbying expenditure but the lobbying firms also file reports, or iii) parent firms file reports including lobbying activities of subsidiaries but the subsidiaries or their lobbying firms also file reports. The CRP dataset explicitly deals with these issues.

The second standout feature of the table also helps explain the aforementioned discrepancy: the 1997–98 cycle was *somewhat* of an anomaly. Table 1 says access groups accounted for 64% of political money in 1997–98 and did not account for more than 64% in any subsequent cycle. Moreover, the CRP lobbying data only begins in 1998. Thus, Table 1 omits 1997 lobbying expenditures implying 64% is an imperfect estimate. Replacing the 1997–98 lobbying expenditure figures with the AST figures raises the 64% figure to 70%.[6]

The third standout features of Table 1 are the dramatic changes in the nature of contributions and the types of groups that contribute. Between 1997–98 and 2007–08, access groups accounted for 80–85% of total contributions but only 75% in 2009–10 and 57% in 2011–12. Underlying this change is a dramatic shift in the composition of contributions towards independent expenditures which are predominately undertaken by groups that only contribute.

The CRP data distinguishes between direct contributions (given directly to the candidate) and indirect contributions (spent on behalf of the candidate). Fig. 1 depicts indirect and total contributions, showing that indirect contributions rose from 7–15% of total contributions between 1997–98 and 2007–08 to 30% in 2009–10 and 52% in 2011–12. Indirect expenditures include PAC internal communications advocating for or against candidates, coordinated expenditures that contribute to candidates' general campaigns and independent expenditures. Independent expenditures are advertisements directed at the entire electorate and specifically advocate for or against a candidate. Fig. 1 shows that the growth in indirect contributions is largely attributable to growth in independent expenditures which grew from 61% of indirect expenditures in 2001–02 to 98% in 2011–12. Interestingly, Fig. 1 also shows that access groups typically accounted for 80–90% of indirect contributions prior to 2009–10 but only 51% in 2009–10 and 29% in 2011–12. Following the AST interpretation of "contribution only" groups (i.e. non-access groups who contribute), this indicates a massive increase in contributions by groups who intend on changing the legislature's composition rather than gaining access to and influencing existing legislators' views.

This massive growth in independent expenditures corresponds with i) the Bipartisan Campaign Reform Act of 2002 which increased contribution limits while severely limiting legal "soft money", ii) the ruling of the 2010 Citizens United v. Federal Electoral Commission (FEC) case which now allows corporations and unions to fund independent expenditures via their general treasuries rather than through their PAC, and iii) the ruling of the 2010 SpeechNow.org v. Federal Election Commission case which now allows a PAC to raise unlimited amounts of money from donors if funding independent expenditures is their sole purpose.[7]

3. Allocating contributions to issues and lobbying expenditures to representatives

As documented by Ansolabehere et al. (2003) (among others), the link from contributions to policy via Congressional voting is surprisingly tenuous. One possible reason is that the researcher does not know the share of a representative's contributions related to issues regarding the particular bill in question. Unfortunately, the FEC contribution reports do not contain this information. However, the fact that access groups systematically comprise the bulk of political money suggests a method for estimating the amounts of political money received by representatives on particular issues.

While contributions data address the representatives being targeted, it does not address the issues of concern. However, the lobbying disclosure reports filed under the 1995 Lobbying Disclosure Act address the issues of concern (from a pre-defined list of 79 issues) even though they do not address the representatives being targeted.[8] Given access groups comprise the bulk of political money, one can use a group's issues of concern to apportion its contributions across issues (note, contributions always refer to *direct*

[4] https://www.opensecrets.org/myos/.

[5] Per AST, a PAC here refers to non-party related PACs. In the CRP data this means PACs that are not party, leadership, joint fundraising, or candidate PACs.

[6] In 1998 dollars, Table 1 of AST says PAC lobbying in the 1997–98 cycle was 2624 million and my Table 1 (per CRP data) says PAC lobbying in 1998 was 1448 million. That is, taking these data as given, 55% of lobbying expenditures in the 1997–98 cycle occurred in the election year itself.

[7] http://www.opensecrets.org/resources/learn/glossary.php.

[8] http://lobbyingdisclosure.house.gov/help/WordDocuments/lobbyingissuecodes.htm.

Table 1
Relationship between contributions and lobbying across Congressional cycles.

Group type	*N*	%	Lobby $	%	Contribs. $	%	Total $	%
1997–98								
Lobby only	4006	62%	562	39%			562	34%
Contribute only	1471	23%			44	20%	44	3%
Lobby and contribute	968	15%	886	61%	180	80%	1065	64%
Total	6445	100%	1448	100%	224	100%	1672	100%
1999–2000								
Lobby only	5625	70%	1202	42%			1202	38%
Contribute only	1324	16%			44	17%	44	1%
Lobby and contribute	1086	14%	1688	58%	212	83%	1900	60%
Total	8035	100%	2890	100%	256	100%	3147	100%
2001–02								
Lobby only	7111	74%	1432	45%			1432	41%
Contribute only	1342	14%			39	15%	39	1%
Lobby and contribute	1150	12%	1765	55%	225	85%	1990	58%
Total	9603	100%	3197	100%	264	100%	3460	100%
2003–04								
Lobby only	8659	77%	1690	45%			1690	42%
Contribute only	1323	12%			40	15%	40	1%
Lobby and contribute	1256	11%	2047	55%	227	85%	2274	57%
Total	11,282	100%	3737	100%	267	100%	4004	100%
2005–06								
Lobby only	10,272	79%	1938	46%			1938	43%
Contribute only	1406	11%			49	15%	49	1%
Lobby and contribute	1331	10%	2258	54%	269	85%	2527	56%
Total	13,009	100%	4196	100%	318	100%	4514	100%
2007–08								
Lobby only	11,358	80%	2055	42%			2055	39%
Contribute only	1421	10%			54	15%	54	1%
Lobby and contribute	1449	10%	2841	58%	297	85%	3138	60%
Total	14,228	100%	4896	100%	350	100%	5246	100%
2009–10								
Lobby only	12,395	81%	2122	39%			2122	36%
Contribute only	1501	10%			106	25%	106	2%
Lobby and contribute	1487	10%	3376	61%	325	75%	3701	62%
Total	15,383	100%	5498	100%	432	100%	5930	100%
2011–12								
Lobby only	10,151	76%	1773	36%			1773	31%
Contribute only	1651	12%			280	43%	280	5%
Lobby and contribute	1512	11%	3214	64%	365	57%	3579	64%
Total	13,314	100%	4987	100%	645	100%	5632	100%

Notes: *N* indicates number of groups. Lobby $ = lobbying by PACs. Contribs. $ = PAC contributions to Congressional candidates. Amounts are in millions of 1998 dollars. Lobbying in the 1997–98 Congressional cycle only includes 1998 lobbying expenditures.

contributions hereafter).[9] Similarly, one can use the group's contributions to apportion its lobbying expenditure on a particular issue across representatives.

To apportion a representative's contributions across issues, I use the lobbying data to determine how the groups donating to the representative allocate their lobbying expenditures across issues. Two features of the data must be noted. First, while the lobbying data does not address the representatives targeted, it does address the government agency lobbied (e.g. House, Senate and Department of Defense).[10] Second, unfortunately, the lobbying disclosure reports merely provide the total amount of lobbying undertaken and the list of issues lobbied on during the filing period (the Honest Leadership and Open Government Act of 2007 increased the filing frequency from semi-annually to quarterly); there is no information on how an interest group splits the specified lobbying expenditure across the issues listed in the disclosure report. Thus, I apportion the lobbying expenditure in a report equally across all issues and agencies listed in a report.[11]

[9] I focus only on direct contributions here because indirect contributions are largely advertisements funded by groups that do not coordinate with the candidate and could be advocating either *for or against* the candidate.

[10] The lobbying dataset contains 247 government agencies that were lobbied.

[11] 58% of lobbying disclosure reports between 1998 and 2012 list only 1 issue, 75% list 1–2 issues and 90% list 1–4 issues. 94% of lobbying disclosure reports between 1998 and 2012 list the US House of Representatives as an agency lobbied, 48% list 1–2 agencies lobbied and 79% list 1–4 agencies lobbied.

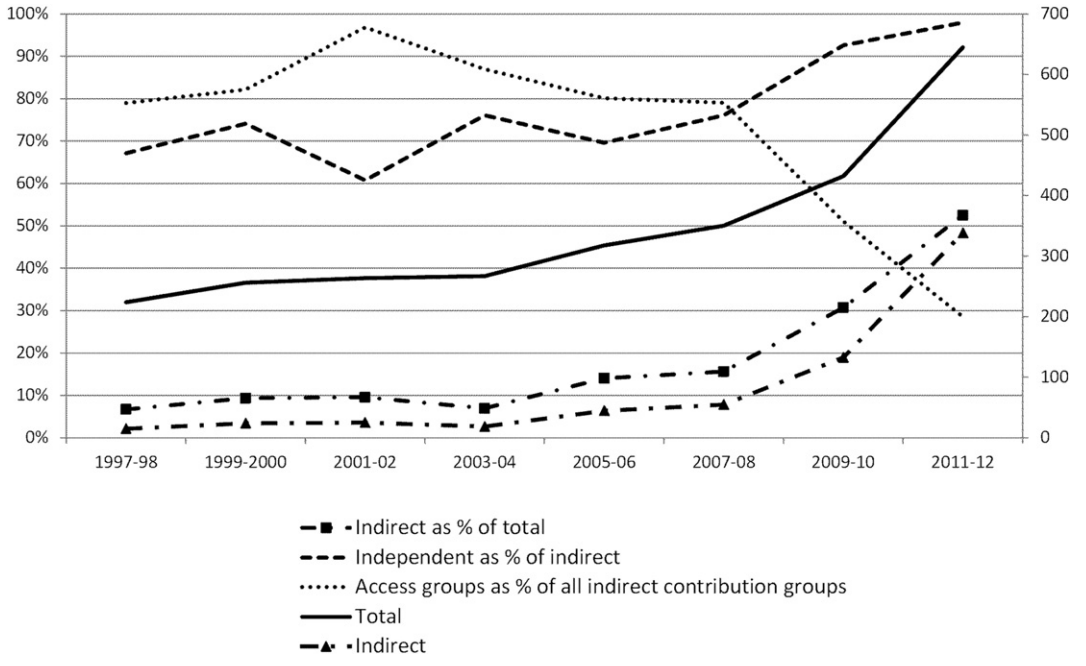

Fig. 1. Contributions (in millions of 1998 dollars) for each Congressional cycle between 1997–98 and 2011–12.

To be clear, denote the lobbying expenditure, number of issues and number of agencies, respectively, listed in lobbying report r by group g in cycle t as L_{rgt}, K_{rgt} and A_{rgt}.[12] Let R_{kgt} denote the set of reports filed by group g in cycle t that list the House as an agency lobbied and issue k as an issue lobbied. Then, the lobbying expenditure by group g on issue k targeted at House representatives in cycle t is

$$L_{kgt} = \sum_{r \in R_{kgt}} \frac{1}{K_{rgt}} \frac{1}{A_{rgt}} L_{rgt}. \tag{1}$$

Moreover, $l_{kgt} = \frac{L_{kgt}}{\sum_k L_{kgt}}$ denotes the share of group g's lobbying expenditure (targeted at House representatives) on issue k in cycle t. Given House representative i receives contributions of C_{igt} from group g in cycle t, then

$$C_{ikt} = \sum_g l_{kgt} C_{igt} \tag{2}$$

represents a measure of representative i's contributions on issue k in cycle t. For example, consider the 2011–12 cycle and suppose the American Chamber of Commerce (ACC) contributes $5000 to House Speaker John Boehner and 10% of the ACC's lobbying expenditures are related to international trade. Then, I treat $500 of the ACC's contributions to John Boehner as contributions received by John Boehner for international trade issues.

One can also allocate lobbying expenditures across representatives using an analogous procedure. Letting $c_{igt} = \frac{C_{igt}}{\sum_i C_{igt}}$ denote the share of group g's contributions going to House representative i in cycle t, then

$$L_{ikt} = \sum_g c_{igt} L_{kgt} \tag{3}$$

represents a measure of how much representative i was lobbied on issue k in cycle t. For example, consider the 2011–12 cycle and suppose the ACC expends $100,000 on lobbying for international trade issues and contributions to John Boehner account for 5% of all House contributions given by the ACC. Then, I treat $5000 as representing the amount that the ACC lobbied John Boehner on international trade issues.

Of course, a larger share of direct contributions (lobbying expenditures) will be allocated across issues (representatives) when access groups account for a larger share of lobbying expenditures (direct contributions). Given the presence of some groups that contribute but do not lobby, some contributions cannot be allocated across issues. These contributions comprise a residual

[12] The CRP data allows one to consider the interest group as the actual PAC or the parent PAC (nevertheless, the two mostly coincide). For example, the American Bankers Association may be the parent PAC and the actual PACs may be the California Bankers Association and the New York Bankers Association. I treat the interest group as the parent PAC.

"unallocated contributions" category for a given House representative. Note, Table 1 shows that access groups are accounting for a smaller share of *total* contributions over recent cycles (57% in 2011–12 versus 85% in 2007–08). However, this merely emphasizes the fact identified in the previous section that groups engaging in indirect contributions are often groups who do not lobby and, per the interpretation of AST, are groups who intend to change the composition of the legislature rather than influence policy of the existing legislature. Indeed, Table A.1 shows that the share of *direct* contributions accounted for by access groups is stable over recent cycles. Thus, the declining share of total contributions for access groups in recent cycles does not pose problems for the methodology described in this section.

Table A.2 shows how the decompositions described in this section give measures of contributions and lobbying expenditures on seven major issues for the House Speaker John Boehner (Republican) and House Minority Leader Nancy Pelosi (Democrat) in the 2011–12 cycle. Less than 10% of contributions remain unallocated. The dataset containing representative-issue-cycle specific amounts of contributions, C_{ikt}, and lobbying expenditures, L_{ikt}, for all House representatives, all 79 issues and all cycles between 1999–2000 and 2011–12 is available in the supplementary material.

4. Congressional voting behavior on Free Trade Agreements

4.1. Background and empirical model

Baldwin and Magee (2000) represent an important paper in the early literature analyzing the empirical link between political money and Congressional voting behavior on trade policy. Relative to earlier papers in the literature, Baldwin and Magee (2000) recognized the problems posed by the endogeneity of political money given that, presumably, an interest group's choice about whether to influence a particular representative's voting behavior on a particular bill depends on the representative's position regarding the bill. Baldwin and Magee (2000) analyze Congressional voting behavior on three trade bills: the 1993 vote on NAFTA (North American Free Trade Agreement), the 1993 vote on extending most favored nation status to China, and the 1994 vote on implementation of the Uruguay Round agreements.[13] To address the endogeneity of political money, Baldwin and Magee (2000) estimated a system of five simultaneous equations; an equation for each of the three votes, an equation for PAC contributions by labor groups, and an equation for PAC contributions by business groups.[14]

Recent contributions to the empirical literature analyzing Congressional voting behavior of trade policy have analyzed temporary tariff suspension bills (Ludema et al., 2011) and bills regarding Free Trade Agreements (FTAs), fast track authority and multilateral commitments negotiated through the GATT (Conconi et al., 2012a,b, 2014).[15] Unlike Baldwin and Magee (2000), these papers carry our their estimation using a single equation probit model and/or a single equation linear probability model. When treating political money as endogenous, they use instrumental variables.[16] Importantly, unlike Baldwin and Magee (2000), all of these papers estimate their single equation empirical model using multiple bills and thus they incorporate various fixed effects.

I will follow a similar approach to these recent contributions and estimate single equation linear probability models and single equation probit models using instrumental variables and fixed effects. Given the lobbying data begins in 1998, I analyze voting behavior on all FTAs brought before the US House of Representatives thereafter.

In particular, I will present variants of the following empirical specification:

$$v_{idsbt} = x_{it}\beta_1 + x_{dt}\beta_2 + x_{dbt}\beta_3 + x_{st}\beta_4 + M_{it}\theta + \widetilde{\varepsilon}_{idsbt}. \tag{4}$$

v_{idsbt} is the vote cast by representative i from congressional district (CD) d located in state s on FTA bill b in year t and takes on the value of one (zero) if the representative voted in favor (against) the proposed FTA. Various vectors of covariates are included in (4): representative (x_{it}), district (x_{dt}), district-bill (x_{dbt}) and state (x_{st}) covariates. M_{it} represents a vector of political money variables and thus θ are the parameters of interest.

To illustrate the benefits of the decomposition introduced in Section 3, I present two sets of results for each specification. The first set uses the standard political money variables found in the existing literature: PAC contributions targeted at representative i by business and labor groups, denoted Bus_{it}^{PAC} and Lab_{it}^{PAC}, in the cycle prior to the current session of Congress.[17] The second set uses the natural analogs of these variables based on Section 3: trade-related contributions and lobbying targeted at representative i by business and labor groups, denoted Bus_{it}^{TRD} and Lab_{it}^{TRD}, in the cycle prior to the current session of Congress.[18]

Like recent papers in the literature, the composite error term $\widetilde{\varepsilon}_{idsbt}$ includes various fixed effects in addition to an idiosyncratic component ε_{idsbt}. All specifications presented include representative fixed effects. Each specification also includes one of the following

[13] All members of the World Trade Organization (WTO) commit to levying non-discriminatory tariffs, the so-called "most favored nation" tariffs, on other WTO members. However, since China was not a member of the WTO in the 1990s, the US was not required to grant most favored nation status to China.

[14] Using the empirical framework of Baldwin and Magee (2000), Im and Sung (2011) find similar results for US Free Trade Agreements that were voted on in the 108th and 109th Congress.

[15] Fast track authority gives the Executive branch of the US government authority to negotiate FTAs after which Congress must vote up or down on the bill (i.e. Congress cannot attach amendments). The GATT (General Agreement on Tariffs and Trade) is the predecessor of the World Trade Organization.

[16] Of these papers, only Ludema et al. (2011) treat political money as endogenous.

[17] For example, consider the 2003 vote on the US–Chile FTA. Then Bus_{it}^{PAC} and Lab_{it}^{PAC} correspond to the contributions received by representative i from business and labor groups in the 2001–02 Congressional cycle.

[18] To be clear, let C_{ikt}^{Lab} and C_{ikt}^{Bus} be defined as in Eq. (2) but where the aggregation is only over groups who are, respectively, labor and business PACs. Similarly define L_{ikt}^{Lab} and L_{ikt}^{Bus} using Eq. (3). Then, $Bus_{it}^{TRD} \equiv C_{ik^*t}^{Bus} + L_{ik^*t}^{Bus}$ and $Lab_{it}^{TRD} \equiv C_{ik^*t}^{Lab} + L_{ik^*t}^{Lab}$ where k^* represents the issue of international trade.

fixed effects: year, year-by-region, FTA or FTA-by-region. [19]Representative fixed effects control for unobservables that affect a representative's voting behavior and are also correlated with the economic or political climate of the district or, more importantly, the political money directed at the representative. Year and year-by-region fixed effects help control for economic and political factors specific to a given year that could be correlated with the representative's voting behavior. Since multiple FTAs sometimes come before Congress in a given year, FTA and FTA-by-region fixed effects are more comprehensive than year and year-by-region fixed effects and help control for economic and political factors specific to a given FTA that could be correlated with a representative's voting behavior. In either case, year-by-region and FTA-by-region fixed effects allow heterogeneity across regions in the impact of the various economic and political factors specific to a given year or FTA.

4.2. Data

Before describing the data underlying Eq. (4), note that Table A.3 summarizes the data and lists the source for each variable. Table A.4 presents the summary statistics of the data while Table A.5 describes the voting outcomes for each FTA in the sample. Apart from the political money, committee member and FTA partner(s) GDP variables used here the data is identical to that used by Lake and Millimet (2014) and hence Tables A.3–A.5 are essentially identical to those presented by Lake and Millimet (2014).

The use of representative and year or FTA fixed effects absorbs representative variables that are time invariant or are collinear with time (e.g. gender and age). Thus, the representative covariates in x_{it} include party affiliation variables: dummy variables indicating party affiliation and whether party affiliation matches that of the President, House Majority and state Governor.[20] The empirical relevance of the latter party affiliation variables stems from Magee (2010).

The district level covariates that are not specific to an FTA, x_{dt}, are intended to capture the factor composition of CDs and the general preferences of these factors towards trade liberalization. First, x_{dt} includes the population share of the district (over the age of 25) across four education categories: less than a high school degree, a high school degree, some college, and a Bachelor's degree or higher. Conconi et al. (2012b) use these as proxies for skilled factor abundance. Second, x_{dt} includes the unemployment rate of residents between 25 and 64 years of age for the same four education groups. Third, x_{dt} includes household median income. Many papers (e.g. Baldwin and Magee, 2000; Conconi et al., 2012a) have included unemployment and household income variables to control for CD preferences towards trade liberalization.

The magnitude of economic gains and losses imposed on a district is likely to vary across FTA partners. In the models with year or year-by-region fixed effects, this is partly controlled for by including GDP of the FTA partner(s) as an indicator of the overall economic size of the FTA partner(s).[21] Additionally, variables corresponding to local tariff vulnerability, LTV_{dbt}, and local tariff gains, LTG_{dbt}, are included in all models. The process of constructing these variables closely follows McLaren and Hakobyan (2010). Intuitively, computation of local tariff vulnerability consists of two steps. First, the pre-FTA tariff imposed by the US on the FTA partner(s) in sector j is weighted by the revealed comparative advantage of the FTA partner(s) in sector j because, presumably, the extent that the FTA partner(s) take advantage of tariff concessions granted by the US depends on its pattern of comparative advantage. These weighted sector-level tariffs are then averaged over sectors using district-sector employment shares. Specifically, local tariff vulnerability is defined as:

$$LTV_{dbt} = \sum_{j \in J} \omega_{jd} RCA_{jt}^{b} \tau_{jt}^{\mathrm{US}-b} \tag{5}$$

where τ_{jt}^{US-b} is the sector j pre-FTA tariff imposed by the US on the FTA partner(s) in bill b, RCA_{jt}^{b} is the Proudman and Redding (2000) measure of revealed comparative advantage in sector j and year t for the FTA partner(s) in bill b and

$$\omega_{jd} = \frac{E_{jd,2000}}{\sum_{j \in J} E_{jd,2000}}$$

represents the employment share of sector j within CD d in 2000.[22,23] A sector is a 4-digit SIC sector with J denoting the set of all such sectors.[24] Local tariff gain is defined analogously:

$$LTG_{dbt} = \sum_{j \in J} \omega_{jd} RCA_{jt}^{\mathrm{US}} \tau_{jt}^{b-\mathrm{US}}. \tag{6}$$

[19] I use the eight regions based on the US Bureau of Economic Analysis (BEA) regional classification. See http://www.bea.gov/regional/docs/regions.cfm.

[20] Note, party affiliation itself is not time invariant given two representatives switch party affiliation during the sample.

[21] For the FTA between the US and Central America, CAFTA-DR, I treat the GDP of the FTA partners as a weighted average of each member's GDP where the weights are US exports to the member as a share of US exports to all members in 2005.

[22] The Proudman and Redding (2000) measure is $RCA_{jt}^{b} = \frac{x_{jbt}}{\frac{1}{7}\sum_{j=1}^{J} x_{jbt}}$ where X_{jbt} denotes sector j exports by FTA partner(s) b to the world in year t and $x_{jbt} = X_{jbt} / \sum_{j=1}^{J} X_{jbt}$ denotes sector j's share of FTA partner(s) b exports to the world in year t. RCA_{jt}^{US} is defined analogously. To mitigate endogeneity concerns, I exclude the US as an export destination when computing RCA_{jt}^{b} and, analogously, I exclude the FTA partner(s) in bill b as export destinations when computing RCA_{jt}^{US} for the purposes of LTG_{dbt}.

[23] I use district-sector employment shares in 2000 to mitigate any endogeneity concerns regarding district employment composition being affected by the FTAs in the sample. The first FTAs in the sample are the US–Chile and US–Singapore FTAs in 2003.

[24] County-level employment data is matched to the 4-digit SIC level using the concordance from http://www.census.gov/eos/www/naics/concordances/concordances.html. These data are matched to the CD-level using the concordances from the Missouri Census Data Center for the 108th and 109th Congresses, http://mcdc.missouri.edu/websas/geocorr2k.html, and from the US Census Bureau for the 110th Congress, http://www.census.gov/geo/maps-data/data/cd_state.html. There was no redistricting in the 111th and 112th Congresses. As in Conconi et al. (2012a), I use the population allocation shares in these concordances as weights when a county lies in multiple districts.

Table 2
Congressional voting behavior on FTAs: linear probability models.

Regressor	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lab_{it}^{PAC}	−13.127		−13.143		−13.111		−13.196	
	(27.093)		(31.463)		(27.028)		(31.608)	
Bus_{it}^{PAC}	0.958		0.948		0.96		0.955	
	(0.768)		(0.757)		(0.766)		(0.761)	
Lab_{it}^{TRD}		−0.316		−0.551		−0.394		−0.533
		(4.438)		(4.433)		(4.439)		(4.429)
Bus_{it}^{TRD}		0.295‡		0.317‡		0.293‡		0.312‡
		(0.172)		(0.175)		(0.172)		(0.175)
LTV_{dbt}	−0.270†	−0.222†	−0.289	−0.227†	−0.254†	−0.207†	−0.29	−0.218†
	(0.128)	(0.09)	(0.197)	(0.094)	(0.124)	(0.089)	(0.211)	(0.1)
LTV_{dbt}	0.411	0.276*	0.355	0.254†	0.413	0.280*	0.361	0.257†
× $Democrat_i$	(0.329)	(0.102)	(0.314)	(0.106)	(0.329)	(0.099)	(0.324)	(0.105)
LTG_{dbt}	−0.027	−0.021†	−0.024	−0.019†	−0.024	−0.017‡	−0.02	−0.014
	(0.018)	(0.008)	(0.02)	(0.008)	(0.018)	(0.01)	(0.022)	(0.01)
LTG_{dbt}	0.055‡	0.049*	0.047‡	0.046*	0.054‡	0.049*	0.053†	0.054*
× $Democrat_i$	(0.030)	(0.013)	(0.025)	(0.014)	(0.031)	(0.014)	(0.026)	(0.014)
N	4626	4626	4626	4626	4626	4626	4626	4626
Fixed effects								
Representative	Y	Y	Y	Y	Y	Y	Y	Y
Year	Y	Y	N	N	N	N	N	N
Year-by-region	N	N	Y	Y	N	N	N	N
FTA	N	N	N	N	Y	Y	N	N
FTA-by-region	N	N	N	N	N	N	Y	Y
Underidentification tests								
K–P	$p = 0.826$	$p = 0.000$	$p = 0.835$	$p = 0.000$	$p = 0.826$	$p = 0.000$	$p = 0.835$	$p = 0.000$
A–P (labor)	$p = 0.832$	$p = 0.000$	$p = 0.839$	$p = 0.000$	$p = 0.832$	$p = 0.000$	$p = 0.838$	$p = 0.000$
A–P (business)	$p = 0.044$	$p = 0.000$	$p = 0.023$	$p = 0.000$	$p = 0.044$	$p = 0.000$	$p = 0.023$	$p = 0.000$
Other tests								
Overidentification	$p = 0.932$	$p = 0.154$	$p = 0.846$	$p = 0.121$	$p = 0.934$	$p = 0.151$	$p = 0.845$	$p = 0.117$
Endogeneity	$p = 0.080$	$p = 0.006$	$p = 0.065$	$p = 0.010$	$p = 0.078$	$p = 0.006$	$p = 0.063$	$p = 0.010$
K–P rk F-statistic	0.131	91.362	0.123	100.681	0.131	91.396	0.122	100.084

Notes: Dependent variable equals one for pro-FTA vote, zero otherwise. Standard errors clustered at the representative level. Except for FTA partner(s) GDP in columns (5)–(8), all covariates listed in Table A.3 are included. All excluded instruments listed in Table A.3 are used as instruments in even-numbered columns. The non trade-related political money variables listed in Table A.3 are not used as instruments in the odd-numbered columns.
‡ $p < 0.10$.
† $p < 0.05$.
* $p < 0.01$.

Finally, state covariates control for factors that could affect the state economic and political climate and could also be correlated with representative voting behavior. These covariates include the Governor's party affiliation, real per-capita gross state product (GSP), agriculture as a share of GSP, manufacturing as a share of GSP, the unemployment rate, the employment rate and union coverage as a share of private manufacturing employment.

4.3. Results

4.3.1. Linear probability models

As is well known in the literature (e.g. Ludema et al., 2011; Conconi et al., 2014), the probit model suffers from the well known incidental parameters problem in the presence of fixed effects. Indeed, as such, Wooldridge (2010, p. 608) states "[I]t is useful to begin with a linear model with an additive, unobserved effect". Thus, I first estimate (4) using a linear probability model with standard errors clustered at the representative level (as in, e.g., Ludema et al., 2011; Conconi et al., 2012a).[25]

Table 2 presents the results. The models in columns (1) and (2) contain year fixed effects. The models in columns (3) and (4) contain year-by-region fixed effects. The models in columns (5) and (6) contain FTA fixed effects. The models in columns (7) and (8) contain FTA-by-region fixed effects. The models in odd-numbered columns contain the standard political money variables found in the existing literature, Bus_{it}^{PAC} and Lab_{it}^{PAC}, while even-numbered columns contain the trade-related political money variables defined in Section 3, Bus_{it}^{TRD} and Lab_{it}^{TRD}.

[25] Estimation is performed via GMM using -xtivreg2- in STATA (Schaffer, 2010).

All models treat political money as endogenous. The models containing Bus_{it}^{PAC} and Lab_{it}^{PAC} use standard exclusion restrictions (e.g. Baldwin and Magee, 2000) of whether the representative served on the House Committee on Ways and Means, whether the representative served on the House Committee on Education and the Workforce, and a variable representing the "experience" of the representative.[26] Given the use of representative fixed effects and year or FTA fixed effects, House tenure is collinear with time for all but less than 1% of representatives.[27] Thus, the "experience" instrument used is an "incumbent" dummy indicating whether the Congressional cycle is the representative's first term in the House. For the models containing Bus_{it}^{TRD} and Lab_{it}^{TRD}, I follow the spirit of Ludema et al. (2011) and augment the previous set of instruments with two more instruments: the sum of non trade-related contributions and lobbying directed at representative i by, respectively, business groups ($Bus_{it}^{N\,-\,TRD}$) and labor groups ($Lab_{it}^{N\,-\,TRD}$) in the cycle prior to the current session of Congress.[28,29]

To begin interpreting the political money coefficients, note that, conditional on a given set of political money variables, the point estimates are very stable when varying the nature of included fixed effects. The sign of political money variables also have the expected sign across all specifications; political money used by business (labor) groups makes a representative more (less) likely to vote in favor of FTAs. Nevertheless, the standard political money variables found in the existing literature, Bus_{it}^{PAC} and Lab_{it}^{PAC}, are never statistically significant. The result for political money used by labor groups is confirmed when using trade-related money Lab_{it}^{TRD}. However, the result for political money used by business groups is overturned: trade-related contributions and lobbying expenditures used by business groups, Bus_{it}^{TRD}, is always statistically significant. Thus, given the host of fixed effects and control variables in Eq. (4), detecting a statistically significant effect whereby political money used by business groups makes representatives more likely to vote in favor of FTAs *requires* construction of the trade-related political money measures.

The use of the trade-related political money measures also reveals other statistically significant relationships. For example, even though the interaction term $LTG_{dbt} \times \text{Democrat}_i$ is statistically significant regardless of the political money measures used, LTG_{dbt} is only statistically significant for Democrats when using trade related measures of political money.[30] Thus, using the standard political economy variables would suggest that potential local gains associated with FTAs do not affect the voting behavior of Democrats or Republicans. However, using the trade-related measures of political money suggests that greater potential local gains associated with an FTA make Democrats more likely to vote in favor of an FTA. Similarly, in models with year-by-region or FTA-by-region fixed effects, uncovering a statistically significant relationship between local tariff vulnerability and Republican voting behavior requires use of the trade-related political money measures. These results show that the benefit of using trade-related political money measures can spill over and help uncover relationships that go beyond the one between Congressional voting behavior and political money.

The various specification tests reported in Table 2 are also useful. First, the test of endogeneity (undertaken by comparing two Sargan–Hansen statistics) always rejects the null that the political money variables are exogenous. Moreover, consistent with the idea that the trade-related political money variables are indeed filtering out non trade-related political money, the p-values when using trade-related political money variables never exceed .01 but the p-values vary between .06 and .08 when using the standard political money variables. Second, one can never reject the null that the instruments are exogenous based on Hansen's J test of overidentification. Thus, these tests suggest that one should instrument for the political money variables and one cannot reject the null that the proposed instruments are exogenous.

However, identification problems appear to plague the specifications using the standard political money variables. Based on the Kleibergen–Paap rk LM statistic, these specifications cannot reject the null that at least one of the standard political money variables is unidentified (p-values exceed 0.8). In particular, based on the Angrist–Pischke first stage χ^2 statistics, one can reject the null that Bus_{it}^{PAC} is unidentified but not that Lab_{it}^{PAC} is unidentified (p-values are, respectively, below 0.05 and above 0.8). Indeed, none of the excluded instruments are individually significant in the first stage regression for Lab_{it}^{PAC} (the p-values vary between 0.5 and 0.9).[31]

In contrast, specifications using trade-related political money do not appear to suffer from identification problems. These specifications always reject the null that at least one of the trade-related measures of political money is unidentified at the $p < 0.01$ level. Further, the Kleibergen–Paap rk Wald F-statistic always exceeds 90 so the instruments do not suffer from a weak instruments problem. As one would expect based on the previous paragraph, the committee membership variables are always individually insignificant

[26] Intuitively, these variables should identify the political money variables because they are presumably correlated with the political power of the representative, and thus their contributions, yet not directly related to their voting behavior on an FTA. Intuitively, one may expect that presence on the House Committee on Ways and Means would identify business contributions while presence on the House Committee on Education and the Workforce would identify labor contributions.

[27] Five representatives in the sample have a gap in their House tenure during the sample. But these representatives only account for 0.75% of representatives and 0.8% of observations.

[28] Intuitively, non trade-related political money is another measure of political power of a representative that should not directly influence their FTA voting behavior. Note that the voting outcome variable used by Ludema et al. (2011) is whether the bill was passed or not and is not a representative-specific voting variable. Thus, they do not have to deal with the issue that lobbying data is not tied to a particular representative. As such, they use information on non trade-related lobbying to instrument for trade-related lobbying.

[29] Given the definition of Bus_{it}^{TRD} and Lab_{it}^{TRD}, then $Bus_{it}^{N\,-\,TRD} \equiv \sum_k C_{ikt}^{Bus} + \sum_k L_{ikt}^{Bus} - Bus_{it}^{TRD}$ and $Lab_{it}^{N\,-\,TRD} \equiv \sum_k C_{ikt}^{Lab} + \sum_k L_{ikt}^{Lab} - Lab_{it}^{TRD}$.

[30] The effect of local tariff gain on a Democrat's voting behavior is given by $LTG_{dbt} + LTG_{dbt} \times Democrat_i$ and is statistically significant in the even-numbered columns (p-values all below 0.03) yet never statistically significant in the odd-numbered columns (p-values all exceed 0.11).

[31] Further, perhaps surprisingly, the Ways and Means Committee membership dummy is not individually statistically significant in the first-stage regression for Bus_i^{PAC} yet the incumbent dummy (positive estimated coefficient) and the Workforce and Education Committee membership dummy (negative estimated coefficient) are individually significant at conventional levels.

Table 3
Congressional voting behavior on FTAs: Probit Models.

Regressor	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lab_{it}^{PAC}	−356.381		24.041		−396.402		106.476	
	(1136.949)		(191.068)		(1243.663)		(396.509)	
Bus_{it}^{PAC}	2.37		3.567		3.125		6.353	
	(10.559)		(2.185)		(11.59)		(4.507)	
Lab_{it}^{TRD}		−1.958		3.042		−5.2		2.428
		(22.803)		(24.14)		(25.733)		(28.683)
Bus_{it}^{TRD}		3.066‡		2.942‡		3.193‡		2.762
		(1.63)		(1.725)		(1.852)		(2.096)
LTV_{dbt}	−5.456	−2.751*	−2.61	−2.962*	−6.177	−3.346*	−2.895	−4.375*
	(10.303)	(0.712)	(1.879)	(0.774)	(11.181)	(0.794)	(4.241)	(0.979)
LTV_{dbt}	8.579	2.793*	2.304	2.855*	10.08	3.721*	2.19	4.405*
× $Democrat_i$	(19.916)	(0.778)	(2.728)	(0.831)	(22.028)	(0.888)	(6.092)	(1.04)
LTG_{dbt}	−0.327	−0.099	−0.093	−0.091	−0.29	−0.106	−0.074	−0.076
	(0.843)	(0.062)	(0.095)	(0.063)	(0.766)	(0.07)	(0.199)	(0.079)
LTG_{dbt}	0.544	0.136	0.121	0.126	0.689	0.158	0.151	0.213‡
× $Democrat_i$	(1.459)	(0.091)	(0.13)	(0.093)	(1.871)	(0.103)	(0.306)	(0.125)
N	2003	2003	2003	2003	2003	2003	1994	1994
Fixed effects								
Representative	Y	Y	Y	Y	Y	Y	Y	Y
Year	Y	Y	N	N	N	N	N	N
Year-by-region	N	N	Y	Y	N	N	N	N
FTA	N	N	N	N	Y	Y	N	N
FTA-by-region	N	N	N	N	N	N	Y	Y

Notes: Dependent variable equals one for pro-FTA vote, zero otherwise. Asymptotic standard errors are used. Except for FTA partner(s) GDP in columns (5)–(8), all covariates listed in Table A.3 are included. All excluded instruments listed in Table A.3 are used as instruments in even-numbered columns. The non trade-related political money variables listed in Table A.3 are not used as instruments in the odd-numbered columns.
‡ $p < 0.10$.
† $p < 0.05$.
* $p < 0.01$.

in the first-stage regressions (at conventional levels). However, in addition to the incumbent dummy, non trade-related political money used by business groups ($Bus_{it}^{N\ -\ TRD}$) and labor groups ($Lab_{it}^{N\ -\ TRD}$) are individually statistically significant at the $p < 0.01$ level in the first-stage regressions for trade-related contributions used by, respectively, business and labor groups. Thus, non trade-related contributions appear to be highly correlated with the endogenous variables and mitigate the identification problems facing specifications using the standard political money variables.

4.3.2. Probit models

The previous section showed that, given the host of fixed effects and control variables in (4), trade-related measures of political money used by business and labor groups are required to uncover any statistically significant relationship between political money and Congressional voting behavior on FTAs. However, one may be concerned that this result stems from limitations associated with the linear probability model. To mitigate this concern, I now estimate Eq. (4) using an instrumental variables probit model.[32] As noted earlier, given the fixed effects embedded in the empirical model, one must keep the incidental parameters problem in mind. Nevertheless, the results will show that the main result of the previous section – the importance of using trade-related measures of political money – is not an artifact of the linear probability model.

Table 3 presents the results. Even though all specifications in Table 3 are estimated using a probit model rather than a linear probability model, each column of Table 3 includes the same covariates and fixed effects as the analogous column of Table 2.[33] The results clearly show the importance of using trade-related measures of political money. As with the linear probability models, political money used by labor groups remains statistically insignificant regardless of the way that political money is measured. However, except for the specification with FTA-by-region fixed effects in columns (7) and (8), political money used by business groups is only statistically significant when using the trade-related measure of political money. Indeed, the

[32] Probit estimation is performed using -ivprobit- in STATA. Given the presence of multiple endogenous variables, the estimator used is the two-step estimator of Newey (1987).
[33] One should keep in mind that, unlike the linear probability model, the coefficients of a probit model are not marginal effects. Thus, the magnitude of coefficients across Tables 2 and 3 are not directly comparable.

p-values on the standard political money variables in columns (1) and (5) indicate this result is *starker* than in the linear probability model. Overall, despite trade-related political money used by business groups being statistically insignificant with FTA-by-region fixed effects, the probit model results show that the qualitative importance of using trade-related measures of political money remains.[34]

5. Conclusion

The main contribution of this paper is the construction of a publicly available and novel dataset that decomposes PAC campaign contributions across issues of concern to the PAC giving the contributions and also decomposes PAC issue-specific lobbying expenditures across House representatives lobbied by the PAC. Since PAC contribution data does not explicitly divulge the issues of concern to PACs, the dataset can help researchers tie representative voting behavior to those contributions and lobbying expenditures related to bill-specific issues of concern. By reducing the measurement error associated with using total contributions in Congressional voting studies, the dataset could help alleviate the observation of Ansolabehere et al. (2003) regarding the surprisingly tenuous link from PAC contributions to Congressional voting behavior. Additionally, since lobbying data does not explicitly divulge an interest group's issue-specific lobbying expenditures targeted at particular representatives, the dataset affords researchers the luxury of using lobbying data for studies of Congressional voting behavior. This is especially useful given, as explained by Bombardini and Trebbi (2012, p. 19), "… lobbying expenditures represent quantitatively the most important channel of political influence" since they dwarf the absolute size of campaign contributions.

Indeed, I show how the novel dataset can uncover statistically significant relationships between political money and US Congressional voting behavior that would otherwise remain hidden. In particular, I show that using the sum of trade-related contributions and lobbying expenditures by, respectively, business and labor interest groups reveals a statistically significant relationship between political money and voting on Free Trade Agreements whereas no such relationship would be detected using the standard variables of PAC contributions by business and labor groups. This is consistent with the idea that my issue-specific measures of political money reduce measurement error. Moreover, the analysis also reveals that the ability to use political money related to issues other than the bill in question (i.e. non trade-related political money in my application) can greatly help with identification when using instrumental variables estimation.

As a preliminary step en-route to the creation of the novel dataset, the paper confirms an earlier finding of Ansolabehere et al. (2002) (AST). By using a dataset covering all Congressional cycles between 1997–98 and 2011–12, rather than the single 1997–98 cycle of AST, I confirm AST's finding that interest groups who engage in contributions and lobbying account for the majority of such political money. Thus, this is a robust feature of the US political system. Nevertheless, I also find that a non-trivial and quickly rising share of contributions now come from groups who AST view as attempting to influence the legislature's composition rather than the views of existing legislators. This is associated with the rise of indirect contributions, and independent expenditures in particular, as the dominant form of contributions.

Recent work by Bertrand et al. (2011) and Vidal et al. (2012) suggest ways to further address the relationship between representative-issue specific measures of political money and Congressional voting behavior. As discussed in the introduction, their results suggest the value that an interest group places on a dollar paid to a lobbyist depends on the connectedness of the lobbyist to representatives who can influence the interest group's issues of concern. Thus, one could refine the representative-issue specific measures of political money that I introduce in this paper by accounting for the connectedness of an interest group's lobbyists to the representatives that could influence (e.g. by committee assignment) the interest group's issues of concern.

The spirit of Bertrand et al. (2011) and Vidal et al. (2012) also suggests another direction for future research. As noted in Section 3, an interest group's lobbying disclosure report lists all government agencies lobbied in the filing period. I then allocate the value of lobbying equally across all such agencies and restrict attention to the House of Representatives as one such agency. However, one could potentially use information regarding the other issue-relevant agencies lobbied by an interest group (e.g. the Office of the US Trade Representative for international trade issues) if one had measures of connectedness between representatives and various government agencies. Indeed, given the Bertrand et al. (2011) and Vidal et al. (2012) measures of connectedness between lobbyists and representatives, measures of connectedness between lobbyists and government agencies would create an indirect linkage between interest groups and representatives via lobbyists and government agencies.

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[34] Moreover, regardless of the fixed effects included in the probit model, uncovering a statistically significant relationship between local tariff vulnerability and Republican voting behavior requires the trade-related political money measures.

Appendix A

Table A.1
Relationship between direct contributions and lobbying across Congressional cycles.

Group type	*N*	%	Lobby $	%	Contribs. $	%	Total $	%
1997–98								
Lobby only	4006	62%	562	39%			562	34%
Contribute only	1442	22%			41	20%	41	2%
Lobby and contribute	968	15%	886	61%	168	80%	1053	64%
Total	6416	100%	1448	100%	209	100%	1656	100%
1999–2000								
Lobby only	5625	70%	1202	42%			1202	38%
Contribute only	1293	16%			40	17%	40	1%
Lobby and contribute	1086	14%	1688	58%	192	83%	1881	60%
Total	8004	100%	2890	100%	232	100%	3123	100%
2001–02								
Lobby only	7111	74%	1432	45%			1432	42%
Contribute only	1292	14%			38	16%	38	1%
Lobby and contribute	1150	12%	1765	55%	200	84%	1965	57%
Total	9553	100%	3197	100%	238	100%	3435	100%
2003–04								
Lobby only	8659	77%	1690	45%			1690	42%
Contribute only	1323	12%			38	15%	38	1%
Lobby and contribute	1256	11%	2047	55%	211	85%	2258	57%
Total	11,238	100%	3737	100%	248	100%	3985	100%
2005–06								
Lobby only	10,272	79%	1938	46%			1938	43%
Contribute only	1357	10%			40	15%	40	1%
Lobby and contribute	1331	10%	2258	54%	233	85%	2492	56%
Total	12,960	100%	4196	100%	273	100%	4469	100%
2007–08								
Lobby only	11,358	80%	2055	42%			2055	40%
Contribute only	1338	9%			42	14%	42	1%
Lobby and contribute	1449	10%	2841	58%	253	86%	3094	60%
Total	14,145	100%	4896	100%	296	100%	5192	100%
2009–10								
Lobby only	12,395	81%	2122	39%			2122	37%
Contribute only	1372	9%			42	14%	42	1%
Lobby and contribute	1487	10%	3376	61%	258	86%	3634	63%
Total	15,254	100%	5498	100%	299	100%	5798	100%
2011–12								
Lobby only	10,151	78%	1773	36%			1773	33%
Contribute only	1342	10%			38	12%	38	1%
Lobby and contribute	1512	12%	3214	64%	268	88%	3483	66%
Total	13,005	100%	4987	100%	306	100%	5294	100%

Notes: *N* indicates number of groups. Lobby $ = lobbying by PACs. Contribs. $ = PAC direct contributions to Congressional candidates. Amounts are in millions of 1998 dollars. Lobbying in the 1997–98 Congressional cycle only includes 1998 lobbying expenditures.

Table A.2
Contributions and lobbying expenditure by issue for House Speaker John Boehner and House Minority Leader Nancy Pelosi in 2012 Congressional cycle.

	Total	Allocated		Environ.		Defense		Health		Education		Immig.		Budget		Trade		Other	
Contribs.	$	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Pelosi	1031	961	93.2	20	2.1	24	2.5	88	9.2	26	2.7	15	1.6	59	6.2	27	2.8	703	73.1
Boehner	2678	2460	91.9	86	3.5	37	1.5	184	7.5	28	1.1	36	1.5	131	5.3	87	3.5	1872	76.1
Lobbying		$		$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%
Pelosi	N/A	3093	N/A	46	1.5	48	1.5	240	7.8	85	2.8	19	0.6	99	3.2	94	3.0	2462	79.6
Boehner	N/A	14682	N/A	717	4.9	220	1.5	842	5.7	229	1.6	91	0.6	881	6.0	568	3.9	11135	75.8

Notes: Amounts are in thousands of nominal dollars. Allocated $ is the total allocated to issues. Allocated % is a percentage of total contributions. All other percentages are a percentage of the allocated contributions or allocated lobbying expenditures. Abbreviations: Contribs. = contributions; Environ. = environment; Immig. = immigration.

Table A.3
Variable definitions and sources.

Variable	Definition	Source
FTA Vote	1 = yes, 0 = otherwise	https://www.govtrack.us
Representative covariates		
Independent	1 = yes, 0 = otherwise	
Democrat	1 = yes, 0 = otherwise	
Republican	1 = yes, 0 = otherwise	
Same party as President	1 = yes, 0 = otherwise	
Same party as House Majority	1 = yes, 0 = otherwise	
Same party as Governor	1 = yes, 0 = otherwise	
Bus_{it}^{PAC}	PAC contributions by business groups	https://www.opensecrets.org/myos/
Lab_{it}^{PAC}	PAC contributions by labor groups	
Bus_{it}^{TRD}	Trade-related political money used by business groups	See section 3
Lab_{it}^{TRD}	Trade-related political money used by labor groups	https://www.opensecrets.org/myos/
State covariates		
Governor, Independent	1 = yes, 0 = otherwise	Wikipedia (e.g., http://en.wikipedia.org/wiki/Governor_of_Alabama)
Governor, Democrat	1 = yes, 0 = otherwise	
Governor, Republican	1 = yes, 0 = otherwise	
Real GSP (per capita, millions 2005$)	Real per capita GSP	Bureau of Economic Analysis (http://www.bea.gov)
Agriculture (% of GSP)	Share of GSP	
Manufacturing (% of GSP)	Share of GSP	
Employment rate	Employment divided by population	
Unemployment rate	Official unemployment rate	Bureau of Labor statistics (obtained via http://www.dlt.ri.gov/lmi/laus/us/annavg.htm)
Union coverage	Percent covered in private manufacturing	http://www.unionstats.com
District-bill covariates		
Local tariff vulnerability (LTV_{dbt})	Average weighted pre-FTA sector-specific tariff imposed on FTA partner(s) where weights are sector-specific revealed comparative advantage of FTA partner(s) and averaging takes place across sectors using CD-specific employment shares from 2000	World Bank's integrated trade solution (WITS) database (http://wits.worldbank.org/); Bureau of Labor statistics (http://www.bls.gov/cew/datatoc.htm)
Local tariff gain (LTG_{dbt})	Average weighted pre-FTA sector-specific tariff imposed on US by FTA partner(s) where weights are sector-specific revealed comparative advantage of US and averaging takes place across sectors using CD-specific employment shares from 2000	
FTA partner(s) GDP	FTA partner(s) GDP in millions of 2005 US$	World development indicators
District covariates		
Education, % HS graduate	Population share by education (aged 25+)	American community survey (http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t); values for 2003–2004 are assumed to be equal to 2005 values
Education, % some college	Population share by education (aged 25+)	
Education, % BA	Population share by education (aged 25+)	
Education, % advanced degree	Population share by education (aged 25+)	
UR, less than HS	Unemployment rate (aged 25–64)	
UR, HS	Unemployment rate (aged 25–64)	
UR, some college	Unemployment rate (aged 25–64)	
UR, BA or higher	Unemployment rate (aged 25–64)	
Household median income	Household median income	
Excluded instruments		
Incumbent	1 = Not first term in House, 0 = otherwise	http://history.house.gov/Institution/, http://bioguide.congress.gov/biosearch/biosearch.asp
Member of House Committee on Ways and Means	1 = yes, 0 = otherwise	http://waysandmeans.house.gov http://www.gpo.gov
Member of House Committee on Education and the Workforce	1 = yes, 0 = otherwise	http://edworkforce.house.gov http://www.opencongress.org
Bus_{it}^{N-TRD}	Non trade-related political money used by business groups	See Section 3 https://www.opensecrets.org/myos/
Lab_{it}^{N-TRD}	Non trade-related political money used by labor groups	

Notes: Data cover votes on 11 Free Trade Agreements (FTAs) over the period 2003–2011 in the House of Representatives. All political money variables are measured in millions of 2010 dollars for the Congressional cycle prior to the current session of Congress. Abbreviations: BA = Bachelor's; HS = high school; GSP = gross state product; GDP = gross domestic product; UR = unemployment rate.

Table A.4
Summary statistics.

Variable	Mean	SD	Min	Max
FTA Vote (1 = Yes)	0.656	0.475	0	1
Representative covariates				
Independent (1 = yes)	0.002	0.039	0	1
Democrat (1 = yes)	0.468	0.499	0	1
Republican (1 = yes)	0.530	0.499	0	1
Education and Workforce Committee (1 = yes)	0.105	0.307	0	1
Ways and Means Committee (1 = yes)	0.091	0.287	0	1
Bus_{it}^{PAC}	.365955	.287457	−.002974	2.408148
Lab_{it}^{PAC}	.090938	.096268	−.005949	.507753
Bus_{it}^{TRD}	.062375	.066360	−.002105	.650861
Lab_{it}^{TRD}	.004666	.005915	−.000281	.027503
Bus_{it}^{N-TRD}	1.638788	1.708525	−.032329	18.630662
Lab_{it}^{N-TRD}	.121233	.129934	−.006200	.696062
Incumbent (1 = yes)	0.861	0.346	0	1
Same party as President (1 = yes)	0.498	0.500	0	1
Same party as House Majority (1 = yes)	0.537	0.499	0	1
Same party as Governor (1 = yes)	0.530	0.500	0	1
District-bill covariates				
Local tariff vulnerability (LTV_{dbt})	0.038	0.111	0	3.582
Local tariff gain (LTG_{dbt})	0.534	0.876	0	15.371
FTA partner(s) GDP	224358.9	340520.3	15969.1	1139141
District covariates				
Education, % HS graduate (aged 25+)	0.295	0.065	0.119	0.494
Education, % some college (aged 25+)	0.075	0.016	0.031	0.131
Education, % BA (aged 25+)	0.172	0.056	0.044	0.370
Education, % advanced degree (aged 25+)	0.100	0.046	0.016	0.312
UR, less than HS (aged 25–64)	12.145	5.047	2.0	38.8
UR, HS (aged 25–64)	7.792	3.288	1.5	28.2
UR, some college (aged 25–64)	6.148	2.602	1.7	21.0
UR, BA or higher (aged 25–64)	3.331	1.416	0.5	11.3
Household median income	50692.540	17492.990	15506	117288
State covariates				
Governor (1 = Independent)	0.005	0.072	0	1
Governor (1 = Democrat)	0.449	0.497	0	1
Governor (1 = Republican)	0.546	0.498	0	1
Real GSP (per capita, millions 2005$)	0.042	0.006	0.028	0.065
Agriculture (% of GSP)	0.010	0.009	0.001	0.098
Manufacturing (% of GSP)	0.127	0.052	0.015	0.366
Unemployment rate	6.320	2.021	2.500	13.200
Employment rate	0.576	0.036	0.480	0.766
Union coverage (%, private manufacturing)	12.058	6.384	1.200	31.300

Notes: $N = 4647$. Data cover votes on 11 Free Trade Agreements (FTAs) over the period 2003–2011 in the House of Representatives. All political money variables are measured in millions of 2010 dollars for the Congressional cycle prior to the current session of Congress. Abbreviations: BA = Bachelor's. HS = high school. UR = unemployment rate. GSP = gross state product. GDP = gross domestic product.
See Table A.3 for sources and text for other details.

Table A.5
Breakdown of votes by FTA.

	Political party				
	Vote	Independent	Democrat	Republican	Total
US–Chile (2003)	N	1	128	27	156
	Y	0	74	194	268
					424
US–Singapore (2003)	N	1	127	27	155
	Y	0	74	196	270
					425
US–Australia (2004)	N	1	82	24	107
	Y	0	116	196	312
					419
US–Morocco (2004)	N	1	79	18	98
	Y	0	118	201	319
					417

(*continued on next page*)

Table A.5 *(continued)*

	Political party				
	Vote	Independent	Democrat	Republican	Total
US–Bahrain (2005)	N	1	81	13	95
	Y	0	114	211	325
					420
US-CAFTA (2005)	N	1	186	27	214
	Y	0	15	202	217
					431
US–Oman (2006)	N	1	175	28	204
	Y	0	22	196	218
					422
US–Peru (2007)	N	0	114	16	130
	Y	0	109	175	284
					414
US–Colombia (2011)	N	0	156	9	165
	Y	0	31	229	260
					425
US–Panama (2011)	N	0	121	6	127
	Y	0	66	232	298
					425
US–South Korea (2011)	N	0	128	21	149
	Y	0	59	216	276
					425

Notes: Vote totals differ across FTAs due to abstentions and vacant seats.
Votes represent those included in the sample. Some votes are excluded due to missing covariates used in the analysis.

Appendix B. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.ejpoleco.2014.11.002.

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