

Do Legislators Speak As They Vote?: Discrepancy Between Congressional Roll Calls and Press Releases on Trade in the 114th US Congress

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Abstract

Legislators' voting is an important venue for revealing their preferences, but a limited venue on trade-related bills. Legislators' votes on trade-related bills are highly *constrained choices*: they are a few binary decisions on multifaceted issues, and they are susceptible to strong party discipline. I argue that this constrained voting on trade leads to insufficient reflection of legislators' underlying preferences on trade and their strategic use of press releases to inform their political audience – particularly their constituents, of these preferences. In this paper, I employ GloVe, a word embedding method, to measure legislators' revealed preferences on trade in press release data. I show that legislators with the same vote profile on trade-related bills show significantly different positions on trade and their positions are highly related to their constituency interests. Their voting on trade, however, more strongly reflects party discipline than constituency interests.

1 Introduction

The existing research framework surrounding trade politics relies heavily upon legislative voting practices on trade-related bills (Grossman and Helpman 1994; Hiscox 2002; Milner and Tingley 2011; Gilligan 1997; Rogowski 1987, 1989; Schonhardt-Bailey 2003). Undoubtedly, voting on trade is an important political instrument for legislators to reveal their trade preferences. However, voting decisions cannot fully represent the *intensity* of members' trade preferences, as voting procedures present only a few binary choices without a measure of how strong or weak a stance legislators may have on the same trade-related bill. Moreover, given that trade-related issues have become increasingly multifaceted issues that include labor, health, environment, investment, and security, the underlying dimension of trade preferences can be multidimensional. However, voting on trade-related bills requires legislators to present their positions on multifaceted trade-related bills as a binary choice: yea or nay. In general, this measurement problem does not pose a serious threat if there is enough voting data. However, as the number of trade bills and voting records is very small, it is thus difficult to fully garner legislators' preferences from their votes. For example, in the 114th Congress, the number of voting records on trade-related bills was only four.¹

Party discipline is another reason why voting on trade does not fully present legislators' trade preferences. Though party discipline occurs at different political activities such as roll call votes, floor speeches, and campaign contributions, the most significant manifestation of party discipline is observed in members' roll call voting. Since legislators cast their roll call votes *together* on the floor of Congress, it is easy for party leaders to identify compliant and non-compliant members, and thus reward compliant members and punish non-compliant members. Party leaders reward compliant members with opportunities to advance their political careers and promote constituent interests (Cox and McCubbins 1993). Refusal to fall in line with party discipline often leads to the damage of members' political prospects. Moreover, trade policy has been a partisan issue in the U.S. Congress for the last several decades. The pro-trade coalition has been mainly led by the Republican party, while Demo-

¹A dearth of trade-related roll calls is mainly because of the two reasons: 1) A number of proposed bills fail to reach the voting procedure, or 2) there was a voice vote instead of a roll call vote.

cratic party members have often denounced liberal trade policies. Based on this partisan split, it is important to acknowledge that voting decisions on trade-related bills have not been freely made by individual legislators, but instead, made under the constraints of party pressure.

In this regard, I argue that votes on trade-related bills insufficiently reflect upon legislators' underlying preferences on trade, and that legislators strategically use other political activities to inform their political audience – particularly their constituents, of their underlying trade preferences. I theorize that legislators who cast votes in congruence with constituent interests strongly emphasize their trade positions through their other political activities. I also argue that legislators whose votes are inconsistent with constituent interests provide detailed explanations about their voting decisions on the trade bills by addressing their partial agreements or disagreements on the bills, or are intentionally silent about their voting. Among other sources of revealed preferences on trade (e.g. media interviews, campaign speeches, newsletters, or press releases), I analyze legislators' press releases for two main reasons. First, legislators can directly state not only their trade positions but also the intensity of their positions through a press release. They can issue these whenever and however often they want, while their voting on trade-related bills is highly constrained. Second, issuing press releases on trade is less susceptible to party pressure than voting, since press releases usually target a broad political audience (such as constituents and interest groups), as well as their party cohorts and party leaders.

I collected trade-related voting data and trade-related press releases for the 114th Congress for this analysis.² My exploratory analysis of the collected data showed that there is a significant discrepancy between trade-related vote choices and patterns in trade-related press releases. For example, Representative Mike Bost (R, IL-12) voted for 3 trade-related bills and voted against only 1 during the 114th Congress. Although his voting records show that he supported three out of four free trade-related bills, 8 out of 9 trade-related press releases he published never showed any sign of strong support for free trade. Rather, his trade-related

²This paper analyzes only the 114th Congress, since there were a number of electronically non-available press releases in the previous Congresses. This is because some websites disappear after the owner of the website fails to be re-elected.

press releases were mostly about his efforts to pass an anti-dumping and countervailing duty law to protect the steel industry in Illinois.

In order to measure trade preferences as revealed by press releases, I employed GloVe, a word embedding algorithm, to construct a multidimensional vector space for all terms in press releases. By using pro- and anti-trade terms selected by a regularization method, I calculated cosine similarities between all terms in each press release and the selected pro- and anti-trade terms, and then classified each press release document as pro- or anti-trade. I then compared a text-based measurement and voting-based measurement of members' trade preferences to examine whether there exists a discrepancy between trade-related votes and trade-related press releases. The results show that *trade preferences revealed by press releases more consistently reflect constituent interests measured by the number of low-skill workers, high-skill workers, and unemployment rates than legislators' vote choices in trade-related bills.* In particular, *legislators who represent districts in Swing states tend to be more responsive to constituent interests through press releases than through voting.* These results imply that press releases are an important political venue for legislators to strategically inform their constituents of their trade positions.

These findings contribute to the empirical literature on the domestic politics of trade policy-making (e.g., Hiscox 2002; Goldberg and Maggi 1999; Hainmueller and Hiscox 2006; Lu, Scheve, and Slaughter 2012; Mansfield and Mutz 2009; Scheve and Slaughter 2001). The existing studies take a narrow focus on understanding legislators' responses to domestic coalitions on trade policies, equating the responses with congressional voting. I argue that solely analyzing legislators' voting is insufficient to understand their responsiveness to domestic societal coalitions. Hence, this paper broadens the scope of understanding legislators' responsiveness to pressures from societal coalitions on trade policies, by examining press releases as well as voting patterns.

The rest of the article is organized as follows. In the next section, I highlight the discrepancy between trade-related votes and trade-related press releases. I then present a theory as to why the discrepancy occurs. Next, I explain the method used in this paper, which measures legislators' preferences in press releases. I then present main empirical findings.

The final section concludes.

2 Theory

In this section, I first explain why trade-related votes often do not fully present legislators' preferences on trade, and why press release data are one good complement for measurement of their trade preferences. I theorize that legislators strategically use press releases to inform their constituents of their underlying trade preferences. I also argue that legislators who cast trade votes in a way that is inconsistent with constituent interests tend to be intentionally silent about their trade positions, while legislators who vote in the same way with their constituent interests tend to advertise their trade positions more vociferously.

2.1 Constrained Vote Choices on Trade Bills and Press Releases as an Alternative to Voting

Existing studies of political economy have shown that legislators' voting reflects their response to pressures from societal coalitions (Hiscox 2002; Clinton 2006; Milner and Tingley 2011; Bailey and Brady 1998). However, most of the studies equate reflection with legislators' roll calls, which results in a very basic model of trade policy-making in Congress.³ Although casting a roll call vote is an important political means for legislators to reveal their preference (Mayhew 1974), it is a limited avenue for revealing their *underlying* preference on trade-related bills. Voting does not fully represent *the intensity of preferences*: but rather, voting on trade-related bills presents only a few binary choices without a measure of how strong or weak of a stance the legislators may have on the same bill.

To illustrate that voting on trade-related bills does not fully show the intensity of legislators' trade preferences, consider the following two representatives; Representative Eric Cantor (R, VA) and Representative Sandy Levin (D, MI) of the 112th Congress. Both representatives voted for the South Korea-US FTA, but they each held significantly different

³A few recent studies focus on members' other political activities – such as legislative speeches – to better understand legislators' preferences (Kim, Londregan, and Ratkovic Forthcoming; Lauderdale and Herzog 2016; Schwarz, Traber and Benoit 2017; Slapin and Proksch 2010).

positions on the trade deal. Representative Sandy Levin has continuously criticized the flaws in the Bush administration's version of the South Korea-US FTA. He then switched his position from opposition to favor at the last legislative process, only after a major change was made to the agreement, which was stepwise elimination of tariffs on vehicles instead of immediate elimination. On the other hand, Representative Eric Cantor (R, VA) who was a sponsor of the FTA, strongly favored the South Korea-US FTA from the start. This is significant because despite both casting a favor vote for the South Korea-US FTA, their levels of support on the bill are markedly different. This example shows that voting alone does not show the intensities of legislators' trade preferences, and thus there is the need to consider other political activities that legislators can employ to reveal the intensities of their trade preferences.

Moreover, given that trade-related issues have become increasingly multifaceted in involving labor, health, environment, investment, and security, the underlying dimension of trade preferences can be more than one dimensional. However, voting on trade-related bills requires legislators to present their positions on these multifaceted bills as a simple binary choice: yea or nay. One more extreme aspect of this is that under the Trade Promotion Authority (TPA), legislators have to cast an up-or-down vote within 60 days on massive complex trade deals, such as the Trans-Pacific Partnership (TPP). Although TPP includes a wide range of issues that include labor rights, environment, intellectual property, investment, and U.S. jobs, legislators have to once again make a binary decision on the deal, saying yea or nay without any amendments. Thus, voting on trade-related bills becomes a highly *constrained choice* for legislators attempting to reveal their underlying preferences. This constrained choice is not a serious problem to measure preferences on trade if there is voting data to contextualize this. However, the current number of trade bills and voting records is too small to fully present legislators' underlying trade preferences. For example, in the 114th Congress, the number of voting records on trade-related bills was only four. This is because a number of proposed bills failed to reach the voting procedure and some trade-related bills were settled with voice votes instead of roll calls.

Party discipline within Congress also contributes to limiting legislators to reveal their

underlying trade preferences through voting. Party discipline occurs at various political activities such as roll call votes, floor speeches, and campaign contributions. But the most significant manifestation of party discipline is observed in members' roll call voting. Legislators cast their roll call votes *together* on the floor of Congress. Party leaders reward compliant members with opportunities to advance their political careers and promote constituent interests. On the other hand, refusal to follow party discipline often leads to the damage of members' political prospects. On top of that, trade policy has long been a partisan issue in the U.S. Congress for the last several decades. Pro-trade coalition has been mainly led by Republican party members, while many Democratic party members have been on the side of denouncing liberal trade policies. Based on the partisan split, members have not been free from party pressures when casting votes on trade-related bills.

With this said, legislators whose trade preferences are difficult to reveal through voting, need to capitalize on other political activities to reveal their underlying preferences. In this paper, I analyze press releases to better measure legislators' underlying preferences on trade. In this regard, press releases have two main advantages for legislators. First, this method can better present the *intensity* of their trade preferences than their votes can on trade-related bills. Since legislators can issue press releases whenever and however often they want, press releases can lay out their underlying trade preferences in much more detail.

Figure 1 is a histogram that presents the number of trade-related press releases published by legislators during the 114th Congress (2015-2016). At the top of the figure, there are numbers from 0 to 4, which indicate the number of legislators' pro-trade votes. Figure 1 shows that the number of press releases are significantly different even among members with the same voting profile. For instance, both Representative Marcy Kaptur (D, OH-9) and Representative Louie Gohmert (R, TX-1) have the same voting profile on trade-related bills: both representatives have cast only 1 pro-trade vote and have cast 3 anti-trade votes. Nonetheless, they have each issued a significantly different number of press releases on trade. While Representative Louie Gohmert released only 2 press releases, Representative Marcy Kaptur published more than 15, which serve to 'blast' free trade deals.

Less influence from party pressure is another reason why trade-related press releases are

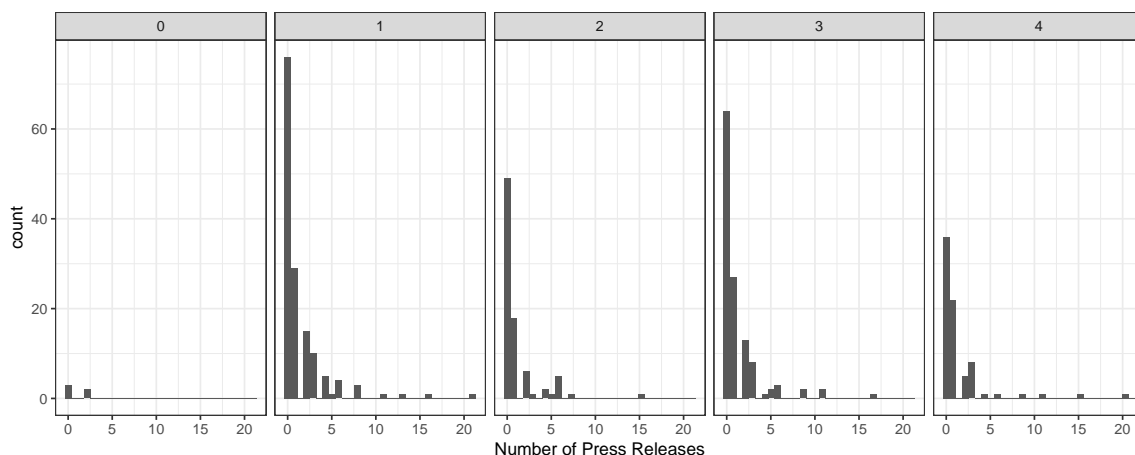


Figure 1: *Number of Press Releases by Legislators' Trade Votes*

Notes: This figure shows the number of trade-related press releases by the number of trade-related votes. The numbers on the top of the figures (0-4) represent the number of pro-trade votes. The vertical dimension measures how many trade-related press releases legislators published. Note that there are variations in the number of issuing press releases despite the same vote profile, and there are excessive zeros.

a good alternative for legislators to reveal their underlying trade preferences. Press releases are usually written for a broad political audience, targeting constituents, interests group, and various media sources, rather than their partisan cohorts and party leaders. Moreover, party leaders are less likely to punish legislators based on what they say on trade-related bills, as long as they vote along the party line. Thus, I argue that press releases can more clearly deliver legislators' underlying preferences rather than their voting on trade.

2.2 Strategic Use of Press Releases and Constituency Interests

Since the primary goal of the legislator is to maximize their chances of re-election (Fiorina 1974; Mayhew 1974), the most important audience outside Congress is their constituents. Voters are better informed of their representatives' policy positions when revealed by press releases or media interviews, than when revealed by roll call votes. Moreover, the medium of the press releases allows for a thorough explanation of policy stances rather than the binary roll call outcomes. This in turn can influence how voters evaluate their legislators' work (Grose, Malhotra, Houweling 2015), and they can thus influence the chances of their

legislators' re-election.

Legislators are aware that what they say is as important as how they vote. It is therefore imperative that they try to inform their constituents of their underlying preferences on trade – especially if their preferences are difficult to be fully revealed through voting. This incentive becomes even larger to those who vote in a way that is inconsistent with constituent interests. Legislators may recognize and address the voting decisions that are unpopular among their constituents, but at the same time they can emphasize their amendments; other votes on trade-related bills, and other political activities that will compensate for the unpopular votes. They can also provide more detailed explanations about their trade positions by explaining their partial agreements or disagreements on each bill. Even if a legislator voted incongruence with constituent interests, the legislator still can use press releases to emphasize their voting decisions in hopes of receiving more support from their constituents. In both scenarios, constituency interests can lead to the noted discrepancy between trade-related votes and trade-related press releases.

The incentive to use press releases to inform constituents of their underlying trade preferences are larger to those in electorally competitive districts than those in electorally safe districts. Legislators who feel insecure about their re-election are much more likely to explain any voting decisions that are incongruent with constituent interests. Those, however, who vote in a way that is consistent with constituent interests and yet feel insecure about re-election, are more likely to vociferously advertise their voting decisions in order to gain support from any constituents outside of the electorally safe districts.

In this paper, I provide three variables that measure constituency interests on trade-related issues; the number of low-skill workers, the percentage of high-skill workers, and unemployment rates. The Stolper-Samuelson theorem predicts the winners and losers from international trade based on endowments of factors of productions such as land, labor and capital. The theorem states that trade benefits the owners of abundant factors and hurts owners of scarce factors. In case of the U.S., according to the theorem, owners of capital should be winners and laborer should be losers from trade. I use the percentage of high-skill workers as a proxy for owners of capital, and the number of low-skill workers as a proxy for

owners of labor. Prior studies have focused on class cleavage and shown that the predictions made by the Stolper-Samuelson theorem are well observed in individuals' and legislators' trade preference formation (Rogowski 1989; Milner and Tingley 2011; Beaulieu, et al. 2005; Scheve and Slaughter 2001; Mayda and Rodrik 2005; and Fordham 2008).

Unlike these studies that assume factors of production are mobile between different industries in each economy, there are other international political economy (IPE) models to identify the winners and the losers of international trade: the specific factors model and new-new trade theory. According to the specific factors model, those who are employed in export industries benefit from international trade, while those working in import-competing industries lose from international trade (Jones 1971; Mussa 1974). The model has a different assumption on factor mobility from the Stolper-Samuelson theorem. The model argues that different types of land, labor skills, and capital equipment have a specific use when it comes to productions of goods, and thus they cannot be adapted quickly to make other products. The new-new theory has narrower focus on analyzing trade winners and losers: firm heterogeneity. Even in the same industry, firms produce different products, and firms have different productivities. According to this model, productive firms benefit from international trade, while less productive firms lose from international trade (Krugman 1981; Costantini and Melitz 2008).

Despite evidence supporting the two IPE models provided by previous studies, I test the Stolper-Samuelson theorem in this paper. The main methodology I employ is determining legislators' trade preferences by aggregating several trade-related bills and trade-related press releases. Some studies examine legislators' trade preferences by analyzing individual votes (Hiscox 2002; Milner and Tingley 2011), while others do so by aggregating several roll call votes (Feigenbaum and Hall 2015; Clinton 2006). I take the latter approach, since most of the press releases on trade-related issues discuss several trade-related issues at the same time, rather than discussing one specific trade-related bill within one press release. Since identifying that exporting industries or productive (or competitive) firms tend to significantly differ by each trade-related bill, it is extremely difficult to test the specific factor model or the new-new theory with my aggregated press release data.

3 Empirical Analysis

This section presents the main empirical results of the discrepancy between trade-related voting and trade-related press releases. I begin with a description of the data used for the analysis. I then explain the method used to measure trade preference in press releases. Next, I present my empirical findings that show the discrepancy of trade preference between roll calls and press releases. In addition, I find that trade preferences revealed by press releases more consistently reflect constituent interests measured by the number of low-skill workers, the percentage of high-skill workers, and unemployment rates than legislators' vote choices in trade-related bills. Legislators' roll calls on trade-related bills, on the other hand, are strongly related to legislators' party affiliation, but not to the number of low-skill workers, high-skill workers, and unemployment rates in their constituency. In particular, legislators who represent districts in Swing states tend to be more responsive to constituent interests through press releases than through voting.

3.1 Press Release Data

I began by constructing a trade-related press release dataset for the House of Representatives in the 114th Congress (2015-2016). To select trade-related press releases for the analysis, I began by selecting press releases that included the word “trade” in their titles. By using a computer-assisted web scraping method, I obtained over 700 trade-related press releases on 435 House of Representatives. As Figure 1 shows, the numbers of press releases published by each legislator differs significantly for each individual. In addition, there are excessive zeros in Figure 1, which means that there were a number of legislators who never published press releases on trade-related issues.

I then pre-processed the press releases by removing numbers, symbols, punctuations, common conjunctions, prepositions, auxiliary verbs, pronouns, and articles such as “and” and “the”. I left the roots off all words. For example, “protection”, “protected”, “protecting” all have the same root “protect”. Next, I count the frequency of every bigram (two consecutive words, e.g. “support trade”) in each legislator’s press release, excluding bigrams mentioned

less than three times. This process creates a list of p bigrams w mentioned in trade-related press releases. I then count w_{mj} , the number of each bigram $j \in \{1, \dots, p\}$ mentioned in each press release m : $w_m = (w_{m1}, \dots, w_{mp})$. This creates a press release-to-bigram matrix (number of press releases $\times p$), summarizing the distribution of bigrams by press releases.

3.2 Methods

Selecting Pro- and Anti-Trade Phrases Using Congressional Floor Speeches

To measure legislators' trade preferences through their press releases, I need to establish reference text that will determine whether each press release is pro-free trade or anti-free trade. For these, I use congressional floor speeches of “rigid members”—the members who voted for all the four trade-related bills or voted against three trade bills.⁴ If phrase A is heavily used by rigid pro-trade legislators, the phrase is likely to be a “pro-trade phrase”. Phrase B, if mostly used by rigid anti-trade legislators, is therefore likely to be an “anti-trade phrase.” If phrase C is similarly used by both rigid pro-trade legislators and rigid anti-trade legislators, the phrase is likely to be neither a pro-trade nor an anti-trade phrase.

To construct a legislators' trade-related floor speech dataset, I searched the Library of Congress website using the keyword “international trade”. I obtained 250 trade-related congressional speeches with an automated script, in order to scrape the speech data. I first split the floor speech data into each legislator's speech to select pro- and anti-trade phrases. I used a computer-assisted means of identifying each legislator's speech and automatically splitting the whole speech when a new legislator's name appeared. If the speaker's name is not unique (e.g., there were two Representative RYAN in the 114th Congress), I distinguish them by using their state (RYAN of Ohio and RYAN of Wisconsin), since congressional records identify the states of the speakers whose names are not unique. I exclude conference report, letter from the president, and news articles from the congressional speech data.

⁴Since few members voted against all the four trade-related bills, I also include legislators who voted against three, as rigid anti-trade legislators.

I then pre-processed the congressional speech data in the same way I did with press releases. I counted the frequency of every bigram in each legislator’s congressional speech, excluding bigrams mentioned less than three times. The outcome of this process is a list of b bigrams v mentioned in trade-related congressional speeches. I then count v_i , the number of each bigram $u \in \{1, \dots, b\}$ mentioned by each legislator i : $v_i = (v_{i1}, \dots, v_{ib})$. This creates a legislator-to-bigram matrix (number of legislators $\times b$) summarizing the distribution of bigrams by legislators.

To select useful phrases that efficiently identify the legislator’s trade preferences and drop “noisy” phrases that are less informative, I implement the Least Absolute Shrinkage and Selection Operator (LASSO) method. The LASSO method is used to select predicting variables by constraining other coefficients at zero (Tibshirani 1996; Friedman, Hastie, and Tibshirani 2010). As described in equation (1), this can be achieved by putting a constraint on the sum of coefficients β_j associated with each phrase.

$$\min_{(\beta_0, \beta) \in \mathbb{R}^{b+1}} - \left[\frac{1}{N} \sum_{j=1}^N y_i \cdot (\beta_0 + v_i^T \beta) - \log(1 + e^{(\beta_0 + v_i^T \beta)}) \right] + \lambda [(1 - \alpha) \|\beta\|_2^2 / 2 + \alpha \|\beta\|_1] \quad (1)$$

To choose the value of λ that gives minimum mean-squared error (MSE), I implement the 10-fold cross-validation. The result of the cross-validation is presented in the Appendix. With this value of λ , I employ LASSO to select phrases that are useful to predict a pro- or anti-trade position in each of the congressional floor speech. This process selects 81 useful phrases. Figure 2 shows the 32 pro- and anti-trade phrases that were selected by the LASSO method and also appeared in members’ press releases. Black text appears for anti-trade phrases, and dark gray appears for pro-trade phrases. The farther a phrase is located from zero on the x axis, the better the phrase indicates a legislators’ position. For example, on the top-right side of Figure 2, we see “encourag[e] colleagu[es]” and “import[ant] legis[ation]” as pro-trade phrases, and “togeth[er] help”, “protect worker[s]” on the bottom-left side as anti-trade phrases.

To examine whether the pro- and anti-trade phrases are used in pro- and anti-trade press releases respectively, I look at the context in which the phrases are used. The anti-trade

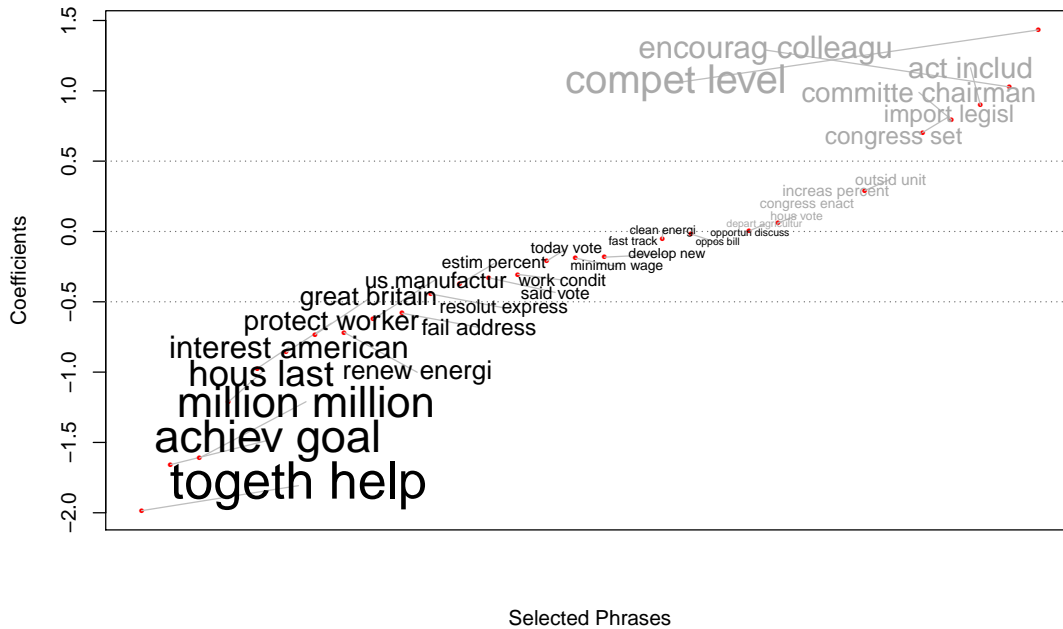


Figure 2: *Selected Pro and Anti-Trade Phrases by LASSO*

Notes: This figure shows the 32 pro- and anti-trade phrases that were selected by the LASSO method and also appeared in members’ press releases. Black text appears for anti-trade phrases, and dark gray appears for pro-trade phrases.

phrase, “protect worker”, for instance, appears in a press release that Representative Tim Ryan (D, OH-13) published on Dec 22, 2015. which denounces “unfair” trade and emphasizes the need to protect American workers.

“Unfair trade laws are impacting men and women throughout our region, and this goes to show that they are not just negatively affecting our manufacturing industry, but also our financial institutions. As the holiday season approaches and Congress continues to negotiate the Trans-Pacific Partnership, we must make sure that we are **protecting workers** from all industries from unfair trade laws,” said Congressman Ryan.”

On the other hand, one of the pro-trade phrases, “depart[ment of] agricultur[e]”⁵, appears in a press release that Representative Adrian Smith (R, NE-3) published on Sep 25, 2015.

⁵All terms used for the analysis in this paper are stemmed.

The press release was about the representative’s support for free trade deals for economic growth, particularly for the agriculture sector.

“With more than 96 percent of the world’s customers living outside our borders, trade provides tremendous opportunities to grow our rural economy. ... On Tuesday, I hosted a seminar in Grand Island called Growing Nebraska Through Trade. ... Nebraska **Department of Agriculture** Director Greg Ibach and numerous other experts also provided informative perspectives on the intersections of trade and agriculture, and state level efforts to grow our value-added economy.”

Measuring Trade Preferences in Press Releases

I then employ GloVe⁶, an unsupervised learning algorithm, to obtain vector representation of all bigrams in press releases (Pennington, Socher and Manning 2014). I use a word embedding method to overcome some problems of *dictionary-based approaches*, which depend on the word count of reference texts to estimate text data. Counting the frequency of identically matching phrases in the text data wastes too much information as the method does not identify that different phrases can have similar meanings. For example, although both “beneficial fta” and “successful fta” have very close meanings, the simple counting method does not treat the two phrases as a match unless the both are selected as reference texts by a regularization method. To overcome these problems, I first vectorize all bigrams g in all press releases z on 50-dimensional space to identify cosine similarities between bigrams. The process of vectorization creates a bigram-to-dimension matrix (number of bigrams $g \times 50$). This process also creates bigram-to-bigram matrices (number of bigrams in m^{th} press release $p \times$ number of all bigrams g) for all press releases z (a bigram-to-bigram-to-press release tensor ($p \times g \times z$)). The matrices contain cosine similarities between bigrams.

Figure 3 presents one example of cosine similarities between bigrams across various press releases. In Figure 3, there is “success[ful] tpa” on the x axis and “economi[c] benefit[s]” is on the y axis. Other bigrams in Figure 3 are the top 60 bigrams that have the highest cosine

⁶This algorithm is different from another word embedding method, word2vec, in that word2vec takes local context windows to train the texts while GloVe takes both the global matrix factorization and local context windows.

$$\sum_{j=1, m=1, k=1}^{g, z, h} w_{i, j, m} * \cos Sim_{jmk} * |LassoCoe f_k| = S_i^{pos} \quad (2)$$

$$\sum_{j=1, m=1, n=1}^{g, z, t} w_{i, j, m} * \cos Sim_{jmn} * |LassoCoe f_n| = S_i^{neg} \quad (3)$$

The result of this process is that each press release has two values; the sum of cosine similarities with pro-trade phrases S_{im}^{pos} and with anti-trade phrases S_{im}^{neg} . Then, all press releases are deemed pro-trade or anti-trade through comparing these two values. If the sum of the cosine similarities of a press release with pro-trade LASSO terms is bigger than that with anti-trade LASSO terms, the press release is identified as pro-trade.

$$\begin{aligned} \text{if } S_{im}^{pro} > S_{im}^{anti}, S_{im}^{pro} = 1, S_{im}^{anti} = 0 \\ \text{otherwise, } S_{im}^{pro} = 0, S_{im}^{anti} = 1 \end{aligned} \quad (4)$$

I then count the number of pro- and anti-trade press releases published by each legislator.

$$\begin{aligned} \sum_{m=1}^z S_{i, m}^{pro} = PR_i^{pro} \\ \sum_{m=1}^z S_{i, m}^{anti} = PR_i^{anti} \end{aligned} \quad (5)$$

According to the results of this method, the legislator who released the most pro-trade press releases was Representative Paul Ryan (R, WI-1), who published 18 press releases to emphasize his support for TPA and free trade deals. On the other hand, Representative Marcy Kaptur (D, OH-9) issued 17 press releases to show her anti-trade position, and was the legislator who published the most anti-trade press releases. To examine whether the press releases are pro- or anti-trade press releases, I present the titles of the Paul Ryan's 18 press releases identified as pro-trade press releases and Marcy Kaptur's 17 press releases identified as anti-trade press releases in the Appendix.

3.3 The Discrepancy between Trade-Related Votes and Trade-Related Press Releases

In order to examine whether there is a discrepancy between trade-related votes and trade-related press releases, I show that legislators' trade preferences are revealed by their voting behavior and issuing of press releases. Figure 4 shows the results. The text in Figure 4 indicates each legislator's congressional district.⁷ The color indicates members' party affiliation: black is for Republicans, and gray is for Democrats. The size of the text is proportional to the number of published press releases. The bigger the text, the more press releases a member has published. As shown in Figure 4, press releases can indicate that considerably different intensities of trade preferences are present among legislators who have the same voting profile. For example, Representative Dan Kildee (D, MI-12) and Representative Marcy Kaptur (D, OH-9) have the same voting profile - 3 nays out of 4 - but they each show significantly different intensities. Representative Dan Kildee published only 6 press releases that express concern over TPP and denounce currency manipulation practices of foreign countries, while Marcy Kaptur published 17 anti-trade press releases. As explained above, "OH-9" is the district where Representative Marcy Kaptur represents, and "WI-1" is the district where Representative Paul Ryan represents.

3.4 Constituency Interests and Revealed Preferences in Voting and Press Releases

I then examine how constituency interests can explain the discrepancy of revealed preferences on trade between roll calls and press releases. I first analyze the relationships between constituency economic interests, measuring the number of low-skill workers the percentage of high-skill workers, and unemployment rates, alongside revealed trade preferences in voting behavior and press releases. The *unemployedpcnt* variable indicates that the percentage of unemployed workers in each district. The *highskillpcnt* variable is a proxy for the percentage

⁷Since there are several people with the same name, I present the results with their congressional districts.

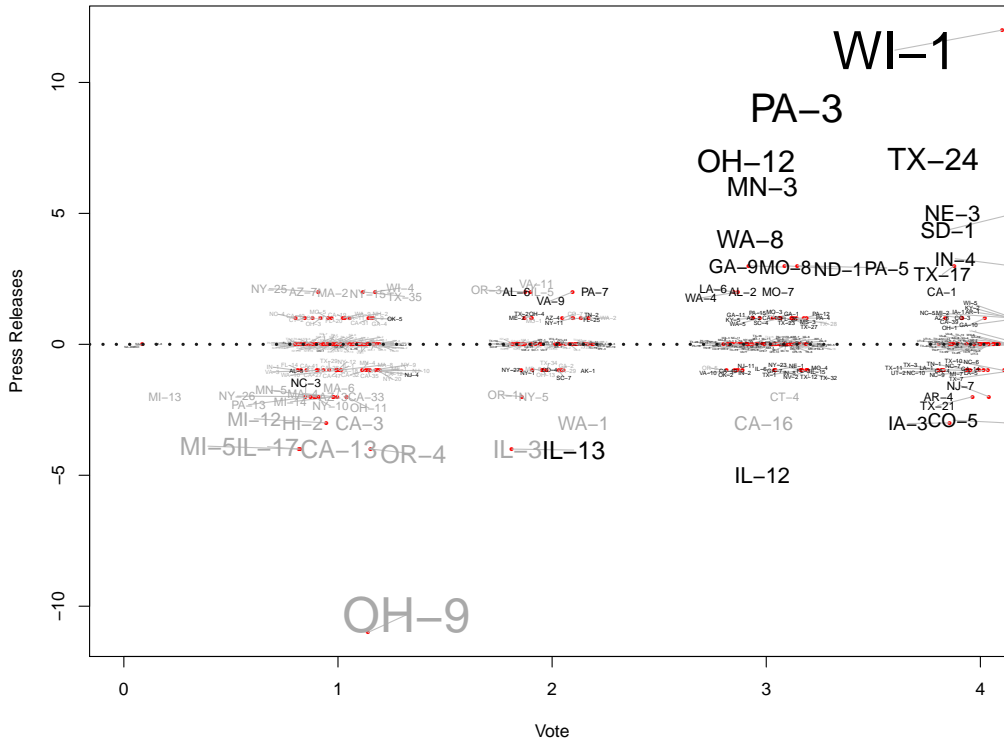


Figure 4: *Variations of Revealed Trade Preferences in Press Releases by Trade Votes*
Notes: This figure shows the discrepancy between trade-vote and trade-press release of legislators. The text indicates each legislator’s congressional district and, the color indicates members’ party affiliation: black is for Republicans, and gray is for Democrats. Despite the same vote profile, the number of issuing pro- and anti-trade press releases significantly differs.

of capital owners⁸, and $\ln Manuf$ is the logged value of the number of workers in manufacture, for a proxy for the size of labor. I obtained the district-level data for unemployment rates, high-skill workers, and manufacturers from the U.S. Census Bureau.

TradeVote, the dependent variable, indicates the number of pro-trade roll calls a representative cast during the 114th Congress. Since there were 4 trade-related roll call votes during this period, the range of the discrete variable is from 0 to 4. If a representative voted for all free trade bills, his or her *TradeVote* is 4. A representative who was against all free trade bills, his or her *TradeVote* is 0. Higher $TradeVote_i$ means that the *representative_i* cast more

⁸High-skill workers are classified as those employed in executive, managerial, administrative, and professional occupations. I follow the categorization made by the U.S. Census Bureau.

pro-trade roll calls. *NegPR* and *PosPR*, two other dependent variables, are the number of pro- and anti-trade press releases published by legislators during the 114th Congress. I collect trade-related roll calls in the 114th Congress (2015-2016) from the Library of Congress, based on the summary of trade-related bills provided by the Cato Institute.⁹

In order to identify the effects of constituency interests on revealed preferences in press releases, I use a zero-inflated poisson model (ZIP). Since there were a number of legislators who never published trade-related press releases, the dependent variables have excessive zeros. In both models, I also include party affiliation to examine the effects of party discipline. That is, I estimate the effects of constituency interests and party discipline (β) on revealed trade preferences in press releases (y_i^{pro} , y_i^{neg}). The ZIP models are as follows:

$$\begin{aligned} \Pr(y_i^{pro} = 0 | X_i, Z_i) &= F(Z_i\gamma) + [1 - F(Z_i\gamma)]\exp(-\exp[X_i\beta]) \\ \Pr(y_i^{pro} | X_i, Z_i) &= [1 - F(Z_i\gamma)] \frac{\exp(-\exp[X_i\beta])\exp(X_i\beta)^{y_i^{pro}}}{y_i^{pro}!} \quad y_i^{pro} > 0 \end{aligned} \tag{6}$$

$$\begin{aligned} \Pr(y_i^{anti} = 0 | X_i, Z_i) &= F(Z_i\gamma) + [1 - F(Z_i\gamma)]\exp(-\exp[X_i\beta]) \\ \Pr(y_i^{anti} | X_i, Z_i) &= [1 - F(Z_i\gamma)] \frac{\exp(-\exp[X_i\beta])\exp(X_i\beta)^{y_i^{anti}}}{y_i^{anti}!} \quad y_i^{anti} > 0 \end{aligned} \tag{7}$$

To examine the effects of constituency interests and party discipline (β) on trade-related voting (y_i^{vote}), I use a poisson model:

$$\Pr(y_i^{vote} | X_i) = \frac{\exp(-\mu_i)\mu_i^{y_i^{vote}}}{y_i^{vote}!} \tag{8}$$

Table 1 presents the results from a zero-inflated poisson regression of trade-related press releases and a poisson regression of trade-related votes on constituency interests and party

⁹The Cato Institute website(<https://www.cato.org/research/trade-immigration/congress>) provides the summary of trade-related bills since 1999.

affiliation. Table 1 shows that trade preferences more consistently reflect constituent interests when revealed through press releases than through legislator voting outcomes on trade-related bills. In the first column of Table 1, the number of anti-trade press releases has a positive and significant relationship with $\ln\text{Manuf}$. This implies that legislators who represent districts where labor is abundant tend to issue more anti-trade press releases than those who represent labor-scarce districts. This is true even if they cast the same number of pro- and anti-trade votes. In the second column, I control party affiliation instead of trade votes, but the number of anti-trade press releases still has a significant and positive relationship with $\ln\text{Manuf}$. The next two columns show that the number of pro-trade press releases has a negative and significant relationship with unemployment . This implies that legislators in districts with higher unemployment rates tend to publish fewer pro-trade press releases when their trade votes or party affiliation is controlled. However, the last column of Table 1 shows that legislators' trade-related votes do not have a significant relationship with the number of low-skill workers, the percentage of high-skill workers, and unemployment rates. Rather, the voting preferences on trade have a strong positive relationship with members' party affiliation; that is, Republicans are more likely to vote for trade-related bills than Democrats.

The results support the hypothesis that legislators' press releases on trade are more reflective of constituency interests than their voting on trade. It is notable that the number of legislators' pro-trade press releases is only negatively affected by constituency interests: legislators who represent trade-vulnerable districts (high unemployment rates) tend to issue fewer pro-trade press releases, but legislators who represent trade-favored districts (more trade "winners" as measured by the percentage of high-skill workers) do not tend to issue more pro-trade press releases. This implies that legislators' decisions to publish pro-trade press releases is more strongly influenced by the economic condition of their constituency (unemployment rates), rather than trade "winners" in their constituency.

Table 2 compares the effects of constituency interests and party discipline on trade-related press releases and trade-related votes between legislators who represent electorally competitive districts, and all legislators. In this paper, I identified legislators who represent

Table 1: The Effects of Constituency Interests on Pro- and Anti-Trade Press Releases and Trade-related Votes

	<i>Dependent variable:</i>				
	NegPR <i>zero-inflated poisson</i>		PosPR <i>zero-inflated poisson</i>		TradeVote <i>Poisson</i>
	(1)	(2)	(3)	(4)	(5)
unemployedpct	-0.08 (-0.20,0.03)	-0.09 (-0.20,0.01)	-0.15** (-0.27,-0.04)	-0.21*** (-0.33,-0.09)	-0.04 (-0.09,0.01)
highskillpct	-2.62 (-5.52,0.29)	-2.89* (-5.71,-0.08)	-0.49 (-3.29,2.31)	-1.70 (-4.49,1.08)	-0.67 (-2.12,0.78)
lnManuf	0.62** (0.18,1.05)	0.58** (0.17,0.99)	0.30 (-0.02,0.62)	0.27 (-0.06,0.59)	0.01 (-0.13,0.15)
TradeVote	-0.24*** (-0.39,-0.10)		-0.03 (-0.16,0.11)		
Party(R)		-0.59*** (-0.92,-0.27)		-0.38* (-0.70,-0.05)	0.75*** (0.60,0.91)
Observations	436	434	436	434	434
Log Likelihood	-506.94	-505.24	-520.54	-518.59	-622.95
Akaike Inf. Crit.					1,255.90

Notes: *NegPR* is the number of pro-trade press releases, and *PosPR* is the number of anti-trade press releases. *TradeVote*, a discrete variable, is the number of pro-trade roll calls (0-4) a representative cast during the 114th Congress.

*p<0.05; **p<0.01; ***p<0.005

electorally competitive districts as the legislators who are in “Swing” states.¹⁰ In the first column, the number of anti-trade press releases published by legislators in Swing states shows a significant relationship with *unemployment* and *lnManuf*, though the total number of anti-trade press releases from all legislators only has a significant relationship with *lnManuf*. This implies that legislators who are in electorally competitive districts tend to publish more anti-trade press releases than those who are in electorally safe districts, as their districts are more trade-vulnerable. This finding is consistent with my argument that legislators who feel electorally insecure have larger incentives to strategically use press releases to inform their constituents of any trade preferences that are congruent with constituent interests. The results in which both trade-related votes and party affiliation are controlled are presented in the Appendix.

¹⁰Swing states include Colorado, Florida, Iowa, Minnesota, Ohio, Nevada, New Hampshire, North Carolina, Pennsylvania, Virginia, and Wisconsin.

Table 2: The Effects of Constituency Interests on Pro- and Anti-Trade Press Releases and Trade-related Votes in Swing States

	<i>Dependent variable:</i>					
	NegPR		PosPR		TradeVote	
	<i>zero-inflated poisson</i>		<i>zero-inflated poisson</i>		<i>Poisson</i>	
	(Swing)	(All)	(Swing)	(All)	(Swing)	(All)
unemployedpct	0.24*** (0.08,0.40)	-0.08 (-0.20,0.03)	0.11 (-0.15,0.36)	-0.15** (-0.27,-0.04)	-0.08 (-0.19,0.03)	-0.04 (-0.09,0.01)
highskillpct	6.84 (-0.86,14.55)	-2.62 (-5.52,0.29)	2.31 (-5.10,9.73)	-0.49 (-3.29,2.31)	-0.45 (-3.46,2.56)	-0.67 (-2.12,0.78)
lnManuf	2.50*** (1.78,3.22)	0.62** (0.18,1.05)	1.37*** (0.60,2.13)	0.30 (-0.02,0.62)	-0.08 (-0.31,0.16)	0.01 (-0.13,0.15)
TradeVote	-0.34* (-0.61,-0.07)	-0.24*** (-0.39,-0.10)	0.08 (-0.16,0.32)	-0.03 (-0.16,0.11)		
Party(R)					0.57*** (0.25,0.88)	0.75*** (0.60,0.91)
Observations	110	436	110	436	110	434
Log Likelihood	-111.60	-506.94	-125.03	-520.54	-166.58	-622.95
Akaike Inf. Crit.					343.16	1,255.90

Notes: NegPR is the number of pro-trade press releases, and PosPR is the number of anti-trade press releases. *TradeVote*, a discrete variable, is the number of pro-trade roll calls (0-4) a representative cast during the 114th Congress. Swing states include Colorado, Florida, Iowa, Minnesota, Ohio, Nevada, New Hampshire, North Carolina, Pennsylvania, Virginia, and Wisconsin.

*p<0.05; **p<0.01; ***p<0.005

On the other hand, the third column indicates that the number of pro-trade press releases by legislators in Swing states does not show a significant relationship with *unemployment*. Rather, legislators tend to publish more pro-trade press releases when their districts have a higher number of low-skill workers. It is possible that there are a greater number of low-skill workers in Swing states, and thus the salience of trade-related issues is higher than in other states. Because of this salience, legislators regardless of their trade preferences might have discussed trade issues very frequently through their press releases. It is also possible that some pro-trade legislators in Swing states show strong support for free trade by issuing pro-trade press releases, but also issue a number of anti-trade press releases at the same time to compensate for their pro-trade press releases. To test this, I need to examine the effects of constituency interests on press-releases with separate groups of legislators according to their trade-related votes. However, because of the small sample size of the legislators who are in

Swing states, this analysis may be limited in showing statistically significant results.

In the last two columns, legislators' trade-related votes do not have a significant relationship with constituency interests. Even in the fifth column, legislators' trade-related votes do not show any significant relationships with unemployment rates, the number of low-skill workers, and the percentage of high-skill workers, even though their votes indicate a lesser influence of party discipline. This implies that legislators' voting on trade-related bills are less consistently influenced by constituency interests than in their press releases, even when legislators are likely to feel insecure about their re-election.

4 Conclusion

In this paper, I have shown that constrained voting choices on trade-related bills induce legislators to inform their constituents of their underlying trade preferences through issuing press releases. My theory predicts that constituency interests lead to a discrepancy in revealed preferences on trade between roll calls and press releases. Indeed, even when their voting profile is the same, legislators who cast trade votes in a way that is inconsistent with their constituent interests tend to remain intentionally silent about their trade positions. On the other hand, legislators who cast votes in congruence with their constituent interests, tend to advertise their trade positions more vociferously. I use legislators' trade-related press releases and trade-related roll calls to test these predictions empirically, finding that legislators' press releases show strong responsiveness to constituent interests, while their roll calls more strongly reflect party discipline on trade-related bills. I further find that legislators who represent electorally competitive districts are more likely to publish anti-trade press releases when they have districts that are more vulnerable to international trade.

My argument differs from previous IPE studies, which presume that legislator voting behavior reflects their response to pressures from societal coalitions (Hiscox 2002; Milner and Tingley 2010). Although it is well known that elected officials represent the interests of different domestic groups when participating in economic-policy making (including the owners of abundant and scarce factors, exporting and import-competing industries, and productive

and competitive firms), existing studies adopt an extremely narrow focus, equating reflection with legislators' voting. I argue that solely analyzing legislator voting behavior is insufficient to understand their responsiveness to domestic societal coalitions. Hence, this paper broadens the scope of legislators' responsiveness to pressures from societal coalitions on trade policies, by examining press releases as well as voting behaviors. By analyzing and comparing the trade preferences revealed by roll calls and by press releases, this paper contributes to the empirical literature on the domestic politics of trade policy-making (e.g., Hiscox 2002; Goldberg and Maggi 1999; Hainmueller and Hiscox 2006; Lu, Scheve, and Slaughter 2012; Mansfield and Mutz 2009; Scheve and Slaughter 2001). This paper also contributes to the theoretical literature on trade politics, focusing on how legislators *explain* their trade positions, rather than focusing on the trade votes themselves. Legislators' explanations can often justify their decision making or even elicit support for the decision from constituents (Grose, Malhotra, and Houweling 2015; Grimmer 2013: 132-138; McGraw, Best, and Timpono 1995). The focus on legislators' explanations is therefore particularly important, given the rising tide of protectionist demands from inside and outside of Congress.

The work of this paper raises several questions for future research. Are voters really influenced by the explanations of their representatives? If public attitudes are truly affected, this poses significant implications for understanding trade politics. Legislators may be able to explain their unpopular roll calls, and voters exposed to such explanations will tend to reward or punish legislators for how positions are expressed, but may not necessarily do so for the positions as revealed by their roll calls *per se*. Furthermore, many studies on economic voting literature argue that voters decide whether or not to punish incumbents based on how well the incumbents' voting record reflects their economic interest. However, considering the potential effects of the explanations presented by legislators to their constituents, economic voting might be influenced by the explanations, rather than roll calls themselves. This would suggest that the key to the mechanism of economic voting is not that voters consider the final decisions of their representatives, but that voters consider how the representatives reflect their interests *throughout* the policy making process. By focusing on other political activities that may reveal the underlying trade preferences of legislators, and by examining

the effects of their explanations on voters' evaluation, trade politics can be understood more in-depth.

5 Appendix

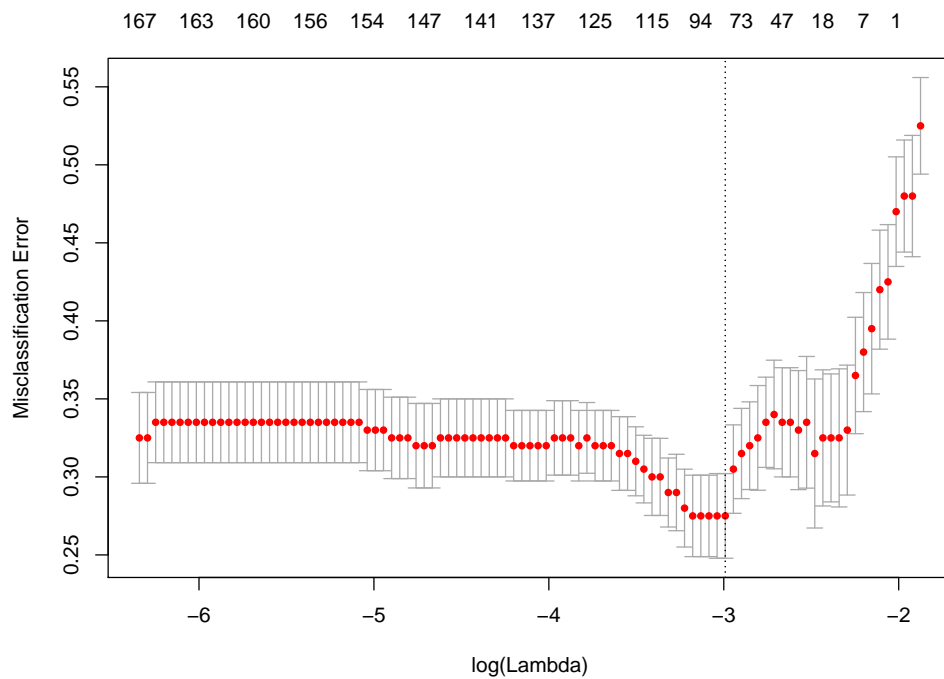


Figure 5: *Cross Validation*

The figure shows that $\log(\lambda) \approx -3$ is found to minimize the MSE. This process selects 81 useful phrases. With this value of λ , I employ LASSO to select phrases that are useful to predict a pro- or anti-trade position in each of the congressional floor speech.

Table 3: Titles of Representative Paul Ryan’s Press Release: Identified as Pro-Trade Releases

Date	Title
2015-06-28	paul ryan on promoting american trade and replacing obamacare
2015-06-11	paul ryan’s step-by-step future starts with trade
2015-05-28	trade promotion authority will rebuild u.s. credibility
2015-05-21	ryan discusses trade and highways during telephone town hall meeting
2015-05-17	ryan on state of the union: for ‘more jobs and better wages,’ we need trade
2015-05-15	ryan on c-span: trade agreements result in ‘more economic growth, more job creation, and better wages’
2015-05-03	ryan calls for passage of trade agreements & reflects on unrest in baltimore on cbss & face the nation
2015-04-30	ryan talks expanding opportunity with american trade and tax reform
2015-04-30	ryan keeps making the case for trade
2015-04-28	paul ryan: japans massive trade opportunity
2015-04-23	ways and means advances trade priorities and accountability act
2015-04-22	putting congress in charge on trade
2015-04-21	the jay weber show: paul ryan on turkey hunting, preventing lois lerner 2.0, and advancing trade agreements
2015-04-16	hatch, wyden and ryan introduce trade promotion authority legislation finance, ways & means
	leaders deliver bill needed to achieve high-quality trade deals that open markets, benefit american workers & job creators
2015-04-02	paul ryan discusses trade and fighting poverty with wolos tim brenel
2015-03-18	trade agreements must get swift advancement through congress
2015-02-23	ryan sees common ground with president on trade
2015-02-10	give congress a say in trade talks

Notes: This table presents the titles of trade-related press releases published by Representative Paul Ryan (R, WI-1), identified as the legislator who published the most pro-trade press releases by the method of this paper. He published 18 pro-trade press releases, which emphasize his support for TPA and free trade deals.

Table 4: Titles of Representative Marcy Kaptur's Press Release: Identified as Anti-Trade Releases

Date	Title
2016-01-11	kaptur, loraín leaders condemn u.s. trade policy as republic steel layoffs confirmed
2016-01-07	kaptur laments potential steel layoffs, points to job-killing trade deals as cause
2015-12-16	kaptur rebukes u.s. trade policy as taa eligibility announced for 177 ohio workers
2015-11-04	reps. kaptur, hunter lead bipartisan group in congress calling on obama administration to release final text of tpp trade deal
2015-08-04	rep. kaptur addresses breakdown in tpp trade talks
2015-06-23	kaptur slams senate vote to fast track job-killing pacific trade deal
2015-06-19	rep. kaptur blasts house leaders for job-outsourcing pacific trade deal
2015-06-05	rep. kaptur introduces bipartisan trade transparency legislation
2015-05-28	rep. kaptur slams u.s. trade policy as more ohio workers are deemed eligible for taa
2015-04-29	lucas county commissioners announce resolution urging congress to oppose fast track trade authority
2015-04-29	kaptur calls out japan for unfair trade policies, currency manipulation
2015-04-24	rep. kaptur contests japan trade deal in house floor speech
2015-04-15	kaptur criticizes political maneuvering to fast-track bad trade deals
2015-04-14	kaptur calls out bad trade deals on u.s. house floor
2015-03-19	reps. ryan, kaptur to ustr: check your math on trade deficits
2015-03-04	reps. kaptur, jones host bipartisan trade discussion
2015-01-27	kaptur requests personal narratives of those impacted from free trade agreements outsourcing of u.s. jobs

Notes: This table presents the titles of trade-related press releases published by Representative Marcy Kaptur (D, OH-9), identified as the legislator who published the most anti-trade press releases by the method of this paper. She published 17 press releases to show her anti-trade position.

Table 5: The Effects of Constituency Interests on Pro- and Anti-Trade Press Releases and Trade-related Votes in Swing States (Both *Party* and *TradeVotes* are controlled.)

	<i>Dependent variable:</i>					
	NegPR		PosPR		vote114	
	<i>zero-inflated count data</i>	<i>zero-inflated count data</i>	<i>zero-inflated count data</i>	<i>zero-inflated count data</i>	<i>Poisson</i>	<i>Poisson</i>
	(1)	(2)	(3)	(4)	(5)	(6)
unemployedpct_114	0.19*	-0.10	0.23	-0.21***	-0.08	-0.04
	(0.01,0.37)	(-0.20,0.003)	(-0.06,0.52)	(-0.32,-0.09)	(-0.19,0.03)	(-0.09,0.01)
highskillpct_114	4.39	-2.97*	6.10	-1.52	-0.45	-0.67
	(-4.39,13.17)	(-5.78,-0.15)	(-2.02,14.22)	(-4.33,1.29)	(-3.46,2.56)	(-2.12,0.78)
lnManuf_114	2.50***	0.59***	1.80***	0.22	-0.08	0.01
	(1.67,3.33)	(0.18,1.01)	(0.88,2.71)	(-0.10,0.53)	(-0.31,0.16)	(-0.13,0.15)
Party(R)	-0.83	-0.35	1.16*	-0.78***	0.57***	0.75***
	(-1.83,0.18)	(-0.85,0.15)	(0.06,2.26)	(-1.28,-0.28)	(0.25,0.88)	(0.60,0.91)
vote114	-0.09	-0.13	-0.27	0.21*		
	(-0.52,0.33)	(-0.35,0.08)	(-0.65,0.11)	(0.01,0.42)		
Observations	110	434	110	434	110	434
Log Likelihood	-110.18	-504.47	-123.32	-515.48	-166.58	-622.95
Akaike Inf. Crit.					343.16	1,255.90

Notes: NegPR is the number of pro-trade press releases, and PosPR is the number of anti-trade press releases. *TradeVote*, a discrete variable, is the number of pro-trade roll calls (0-4) a representative cast during the 114th Congress. Swing states include Colorado, Florida, Iowa, Minnesota, Ohio, Nevada, New Hampshire, North Carolina, Pennsylvania, Virginia, and Wisconsin.

*p<0.05; **p<0.01; ***p<0.005

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