Suspiciously Timed Trade Disputes*

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Abstract

This paper shows that electoral incentives affect the occurrence of trade disputes. Focusing on WTO disputes filed by the United States during the 1995-2012 period, we show that U.S. presidents are more likely to initiate a dispute in the year preceding their re-election date. Moreover, disputes filed by the U.S. tend to target industries that are important to swing states in the presidential election. To explain these regularities, we develop a theoretical model in which an incumbent can file a trade dispute to appeal to voters motivated by reciprocity. The incumbent's ability to initiate a dispute during the re-election campaign provides an advantage over the challenger, who cannot commit to file the dispute if elected. If voters' ideological preferences are not too strong in favor of either candidate, the incumbent will file a trade dispute to increase his re-election chances.

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There was nothing subtle about the American government's lodging of a trade complaint on September 17th, alleging that China unfairly subsidises car-part exports on the same day that Barack Obama was campaigning in the crucial swing state of Ohio—home to many car-part suppliers. But then subtlety does not win many elections.

"Chasing the anti-China vote: A suspiciously timed dispute,"
The Economist, September 22, 2012

1 Introduction

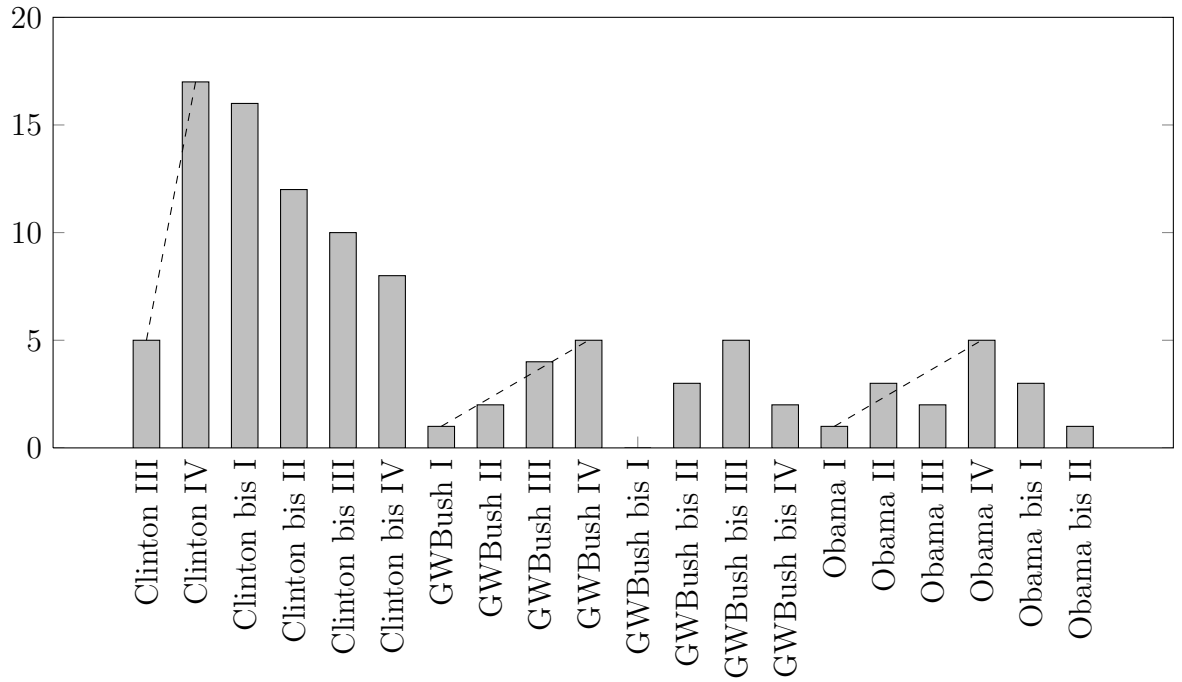
Media coverage of the 2012 United States presidential election suggests that trade disputes mattered in the re-election campaign of Barack Obama. An article in the Economist noted a "suspiciously timed dispute" filed against China in the World Trade Organization (WTO) less than two months before Obama's re-election. The dispute benefited the automobile industry in Ohio, a "crucial swing state" in the U.S. presidential election. Later media coverage observed that Obama "frequently touted a series of cases" against China which were "occasionally timed to campaign stops in industrial swing states in the Midwest" ("US in trade dispute with Indonesia," *Financial Times*, January 10, 2013).

Trade disputes also figured prominently in earlier presidential elections. For example, on October 6, 2004, less than a month before his re-election date, George W. Bush filed a dispute at the WTO against the European Union for allegedly subsidizing Airbus. During the third presidential debate between Bush and John Kerry, Kerry commented: "This president didn't stand up for Boeing when Airbus was violating international rules and subsidies. He discovered Boeing during the course of this campaign after I'd been talking about it for months" ("October 13, 2004 Debate Transcript," Commission on Presidential Debates).

Our paper provides systematic empirical evidence that re-election incentives affect the filing of trade disputes. Our empirical analysis shows that U.S. presidents are more likely to initiate a trade dispute when they are close to facing re-election and that disputes tend to involve industries that are important to swing states in the presidential election. To explain these regularities, we develop a theoretical model in which re-election motives influence the trade disputes filed by incumbent politicians.

We study disputes filed by the United States at the WTO during the 1995-2012 period. There are three main reasons to focus on the U.S. First, it is the country that has filed the most WTO disputes. Second, the existence of executive term limits creates variation in electoral incentives both within and across U.S. presidents, who have direct

Figure 1: WTO disputes filed by the U.S., by year of presidency



control over the decision to file WTO disputes.[1] Finally, there is sharp variation in the electoral importance of U.S. states.

An initial descriptive look at the U.S. dispute history in Figure 1 already suggests a relationship between presidential elections and dispute filings. Each bar represents the number of disputes filed by the U.S. for each year from 1995 through 2014.[2] The dashed lines show an increase in disputes during the first term of the three presidents, when they could still be re-elected. There is no clear pattern in the disputes during the second terms.

In addition to dispute timing, we can also consider how electoral incentives affect the composition of disputes, since industrial employment and election incentives are uneven across the 50 states. We categorize disputes based on whether they are targeted to industries that are among the largest employers in swing states in the presidential elections. Descriptive statistics show that the incidence of disputes is nearly twice as large in these industries.

Our industry-year panel data analysis provides formal support for the importance

[1]Two-term limits were introduced in 1951, when the 22nd Amendment of the U.S. Constitution was ratified.

[2]As we detail in Section 2, our definition of year accounts for differences in the electoral, inaugural, and conventional calendars. Figure 1 covers the 1995-2014 period. Due to the availability of state-level employment data, our empirical analysis ends in 2012.

of re-election motives for trade disputes. We find that U.S. presidents are more likely to file trade disputes during their re-election year. Moreover, trade disputes tend to involve industries that are important in terms of employment for presidential swing states. These results hold regardless of whether we include term or president fixed effects, add additional controls for the determinants of trade disputes, or use alternative econometric methodologies.

To interpret our empirical results, we develop a tractable political economy model of trade disputes. We describe a sequential game between three actors: the incumbent politician, a challenger, and the median voter. Politicians serve one-period terms and can only be re-elected once. In the first period, the incumbent decides whether to file a dispute. At the end of this period, the voter decides whether to elect the incumbent or the challenger. In the second period, the elected politician decides whether to file a dispute, if it was not filed prior to the election. We assume that politicians are office motivated and, all else equal, prefer not to file the trade dispute. The voter has an ideological preference for one of the candidates and prefers the filing of the trade dispute. We focus on this conflict in preferences for the trade dispute because this is the case in which a dispute choice can hinge on electoral incentives.

We first show that, if voters have standard preferences, they will choose between the incumbent and the challenger based on their ideological preferences. In this case, politicians will never file a trade dispute, even if they are office motivated and know that voters would like a dispute to be filed. This is because, if voters are fully rational, their decisions are unaffected by whether or not a politician has a filed a dispute.

To explain why voters would respond to politicians' decisions on trade disputes, we introduce reciprocity: voters want to be (un)kind to an (un)kind politician. There is a well-developed theoretical literature in which agents exhibit intrinsic reciprocal preferences (e.g. Rabin, 1993; Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006). Recent empirical and experimental evidence supports the idea that voters in particular behave reciprocally (e.g. Finan and Schechter, 2012): they feel grateful and want to reward politicians who have conducted policies favorable to them; but they may feel angry and want to punish politicians who have chosen unfavorable policies.[3]

When voters have reciprocal preferences, we find that the unique equilibrium involves the incumbent filing the dispute prior to the election and increasing his chance of re-election, provided that the voter's ideological preference for either candidate is suf-

[3]We focus on intrinsic reciprocity instead of the "instrumental" reciprocity that can result from optimizing behavior of selfish agents (Sobel, 2005). Models of instrumental reciprocity include vote-buying (e.g. Dekel, Jackson, and Wolinsky, 2008) and clientelism, i.e. the literal exchange of favors or policies for political support (e.g. Kitschelt and Wilkinson, 2007; and Robinson and Verdier, 2013).

ficiently small relative to the voter's preference for the trade dispute. When the voter narrowly prefers the challenger, the incumbent's ability to file a dispute provides an advantage over the challenger who cannot commit to file the dispute after the election. The voter's motivation to reciprocally reward the incumbent for filing the dispute dominates the voter's ideological preference for the challenger, so the voter chooses the incumbent. When the voter narrowly prefers the incumbent, the incumbent will still file the dispute, because otherwise the voter's desire to be unkind to the incumbent would dominate the voter's ideological preference for the incumbent. In line with our empirical results, our theoretical model shows that re-election motives can lead politicians to file trade disputes. Our empirical finding that disputes tend to be targeted toward industries important to swing states is in line with our theoretical result that the incumbent only attempts to persuade the voter when ideological preferences are sufficiently small.

Our paper is related to several streams of literature. Recent studies examine the determinants of WTO trade disputes (e.g. Horn, Johannesson, and Mavroidis, 2011; Bown and Reynolds, 2015a, 2015b; Kuenzel, 2014; and Li and Qiu, 2014). Closest to our analysis is the paper by Rosendorff and Smith (2013), who study the role of power change. Chaudoin (2014) considers electoral cycles for disputes filed against the U.S. To the best of our knowledge, ours is the first paper to show that re-election motives affect trade disputes. A recent study by Pervez (2015) provides cross-country evidence that governments tend to file WTO disputes over antidumping duties close to elections. Our paper is distinct in that we focus on the United States—in which the existence of executive term limits creates exogenous variation in electoral incentives—and show that re-election motives affect the timing and industry composition of all types of trade disputes filed.

Our finding that U.S. trade disputes tend to target industries that are important in swing states is reminiscent of Muûls and Petropoulou (2013). They find that U.S. trade policy responds to the interests of swing states, based on a cross-section of industries near the 1984 election and an index of non-tariff trade policies. Similarly, Ma and McLaren (2012) consider how swing state incentives affect the tariffs set in trade agreements. Our paper studies how swing state incentives and electoral calendars affect the filing of WTO disputes.

Our analysis is also related to the literature that studies how electoral calendars affect policy choices. Theoretical work by Rogoff (1990) and Rogoff and Sibert (1988) suggests that, close to elections, incumbent politicians manipulate regular government decisions on fiscal and monetary policies to signal their competence. Drazen (2001) surveys the macroeconomic literature on presidential electoral cycles and concludes that

there is limited evidence in U.S. fiscal policy after 1980 and no evidence in U.S. monetary policy.[4] Recent studies find evidence of electoral cycles in executives' decisions on interstate conflicts (Conconi, Sahuguet, and Zanardi, 2014) and in legislators' voting behavior (e.g. Conconi, Facchini, and Zanardi, 2014; Bouton, Conconi, Pino, and Zanardi, 2014; Conconi, Pino, and Zanardi, 2015).

Our theoretical model builds on the sequential reciprocity framework developed by Dufwenberg and Kirchsteiger (2004). Similarly to Hahn (2009), we apply this framework to understand electoral competition, but our theory focuses on a specific policy choice (the filing of trade disputes) and on how it varies with voters' preferences.

The rest of the paper proceeds as follows. Section 2 describes the data. Section 3 details the empirical strategy and results. Section 4 describes the theoretical model. Section 5 concludes, discussing the broader implications of our analysis for the effectiveness of the WTO.

2 Data

Our dataset covers the 103 disputes that the United States filed in the World Trade Organization between 1995 and 2012.[5] We choose to focus on WTO disputes, disregarding trade disputes filed under the General Agreement on Tariffs and Trade (GATT). Under the GATT, disputes had no fixed timetables and rulings could only be adopted by consensus, implying that a single objection could block the ruling.[6] By contrast, under the dispute settlement procedure established by the WTO, rulings are automatically adopted unless there is a consensus to reject a ruling: any country wanting to block a ruling has to persuade all other WTO members (including its adversary in the case) to share its view. We limit our sample to multilateral trade disputes because of the scarcity of disputes in regional trade agreements.[7]

[4] A large literature stresses voters' resistance to electoral manipulation (e.g. Peltzman, 1992; Shi and Svensson, 2006; and Brender and Drazen, 2008). Among developed countries, Brender and Drazen (2005) find no evidence of electoral cycles in budget deficits, but Brender and Drazen (2013) do find electoral cycles in broad categories of government expenditure.

[5] We start with the database of Horn and Mavroidis (2011) which runs from 1995 until mid-August of 2011, and we extend the sample to the end of 2012 using the WTO's chronological list of dispute cases.

[6] See Schwarz and Sykes (2002) for a discussion on how the impact of GATT disputes were limited primarily to their effects on the reputation of members. The survey of Bagwell, Bown, and Staiger (2014) includes the dispute determinant literature that uses GATT data.

[7] Chase, Yanovich, Crawford, Ugaz (2013) observe just three disputes filed by the U.S. under regional agreements (all under NAFTA). There is a much larger set of NAFTA disputes studied by Li and Qiu (2014), but because these other disputes are filed by private parties rather than states, they are not suited for our analysis.

We classify trade disputes along time and industry dimensions. The dispute timing is based on the date of consultations, the first stage of the WTO dispute process. We classify the industry targeted by the dispute according to Harmonized System (HS) codes, based on the text of the request for consultations.[8] We match HS codes to the U.S. NAICS codes based on industry names. Each dispute can then be linked to state-level employment at the three-digit NAICS level. The state employment data comes from the Quarterly Census of Employment and Wages conducted by the Bureau of Labor Statistics (BLS).

Table 1: Frequency of industries targeted in disputes filed by the U.S.

NAICS	Count	Percent	Description
111	17	13.5	Crop Production
112	11	8.7	Animal Production
212	2	1.6	Mining (except Oil and Gas)
236	1	0.8	Construction of Buildings
237	1	0.8	Heavy and Civil Engineering Construction
311	12	9.5	Food Manufacturing
312	8	6.4	Beverage and Tobacco Product Manufacturing
313	3	2.4	Textile Mills
315	4	3.2	Apparel Manufacturing
316	6	4.8	Leather and Allied Product Manufacturing
325	6	4.8	Chemical Manufacturing
331	2	1.6	Primary Metal Manufacturing
332	2	1.6	Fabricated Metal Product Manufacturing
334	5	4.0	Computer and Electronic Product Manufacturing
335	1	0.8	Electrical Equipment... Manufacturing
336	13	10.3	Transportation Equipment Manufacturing
511	2	1.6	Publishing Industries (except Internet)
512	5	4.0	Motion Picture and Sound Recording Industries
517	1	0.8	Telecommunications
518	3	2.4	Internet Service, Web Search, Data Processing
522	1	0.8	Credit Intermediation and Related Activities
N/A	20	15.9	(Unmatched disputes)
Total	126	100	

Table 1 summarizes the industrial composition of the disputes filed by the United States. Out of the 103 U.S. disputes, we assign 83 disputes to 106 three-digit NAICS

[8]When possible, we use HS codes from the updated 2011 version of the Horn and Mavroidis (2008) database. Otherwise, we base the classification on matching the text of the request with the HS industry names.

industry-dispute pairs, as some disputes mention multiple industries. The other 20 disputes cannot be matched to any NAICS code. A majority of the industry-dispute pairs (62) were in manufacturing industries (NAICS 311-336), led by transportation equipment and food among the three-digit categories. Among the remaining industry-dispute pairs there are 28 in agriculture, 12 in services, and 4 in mining or construction.

Table 2: Frequency of countries targeted in disputes filed by the U.S.

Respondent	**Count**	**Percent**
EU	20	19.4
China	15	14.6
Japan	6	5.8
Korea	6	5.8
Mexico	6	5.8
Argentina	5	4.9
Canada	5	4.9
India	5	4.9
Australia	4	3.9
Brazil	4	3.9
Philippines	4	3.9
Ireland	3	1.9
Belgium	2	1.9
Greece	2	1.9
Turkey	2	1.9
Countries targeted once	14	13.6
Total	103	100

For additional context, we include Table 2, which lists the frequency of target countries among the 103 U.S. disputes. The leading targets are the European Union with 20 and China with 15, while no other country has been named more than 6 times.[9] Each dispute is filed against one country. There are three instances in which multiple members were named on the same day.[10] We still count these as individual disputes in our analysis, which only works against our results as none occurred in a re-election

[9]The 14 countries targeted once in our sample are Chile, Denmark, Egypt, France, France, Hungary, Indonesia, Netherlands, Pakistan, Portugal, Romania, Sweden, UK, and Venezuela.

[10]The three examples are "Certain income tax measures constituting subsidies" in 1998 against five European nations; "Measures relating to the development of a flight management system" in 1999 against both the E.U. and France, and "Measures on minimum import prices" in 2000 against Romania and Brazil.

year.[11]

Due to incongruity between the presidential term calendar, the electoral calendar, and the standard calendar, there is some complication in defining years for the purpose of our analysis. For most years, we define year t to run from November of calendar year $t-1$ to November of calendar year t, where the boundary date in November is based on the most-recent election for non-election years and the election date in the election years. The two exceptions to this rule are (1) the first year of our sample, which runs from Jan. 1995 until November; and (2) the first year for new Presidents, which we define to run from the inauguration date in January until the one-year election anniversary in November. A downside of this methodology is that we leave unclassified disputes between the election of a new President and the inauguration of the new President. There are no such disputes during the 2000-2001 transition, but there are two such disputes during the 2008-2009 transition, and we drop these two disputes from our sample.[12] Using our year classification, we define the dummy variable $Re\text{-}ElectionYear_t$ to be 1 if t is the year prior to the re-election date.

Given our industry and year classification of disputes, we define two dependent variables for our analysis. $Dispute_{it}$ is an indicator of whether a dispute is filed in a three-digit NAICS industry i during year t. $DisputeCount_{it}$ equals the number of disputes in an industry-year.

To define swing states, we use state and national presidential election margins. The swing variable captures the sharp variation in electoral incentives in the U.S. electoral college, which is winner-take-all for most states. We define the dummy variable $Swing_{st}$ to be 1 if and only if the two-party vote share in state s is within 2.5 percent of the national two-party vote share for the most recent presidential election prior to year t. Our definition reflects the theory of Strömberg (2008), who argues that presidential elections depend on both national effects and state effects, so pivotal states for the election are better identified by the closeness of the state vote to the national vote rather than

[11]To resonate with voters beyond simple cheap talk, disputes filed in re-election years should be no less likely to proceed to a WTO panel as disputes filed in other years, and indeed we find that this is case. Specifically, in our 1995-2012 sample, disputes filed in re-election (no re-election) years resulted in panels in 59% (55%) of the cases. It is also the case that disputes filed in re-election years are no less likely to be settled or terminated (by withdrawal or mutually agreed solution): in 33% (26%) of the cases, disputes initiated in re-election (no re-election) years were settled or terminated (and the difference is not statistically significant).

[12]We do verify that there is no effect on our results if we classify these two disputes in either the final year under Bush or the first year under Obama.

the absolute closeness of the state vote.[13] To verify the suitability of our measure, we check how well it forecasts presidential campaign visits for the 2000 and 2004 elections, using the same data as in Strömberg (2008)'s forecasts. Our simple swingness measure performs about as well as the Strömberg (2008) in projecting campaign visits.[14]

To capture the most important industries for each of the 50 states, we define the variable Key_{ist}, which is equal to 1 if a NAICS industry i is one of the top 15 industries by employment in state s in year t. Key industries in swing states are thus identified by the following dummy variable:

$$KeySwingIndustry_{it} = \max_{s \in S}(Key_{ist} * Swing_{st}),$$

which is equal to 1 if industry i is key (top 15 in employment) in some swing state s within the set of U.S. states S in year t. We also control for the national importance of an industry by constructing the dummy variable $KeyUSIndustry_{it}$, which is equal to 1 if industry i is one of the top 15 industries by employment in the U.S. at large.

Our final category of data is U.S. macroeconomic variables. $\Delta Unemployment_{t-1}$ is the change in the annual U.S. unemployment rate from the Current Population Survey of the BLS. $\%\Delta GDP_{t-1}$ is the annual percentage growth rate of U.S. real Gross Domestic Product (GDP) from the Bureau of Economic Analysis. $\%\Delta ExchangeRate_{t-1}$ is the growth rate of the trade-weighted U.S. dollar index of major currencies that is calculated by the Federal Reserve Board of Governors.

Table 3 summarizes the data. We include 101 NAICS industries and 18 years for a total of 1,818 observations in the panel. There were disputes in 76 (4 percent) of the industry-years. Three of the 18 years were re-election years. For the full panel, 29 percent of industry-years were key to a swing state, though this percentage varies by year—the maximum is 32.7 (for three of the first six years of our sample) and the minimum is 25.7 percent (from 2005-2010).

Descriptive statistics of the cross-tabulated data provide some initial support for our hypotheses. We find 26.7 percent of disputes filed by the U.S. occur in the three presidential re-election years, whereas we would expect to find a 16.7 percent share (3 of

[13]Because we require up to a four-year forecast, we cannot effectively implement the Strömberg (2008) measures of electoral incentives, which use state polls taken just weeks before the election. We can calculate the Strömberg measures using the limited data that is available four years in advance, but we find that such a data-limited implementation provides an inferior performance relative to our simple measure, based on how well each forecasts 2000 and 2004 campaign visits.

[14]For example, the 14 states we classify as swing states during the 2001-2004 period (based on 2000 election results) averaged 17.1 campaign visits in 2004 (compared to just 16.0 campaign visits for Strömberg's top 14 states, based on his "Q" measure of electoral incentives). Actual campaign visits in the 14 most-visited states were 17.9.

Table 3: Summary Statistics (1995-2012)

Variable	Mean	Std. Dev.	Min.	Max.
$Dispute_{it}$	0.042	0.200	0	1
$DisputeCount_{it}$	0.058	0.316	0	5
$Re\text{-}ElectionYear_t$	0.167	0.373	0	1
$KeySwingIndustry_{it}$	0.289	0.454	0	1
$KeyUSIndustry_{it}$	0.149	0.356	0	1
$\Delta Unemployment_{t-1}$	0.111	0.998	-0.800	3.500
$\%\Delta GDP_{t-1}$	2.587	1.854	-2.804	4.787
$\%\Delta ExchangeRate_{t-1}$	-0.003	0.054	-0.118	0.084
Observations	1,818			

18) absent electoral cycles. While WTO disputes cite 4.2 percent of all 3-digit NAICS industry on average per year, this rate almost doubles to 8.2 percent for industry-years such that $KeySwingIndustry_{it} = 1$.

3 Empirical analysis

In this section, we bring to the data two hypotheses motivated by the anecdotal evidence cited in the introduction and later rationalized by our theory: (1) U.S. executives file more trade disputes when they are close to re-election, and (2) trade disputes are more likely to target industries that are important to swing states in the presidential election.

We test these hypotheses using an industry-year panel. We consider three alternative econometric methodologies: a linear probability model, a probit model and a negative binomial model. In the first two models, the dependent variable is the dummy variable $Dispute_{it}$, which is equal to 1 if the United States files at least one dispute targeting industry i in year t. In the negative binomial model, the dependent variable is $DisputeCount_{it}$, the number of disputes filed by the United States in year t targeting industry i.[15]

Our main regressors of interests are the dummy variables $Re\text{-}ElectionYear_t$ and $KeySwingIndustry_{it}$, which capture years and industries that should be more important for a president's re-election. We always include the variable $KeyUSIndustry_{it}$, to make sure that the variable $KeySwingIndustry_{it}$ does not simply capture the importance of

[15]We observe more than one dispute in a given industry-year in 20 industry-year observations. These observations are 1.1% of our total sample, but 26.3% of the industry-years with a dispute, so we consider both the binary model and the count model to be worthwhile.

an industry in the U.S. at large rather than in swing states. Notice that the dummy $KeySwingIndustry_{it}$ varies across both the time and industry dimensions, while $Re\text{-}ElectionYear_t$ varies only across time (taking a value of 1 in only three years of our sample). The variable $KeySwingIndustry_{it}$ will thus allow us to identify the role of electoral incentives with greater precision.

The panel structure of our data allows us to include industry fixed effects in all of our specifications. Throughout we use fixed effects at the two-digit level of the NAICS classification, so we test our swing state hypothesis based on variation at the three-digit NAICS level within the two-digit classifications. We use $\mathbf{I}_i$ to denote the matrix of dummy variables for all the two-digit industries.

All our specifications include time-varying factors, denoted by the matrix $\mathbf{T}_t$. Because of our interest in the variable $Re\text{-}ElectionYear_t$, we cannot include year fixed effects. However, we can include fixed effects for each term served by an executive or for his entire presidency. Term effects may work against our results, if the effects of re-election incentives spill into earlier years of the first term. However, they allow us to control for term-specific variables that may affect the initiation of disputes. In particular, they account for whether the executive can still be re-elected (first term) or faces term limits (second term). We thus report results with either term or president effects.

One possible concern is that the estimated re-election year effects could result from omitted variables that also peak in the re-election years of 1996, 2004, and 2012. To deal with this concern, we include three macroeconomic variables, which recent studies suggest might affect the filing of trade disputes: $Unemployment_{t-1}$, $\%\Delta GDP_{t-1}$ and $\%\Delta ExchangeRate_{t-1}$.[16] We use lagged variables to limit potential endogeneity concerns. Throughout our analysis, we estimate both the parsimonious specification without the macroeconomic controls and the full specification including the macroeconomic controls.

In line with our hypotheses, the key coefficients of interest are always positive and significant—at least at 10 percent for the $Re\text{-}ElectionYear_t$ dummy and at least at 5 percent for the $KeySwingIndustry_{it}$ dummy—regardless of the econometric methodology and the specification. Not surprisingly, the strongest support for our hypotheses comes from the negative binomial model, which makes full use of the time variation in the data.

[16]Bown and Crowley (2013) find that nations refrain from applying temporary trade barriers against nations with weaker macroeconomic conditions. These barriers are an important source of disputes, so a reduction in such barriers applied against the U.S. could explain a reduction in disputes filed by the U.S. We follow the authors' choice of lagged macroeconomic indicators, albeit at an annual frequency instead of a quarterly frequency, and we use an index of U.S. exchange rates rather than bilateral exchange rates. Also, Li and Qiu (2014) find that disputes are pro-cyclical and that real exchange rates are a significant predictor of disputes.

3.1 Linear Probability Model

For our panel analysis, we first consider a linear probability model that follows the form

$$\begin{aligned} Dispute_{it} =& \gamma_0 + \gamma_1 Re\text{-}ElectionYear_t + \gamma_2 KeySwingIndustry_{it} \\ &+ \gamma_3 KeyUSIndustry_{it} + \gamma_4 \mathbf{T}_t + \gamma_5 \mathbf{I}_i + \varepsilon_{it}. \end{aligned} \tag{1}$$

The main parameters of interests are the re-election effect and the key swing effect. We estimate four models using ordinary least squares.

Table 4: Linear Probability Model

	(1)	(2)	(3)	(4)
$Re\text{-}ElectionYear_t$	0.027*	0.024*	0.041*	0.032**
	(0.014)	(0.014)	(0.022)	(0.015)
$KeySwingIndustry_{it}$	0.073***	0.073***	0.073***	0.073***
	(0.016)	(0.022)	(0.022)	(0.022)
$KeyUSIndustry_{it}$	-0.029	-0.029	-0.029	-0.028
	(0.023)	(0.023)	(0.023)	(0.023)
$\Delta Unemployment_{t-1}$			0.016	0.013
			(0.014)	(0.010)
$\%\Delta GDP_{t-1}$			0.002	0.002
			(0.007)	(0.006)
$\%\Delta ExchangeRate_{t-1}$			0.010	-0.010
			(0.128)	(0.094)
Term fixed effects	Yes	No	Yes	No
President fixed effects	No	Yes	No	Yes
2-digit industry fixed effects	Yes	Yes	Yes	Yes
Observations	1,818	1,818	1,818	1,818
R^2	0.14	0.14	0.14	0.14

Notes: The table reports coefficients of a linear probability model, with robust standard errors in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Table 4 reports the results for the linear probability model, which support our main hypotheses. In the parsimonious specifications in Columns 1 and 2, which differ only with respect to the type of fixed effects included, we find a re-election year effect that is significant at the 10% level and a key swing effect that is strongly significant. The results in columns 3 and 4 including the macroeconomic controls confirm the robustness of our two main coefficients of interest, and the controls themselves are insignificant. The coefficient $KeyUSIndustry_{it}$ is not of the expected sign, as we would expect industries of importance nationally to be electorally important, but it is highly insignificant.

3.2 Probit model

Our second approach is to estimate a probit model. This specification avoids well-known problems of the linear probability model, at the expense of placing a distributional assumption on the industry-year errors. One additional consequence of using a probit model is that the fixed effects are not identified for two-digit NAICS industries in which no dispute was filed during our 18-year sample.[17] We then effectively drop the observations in these 2-digit industries, leaving us with 44 3-digit NAICS industries (within eight 2-digit NAICS industries) for a total of 792 observations.

We estimate the following probit specification:

$$Pr(Dispute_{it} = 1|\cdot) = \Phi(\lambda_0 + \lambda_1 Re\text{-}ElectionYear_t + \lambda_2 KeySwingIndustry_{it} + \lambda_3 KeyUSIndustry_{it} + \lambda_4 \mathbf{T}_t + \lambda_5 \mathbf{I}_i). \quad (2)$$

The Φ as usual denotes the standard normal cumulative distribution function.

Table 5 displays the estimated probit coefficients, which provide additional support for our hypotheses. As with the linear probability model, we find that the re-election year coefficient is significant at least at the 10% level, regardless of the time fixed effects and the controls that we include in the model. The key swing industry coefficient continues to be strongly significant with the anticipated sign. The key U.S. industry coefficient is now of the expected sign but remains insignificant.

To interpret the probit results, we calculate how the model's average predicted probabilities vary as we condition on $Re\text{-}ElectionYear_t$ and $KeySwingIndustry_{it}$ taking on values of 0 and 1. The second part of the table reports the results. The first row reveals that the probability that a dispute is filed in a re-election year and targets a swing industry is between 0.18 to 0.25 higher than the probability of a dispute being filed in other years and targeting other industries. The other rows evaluate the effects of varying each of our two main variables of interest individually. The effect of $KeySwingIndustry_{it}$ is strongly significant across all four columns regardless of whether we condition on $Re\text{-}ElectionYear_t = 0$ or 1. The effect of $Re\text{-}ElectionYear_t$ is significant at the 10% level for a majority of our estimates. Though the $Re\text{-}ElectionYear_t$ model coefficient is significant across all specifications, its effect on the predicted probabilities is less robust. Still, the balance of evidence from the coefficients and the differences in the predicted

[17] Notice that the industry fixed effects that we include are at a more aggregate level (i.e. 2-digit NAICS) than the dimension of the panel (i.e. 3-digit NAICS). Thus, we have up to 10 three-digit industries used in the estimation of each of the two-digit industry fixed effects. For a robustness check, we estimate conditional logit models—a logit with MLE conditional on the sum of disputes in a two-digit industry instead of estimating fixed effects—and we find that the results are qualitatively identical.

Table 5: Probit Results

	(1)	(2)	(3)	(4)
$Re\text{-}ElectionYear_t$	0.363*	0.293*	0.554*	0.486**
	(0.188)	(0.165)	(0.335)	(0.243)
$KeySwingIndustry_{it}$	0.667***	0.663***	0.687***	0.675***
	(0.176)	(0.175)	(0.177)	(0.175)
$KeyUSIndustry_{it}$	0.268	0.269	0.240	0.250
	(0.399)	(0.402)	(0.399)	(0.402)
$\Delta Unemployment_{t-1}$			0.217	0.256
			(0.232)	(0.165)
$\%\Delta GDP_{t-1}$			0.009	0.061
			(0.154)	(0.103)
$\%\Delta ExchangeRate_{t-1}$			-0.242	0.212
			(2.122)	(1.641)
Term fixed effects	Yes	No	Yes	No
President fixed effects	No	Yes	No	Yes
2-digit industry fixed effects	Yes	Yes	Yes	Yes
Differences in Predicted Probabilities for $\hat{P}(Re\text{-}ElectionYear_t, KeySwingIndustry_{it})$				
$\hat{P}(1,1) - \hat{P}(0,0)$	0.198***	0.181***	0.248***	0.229***
	(0.063)	(0.056)	(0.097)	(0.072)
$\hat{P}(0,1) - \hat{P}(0,0)$	0.107***	0.108***	0.106***	0.106***
	(0.033)	(0.033)	(0.032)	(0.033)
$\hat{P}(1,0) - \hat{P}(0,0)$	0.049*	0.039	0.080	0.069*
	(0.029)	(0.024)	(0.058)	(0.040)
$\hat{P}(1,1) - \hat{P}(0,1)$	0.090*	0.072*	0.142	0.123*
	(0.050)	(0.043)	(0.093)	(0.066)
$\hat{P}(1,1) - \hat{P}(1,0)$	0.148***	0.142***	0.168***	0.160***
	(0.047)	(0.044)	(0.055)	(0.048)
Observations	792	792	792	792
Pseudo R^2	0.18	0.17	0.18	0.18

Notes: The first part of the table reports coefficients of a probit model, with robust standard errors in parentheses. The second part of the table reports differences in the model's average predicted probabilities, as we condition on the two dummy variables in the $\hat{P}(\cdot)$ function taking on the specified values of 0 or 1. For the other variables, the predicted probabilities are calculated conditional on the observed data. Standard errors for the differences are calculated using the delta method. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

probabilities support our hypothesis that disputes are more likely to be filed in re-election years, particularly if they target industries that are important for swing states in the presidential election.[18]

[18]We have tried including an interaction between $KeySwingIndustry_{it}$ and $Re\text{-}ElectionYear_t$, but this was never significant. This is not surprising, given that the variable $Re\text{-}ElectionYear_t$ varies only over time and is equal to 1 in only three years of our sample.

3.3 Count Model

The third of our main specifications models the variable $DisputeCount_{it}$. An advantage of the count model is that it can exploit the variation in the 20 industry-years out of 76 with more than one dispute. It also provides an additional functional form check on our previous results.

We assume $DisputeCount_{it}$, conditional on the data, follows a negative binomial distribution with parameters μ_{it} and α such that

$$E[DisputeCount_{it}|\cdot] = \mu_{it} \equiv exp(\beta_0 + \beta_1 Re\text{-}ElectionYear_t + \beta_2 KeySwingIndustry_{it} + \beta_3 KeyUSIndustry_{it} + \beta_4 \mathbf{T}_t + \beta_5 \mathbf{I}_i) \quad (3)$$

and $Var[DisputeCount_{it}|\cdot] = \mu_{it} + \alpha\mu_{it}^2$. We then estimate using maximum likelihood.

Table 6 provides the estimates from the negative binomial regressions, which provide the strongest support for our hypotheses.[19] The re-election year coefficient is statistically different from zero at the 1% level in three of the four specifications, which is a stronger result than we found with the binary dependent variable. The key swing industry effects remain strongly significant in all specifications. The effect of key industries at the national level has the expected positive sign, though it is still not statistically significant in any specification.

The second part of Table 6 shows how the predicted counts vary as we condition on $Re\text{-}ElectionYear_t$ and $KeySwingIndustry_{it}$ taking on values of 0 or 1, so this part is analogous to the differences in predicted probabilities from Table 5. The first row shows that a key swing industry in a re-election year has a .40 to .64 larger predicted count than other industries in other years. The effect of varying $KeySwingIndustry_{it}$ remains strongly significant regardless of the specification or the value of $Re\text{-}ElectionYear_t$. The effect of varying $Re\text{-}ElectionYear_t$ is significant at the 10% level or 5% level in three of the four specifications, regardless of how we condition on $KeySwingIndustry_{it}$. These results provide the strongest support for our hypothesis that re-election incentives affect the filing of trade disputes.

[19] We strongly reject the hypothesis that the dispersion parameter α (not reported) equals zero, confirming that the negative binomial model is appropriate rather than the simpler Poisson model.

Table 6: Negative Binomial Results

	(1)	(2)	(3)	(4)
$Re\text{-}ElectionYear_t$	0.795***	0.663***	1.083*	1.013***
	(0.297)	(0.250)	(0.576)	(0.387)
$KeySwingIndustry_{it}$	1.210***	1.197***	1.229***	1.204***
	(0.252)	(0.248)	(0.252)	(0.247)
$KeyUSIndustry_{it}$	0.818	0.830	0.792	0.809
	(0.546)	(0.562)	(0.539)	(0.554)
$\Delta Unemployment_{t-1}$			0.276	0.369
			(0.407)	(0.270)
$\%\Delta GDP_{t-1}$			-0.053	0.053
			(0.275)	(0.160)
$\%\Delta ExchangeRate_{t-1}$			0.719	1.670
			(3.733)	(2.670)
Term fixed effects	Yes	No	Yes	No
President fixed effects	No	Yes	No	Yes
2-digit industry fixed effects	Yes	Yes	Yes	Yes
Differences in Predicted Counts for $\hat{C}(Re\text{-}ElectionYear_t, KeySwingIndustry_{it})$				
$\hat{C}(1,1) - \hat{C}(0,0)$	0.466***	0.403***	0.636*	0.578**
	(0.176)	(0.132)	(0.384)	(0.243)
$\hat{C}(0,1) - \hat{C}(0,0)$	0.171***	0.172***	0.169***	0.165***
	(0.048)	(0.049)	(0.049)	(0.047)
$\hat{C}(1,0) - \hat{C}(0,0)$	0.088**	0.070**	0.136	0.124*
	(0.042)	(0.033)	(0.111)	(0.070)
$\hat{C}(1,1) - \hat{C}(0,1)$	0.295*	0.231**	0.466	0.413*
	(0.157)	(0.114)	(0.382)	(0.235)
$\hat{C}(1,1) - \hat{C}(1,0)$	0.378***	0.333*	0.499***	0.454**
	(0.147)	(0.114)	(0.287)	(0.191)
Observations	792	792	792	792
Pseudo R^2	0.17	0.17	0.17	0.17

Notes: The first part of the table reports coefficients of a negative binomial model, with robust standard errors in parentheses. The second part of the table reports differences in the model's average predicted counts, as we condition on the two dummy variables in the $\hat{C}(\cdot)$ function taking on the specified values of 0 or 1. For the other variables, the predicted counts are calculated conditional on the observed data. Standard errors for the differences are calculated using the delta method. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

3.4 Robustness

To conclude the empirical section, we consider additional checks of the robustness of our main results. We consider both alternative definitions of our key swing industry variables and the potential endogeneity of our key swing industry variable.

One concern is that our results may be highly sensitive to our choice to define a key industry based on a top 15 employment rank. To address this concern, we define $Top20SwingIndustry_{it}$ and $Top20USIndustry_{it}$, which are defined like our baseline regressors except that we now use top 20 in employment at the state or national level in their construction. We would expect that as we expand the definition of key industries, the measured effects would eventually decline as we include less electorally-important industries.

Table 7: Robustness to Top 20 Key Industry Cutoff

	(1)	(2)	(3)	(4)	(5)	(6)
Model functional form	Linear	Linear	Probit	Probit	Neg. Bin.	Neg. Bin.
$Re\text{-}ElectionYear_t$	0.027**	0.042*	0.384**	0.564*	0.852***	1.157**
	(0.014)	(0.022)	(0.188)	(0.334)	(0.293)	(0.573)
$Top20SwingIndustry_{it}$	0.057***	0.057***	0.633***	0.636***	1.245***	1.247***
	(0.017)	(0.017)	(0.171)	(0.173)	(0.248)	(0.247)
$Top20USIndustry_{it}$	-0.019	-0.019	0.079	0.073	0.230	0.223
	(0.020)	(0.020)	(0.274)	(0.275)	(0.448)	(0.447)
$\Delta Unemployment_{t-1}$		0.016		0.205		0.261
		(0.014)		(0.233)		(0.411)
$\%\Delta GDP_{t-1}$		0.003		0.010		-0.051
		(0.007)		(0.156)		(0.283)
$\%\Delta ExchangeRate_{t-1}$		0.016		-0.192		0.998
		(0.128)		(2.120)		(3.736)
Term fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
2-digit industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,818	1,818	792	792	792	792
(Pseudo) R^2	0.13	0.14	0.17	0.18	0.17	0.17

Notes: The table reports coefficients above robust standard errors in parentheses. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Table 7 contains the results across our three primary specifications. We report only results for the term fixed effects as this is the most restrictive specification in finding a re-election year effect. We find that the results continue to hold with the larger set of industries. As expected, the point estimate of the key industry effects are smaller for the linear models and the probit models, but the estimates are slightly larger for the

negative binomial model.

For a final robustness check, we consider the possibility that our key industry variables are endogenous, perhaps due to omitted variables that affect both industry employment and disputes during the WTO era. To address this concern, we define instrumental variables for the industries key to swing states based on the 1994 data, $KeySwingIndustry1994_{it}$ and $KeyUSIndustry1994_{it}$. Specifically, we define swing states based on the 1992 election results, and key industries based on the 1994 employment data, and we follow our previous methodology to construct the new variables. We then estimate the linear model using two-stage least squares, with the two new 1994 variables serving as instruments for $KeySwingIndustry_{it}$ and $KeyUSIndustry_{it}$.[20]

Table 8: Two-stage least squares regressions

	(1)	(2)	(3)	(4)
$Re\text{-}ElectionYear_t$	0.027*	0.023*	0.041*	0.030**
	(0.014)	(0.013)	(0.022)	(0.015)
$KeySwingIndustry_{it}$	0.113***	0.113***	0.113***	0.112***
	(0.028)	(0.028)	(0.028)	(0.028)
$KeyUSIndustry_{it}$	-0.035	-0.035	-0.035	-0.035
	(0.032)	(0.032)	(0.032)	(0.032)
$\Delta Unemployment_{t-1}$			0.016	0.012
			(0.014)	(0.010)
$\%\Delta GDP_{t-1}$			0.002	0.002
			(0.007)	(0.006)
$\%\Delta ExchangeRate_{t-1}$			0.008	-0.017
			(0.128)	(0.094)
Term fixed effects	Yes	No	Yes	No
President fixed effects	No	Yes	No	Yes
2-digit industry fixed effects	Yes	Yes	Yes	Yes
Observations	1,818	1,818	1,818	1,818
R^2	0.13	0.13	0.14	0.13

Notes: The table reports two-stage least squares coefficients, with robust standard errors in parentheses. The variables $KeySwingIndustry_{it}$ and $KeyUSIndustry_{it}$ are treated as endogenous. The first-stage instruments excluded from the second stage are analogs to the bolded variables, defined based on the level of employment in 1994. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively.

Table 8 shows the results from the two-stage least squares estimation.[21] They are in

[20]Similarly, estimating two-step probit models would deliver similar results but the interpretation of the coefficients would be more difficult (i.e. marginal effects could not be easily calculated).

[21]The first-stage F-statistics suggest there is no problem with weak instruments.

line with the results from the ordinary least squares estimation in Table 4 and provide a final confirmation of our main hypotheses.

4 A model of electoral incentives and trade disputes

In this section, we present a political economy model of trade disputes to rationalize our empirical findings.

We describe a sequential game between three actors: the incumbent politician, a challenger, and the median voter. We first show that, if voters have standard preferences, their decision will be driven only by ideology. In this scenario, electoral incentives will have no impact on the filing of trade disputes. We then show that re-election motives can lead the incumbent politician to file a trade dispute, if voters are not too ideological and have intrinsic reciprocal preferences, i.e. want to be (un)kind to an (un)kind politician. As mentioned in the introduction, the existence of reciprocal preferences is emphasized in the theoretical literature (e.g. Rabin, 1993; Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006) and supported by empirical and experimental studies (e.g. Finan and Schechter, 2012).

4.1 Players, actions, and strategies

We assume that politicians can only serve two terms, lasting one period each. This assumption allows us to study how the behavior of an incumbent politician varies between the first period (when he can still be re-elected) and the second period (when he has no re-election motives).

The model consists of three stages:

1. In the first period, the incumbent I decides whether to initiate a trade dispute against another WTO country. The incumbent's action is denoted by m_I. The incumbent can choose between filing a complaint (action F) or not (action N).

2. At the end of the first period, after having observed the electoral campaign, voters decide who gets elected for the next term. In order to keep the model tractable, we concentrate on the median voter V. By slight abuse of notation, action I denotes the vote for the incumbent, and action C the vote for the challenger C.

3. In the second period, the elected president can file a complaint, if it has not yet been filed by the incumbent in stage 1. In this case, the re-elected incumbent can choose between filing a complaint (action f_I) or not (action n_I). If the challenger

gets elected and the former president has not filed the complaint in stage 1, the challenger has the choice between f_C and n_C.

Denote the set of pure strategies of each player as $A_I \equiv \{Ff_I,\ Fn_I,\ Nf_I,\ Nn_I\}$, $A_C \equiv \{f_C,\ n_C\}$, and $A_V \equiv \{II, IC, CI, CC\}$. For the incumbent strategy, the first character denotes the stage 1 choice and the second denotes the stage 3 choice. For the voter strategy, the first character is the action conditional on F, and the second is the action conditional on N.

Denote a particular pure strategy of each politician as $a_I \in A_I$ and $a_C \in A_C$.[22] Denote a particular voter strategy as $a_V \in \Delta(A_V)$, the set of mixed strategies over A_V. We further denote a particular mixed strategy a_V as $p_{IC} \cdot IC + p_{CC} \cdot CC + p_{II} \cdot II + p_{CI} \cdot CI$. For any mixed strategy we introduce, we denote the probabilities of its pure strategies with matching superscripts, e.g. the probability of playing IC when choosing mixed strategy a'_V is denoted by p'_{IC}.

See Figure 2 for the extensive form of the game. The figure depicts only the material (direct) component of payoffs, omitting the voter's reciprocal payoffs. We elaborate further on both payoff components in the following subsection.

4.2 Payoffs

Politicians: We assume that politicians are office motivated, and earn a payoff of 1 when they are in office and a payoff of zero out of office.

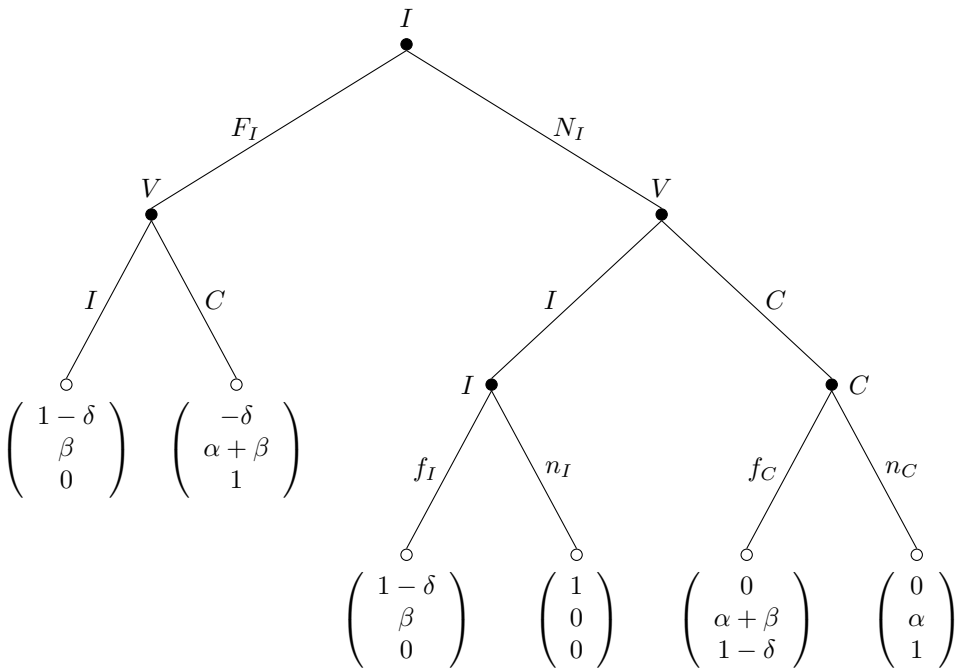
A politician bears a cost of δ for initiating a trade dispute.[23] Given our assumptions about the politicians' payoffs, if $\delta > 1$, then the dispute will never be filed. By contrast, if $\delta < 0$, the dispute will always be filed. Many potential disputes fall into these categories, such that re-election incentives would not matter. We focus on the parameter range $\delta \in (0, 1)$, for which re-election motives may affect politicians' choices.

Our assumption that politicians bear some costs when filing trade disputes warrants some discussion about the possible sources of such costs. The literature points out that there are the direct costs of litigating a dispute, as successful disputes require significant

[22] If we were to allow mixed strategies for the politicians, we would find that the politicians play only pure strategies in equilibrium, except for the knife's edge case in which the politician is indifferent between all strategies, so we do not consider those mixed strategies further.

[23] A-priori it is unclear whether a complaint is also costly when the other politician files the complaint. For this model we have chosen that only the politician filing the complaint has to bear the cost. Hence, δ reflects the political costs of a complaint, and not an intrinsic preference of the politicians. None of our results would change if the complaint is also costly when the other politician files it. One might also speculate that the costs of filing a complaint might be different for the incumbent and the challenger. Again, none of our results would change as long as the costs are strictly positive for both politicians.

Figure 2: Extensive form of the game with material payoffs for players I, V, and C



legal expertise. For example, Bown (2009) cites estimated litigation costs exceeding 10 million for individual disputes. Disputes can also have a shadow cost, due to limited resources at every stage of the dispute process (see Chapter 5 of Bown, 2009, for details on the process). Such dispute costs have played a significant role in prior theory of the WTO dispute settlement process. Maggi and Staiger (2011) argue that a dispute cost is important for explaining a pro-trade bias in WTO rulings.

Voters: The payoff of the voter consists of two parts. First, there is a material (direct) payoff, depending on the strategies of the politicians and on his vote. This payoff is denoted by $\pi_V(a_I, a_V, a_C)$. It is normalized to zero when the incumbent gets re-elected and no complaint is filed. We use α to denote the median voter's additional material payoff if the challenger gets elected. If α is positive, the median voter has an intrinsic preference for the challenger. If α is negative, he has an intrinsic preference for the incumbent. Note that the smaller the absolute value of α, the "closer" the race in the respective state and the more important the trade issue in relative terms. We use β to denote the median voter's additional payoff from a complaint. We assume $\beta > 0$.

In addition to the material payoff, the voter is motivated by reciprocity, i.e. the desire to choose an action that is (un)kind to an (un)kind politician. Following the preference form of Dufwenberg and Kirchsteiger (2004), we will denote the voter's reciprocity toward each of the two politicians as the product of two concepts to be defined: (1) the

voter's kindness toward the politician, and (2) the voter's perception of the politician's kindness to the voter. The voter's utility is the sum of the reciprocity payoffs for each politician and the material payoff.

A strategy choice of player i is kind to another player j if the choice intends to give j a high material payoff, minus the average between the highest and the lowest payoff i can intend give to j. The payoff the voter intends to give to a politician by choosing a particular strategy a_V depends on the incumbent's first stage action m_I, which the voter already knows when making a choice in stage 2. The intended payoff also depends on the choices made in stage 3 (if the incumbent has chosen N in stage 1) which the voter does not know when he makes his choice. Hence, the voter has to form beliefs about what will happen in stage 3. Denote by $b_I \in \{f_I, n_I\}$ the voter's belief about the incumbent's action in stage 3, and by $b_C \in \{f_C, n_C\}$ the voter's belief about the challenger's strategy. Denote the voter's kindness to politicians I and C by $k_I(a_V \,|m_I, b_I, b_C\,)$ and $k_C(a_V \,|m_I, b_I, b_C\,)$ respectively.

What is the kindness of a politician to the voter, as perceived by the voter? It is the material payoff the voter thinks that the respective politician intends for the voter, minus the average of what the voter thinks is the maximum and the minimum the politician can intend for the voter. The material payoff the voter thinks that the incumbent intends for him depends on the stage 1 action m_I of the incumbent, and on the voter's first order beliefs about the politicians' stage 2 actions, b_I and b_C. The voter's material payoff depends of course also on the voter's strategy. The material payoff the incumbent can intend for the voter depends also on the incumbent's belief about the voter's strategy. For measuring the voter's perception about the incumbent's intentions we need c_V^I, the voter's second-order belief about the incumbent's belief about the voter's strategy. Due to a similar reasoning, the voter's second-order belief about the incumbent's belief about the challenger's strategy, denoted by c_C^I, is required. Denote the voter's perception of the incumbent's kindness to the voter by $\kappa_I(m_I, b_I, b_C, c_V^I, c_C^I)$. For a similar reason, the voter's perception of kindness of the challenger's strategy choice depends on the first-stage action of the incumbent m_I, on the first-order beliefs of the voter, b_I and b_C, on the voter's second-order belief about the challenger's belief about the voter's strategy, c_V^C, and on the voter's second-order belief about the challenger's belief about the third-stage action of the incumbent, c_I^C. Denote the voter's perception of the challenger's kindness by $\kappa_C(m_I, b_I, b_C, c_V^C, c_I^C)$.

The overall utility of the voter is given by

$$u_V(a_I, a_V, a_C, b_I, b_C, c_V^I, c_C^I, c_V^C, c_I^C) = \pi_V(a_I, a_V, a_C) + \tag{4}$$
$$k_I(a_V \,|m_I, b_I, b_C)\kappa_I(m_I, b_I, b_C, c_V^I, c_C^I) + k_C(a_V \,|m_I, b_I, b_C)\kappa_C(m_I, b_I, b_C, c_V^C, c_I^C).$$

This formulation implies that the voter wants to behave reciprocally, and that this wish to be kind (unkind) to a certain politician increases with the perceived kindness (unkindness) of the politician to the voter.

4.3 Kindness calculations

Here we give examples of kindness function evaluation. The example calculations are chosen to be useful in the next subsection. Throughout this subsection, we assume that the voter expects no stage 3 disputes, i.e. $b_I = n_I$ and $b_C = n_C$. We also assume, unless otherwise indicated, that the voter believes that neither candidate anticipates that the other will file a dispute in stage 3, i.e. $c_C^I = n_C$ and $c_I^C = n_I$.

Kindness of the voter to the politicians: First, assume that the incumbent has chosen N in stage 1. With such beliefs and knowing that $m_I = N$, choosing II or CI gives the incumbent a material payoff of 1, which is the maximum the voter could give to the incumbent. Choosing II or CI gives the challenger 0, which is the minimum the challenger could get. Choosing IC or CC gives the incumbent 0 (the minimum possible) and the challenger 1 (the maximum possible). Suppose the voter plays the strategy $a_V = p_{IC} \cdot IC + p_{CC} \cdot CC + p_{II} \cdot II + p_{CI} \cdot CI$. Then,

$$k_I(a_V \,|N, n_I, n_C) = p_{II} + p_{CI} - \frac{1}{2}(1+0) = p_{II} + p_{CI} - \frac{1}{2}. \tag{5}$$
$$k_C(a_V \,|N, n_I, n_C) = p_{CC} + p_{IC} - \frac{1}{2}(1+0) = p_{CC} + p_{IC} - \frac{1}{2}.$$

If the incumbent instead chooses F in stage 1, then

$$k_I(a_V \,|F, n_I, n_C) = p_{IC} + p_{II} - \delta - \frac{1}{2}((1-\delta) + (-\delta)) = p_{IC} + p_{II} - \frac{1}{2}. \tag{6}$$
$$k_C(a_V \,|F, n_I, n_C) = p_{CC} + p_{CI} - \frac{1}{2}(1+0) = p_{CC} + p_{CI} - \frac{1}{2}.$$

To summarize, a pure strategy of the voter yields a kindness of $\frac{1}{2}$ to the election winner and a kindness of $-\frac{1}{2}$ to the election loser, where the election outcome is conditional on the voter's strategy and the incumbent's first-stage action. For the mixed strategies, the

kindness function is positive for a politician when the voter selects that politician more than half the time.

Perceived kindness of the incumbent to the voter: Assume that the second-order belief about the voter's strategy is given by $c_V^I = a'_V$. Then the voter's perceived kindness of the incumbent, conditional on the incumbent's first-stage action, would be:

$$\kappa_I(F, n_I, n_C, a'_V, n_C) = \frac{1}{2}\left(\beta + \alpha(p'_{CI} - p'_{IC})\right). \tag{7}$$

$$\kappa_I(N, n_I, n_C, a'_V, n_C) = -\frac{1}{2}\left(\beta + \alpha(p'_{CI} - p'_{IC})\right). \tag{8}$$

To understand the perceived kindness, first consider the dispute payoff when the dispute does not impact the voter's behavior. Since the incumbent could provide a material payoff of β by filing a dispute or a 0 payoff by not filing, the kindness of the filing is $\beta - \frac{1}{2}(\beta + 0) = \frac{\beta}{2}$. Also, the perceived kindness must reflect the voter's perception about whether the incumbent anticipates that filing would affect the voter's action, as is the case when $p'_{CI} > 0$ or $p'_{IC} > 0$. For example, if $\alpha > 0$ and $c_V^I = IC$, then the incumbent's ability to improve perceived kindness by playing F is limited by the voter's second-order belief that the incumbent knows the dispute will influence the election outcome. According to the belief, the dispute would alter the voter's material payoff from α to β rather than from 0 to β, so $\kappa_I(F, \cdot, IC, \cdot) = \frac{\beta-\alpha}{2}$ rather than $\frac{\beta}{2}$.

Voter's perceived kindness of the challenger: Assume that the second-order belief about the voter's strategy is given by $c_V^C = a'_V$ (we discard the earlier assumption on c_V^I). The voter then thinks that the maximum the challenger could intend is $(p'_{CC}+p'_{IC})(\alpha+\beta)$ when the challenger chooses f_C, and the minimum is $(p'_{CC} + p'_{IC})\alpha$ when the challenger chooses n_C. The voter's perception of the challenger's kindness, conditional on b_C, is then

$$\kappa_C(N, n_I, n_C, a'_V, n_I) = -\frac{1}{2}\beta(p'_{CC} + p'_{IC}). \tag{9}$$

$$\kappa_C(N, n_I, f_C, a'_V, n_I) = \frac{1}{2}\beta(p'_{CC} + p'_{IC}). \tag{10}$$

Notice that if $p'_{CC} = p'_{IC} = 0$, then the challenger's decision node is never reached, so the perceived kindness is zero. The same is true if the incumbent chooses F, so

$$\kappa_C(F, b_I, b_C, c_V^C, c_I^C) = 0. \tag{11}$$

4.4 Equilibrium

We use the notion of a sequential reciprocity equilibrium as developed by Dufwenberg and Kirchsteiger (2004). Applied to our model, the equilibrium consists of a strategy combination (a_I^*, a_V^*, a_C^*), first order beliefs of the voter (b_I^*, b_C^*), and second order beliefs $(c_V^{I*}, c_C^{I*}, c_V^{C*}, c_I^{C*})$ of the voter for which it holds:

1. The voter's beliefs are consistent with the equilibrium strategy combination: $b_I^* = c_I^{C*} = a_I^*$, $c_V^{I*} = c_V^{C*} = a_V^*$ and $b_C^* = c_C^{I*} = a_C^*$.
2. The first stage choice of the incumbent is optimal for the incumbent, given the equilibrium second and third stage choices.
3. At each decision node the voter controls, his equilibrium choice prescribes an optimal action, given the equilibrium choices made in the third stage and given his first and second order beliefs.
4. The third stage choices of the politicians are optimal, given that their third stage decision nodes are actually reached.

The sequential reciprocity equilibrium boils down to the traditional subgame perfect equilibrium whenever the voter is not motivated by reciprocity, i.e. whenever his overall payoff is simply $\pi_V(a_I, a_V, a_C)$.

Result 1 *If the voter is not motivated by reciprocity (i.e. if his overall payoff is given by $\pi_V(a_I, a_V, a_C)$), then the subgame perfect equilibrium is characterized by*

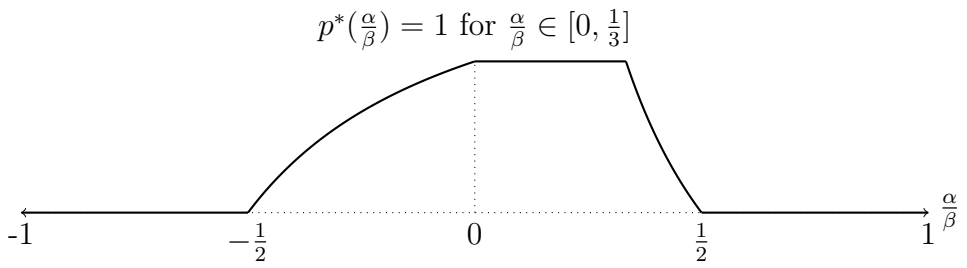
i) If $\alpha > 0$, then $a_I^* = Nn_I, a_V^* = CC, a_C^* = n_C$.
ii) If $\alpha < 0$, then $a_I^* = Nn_I, a_V^* = II, a_C^* = n_C$.
iii) If $\alpha = 0$, then $a_I^* = Nn_I, a_V^* \in A_V$, and $a_C^* = n_C$.

Proof: Apply backward induction to the extensive form game in Figure 2.■

Notice that, without reciprocity, the possibility of filing a complaint is irrelevant for the outcome of the election. The voter will cast his vote only according to his material preference for the candidates as measured by α. If the voter has no material preference ($\alpha = 0$), any voting behavior is part of an equilibrium. But in all cases the politicians will not file a complaint.

The situation is different when the median voter is motivated by reciprocity. Figure 3 previews the results. To interpret the figure, understand that the dispute benefits the incumbent only if the voter plays the strategy IC. The figure plots the share of IC

Figure 3: Probability that the vote depends on incumbent's choice to file a dispute



in the voter's unique equilibrium strategy, as a function of $\frac{\alpha}{\beta}$. The voter motivated by reciprocity plays a nonzero share of IC for a range of parameter values, whereas the voter unmotivated by reciprocity never plays IC, as in Result 1. To find the range of $\frac{\alpha}{\beta}$ for which the incumbent would file a dispute, imagine a horizontal line at δ. The incumbent files a dispute when p^*_{IC} is above that line. As $\delta \to 0$, the interval of dispute occurrence approaches the interval $(-\frac{1}{2}, \frac{1}{2})$.

We first consider the results when $\alpha \geq 0$, so the voter's material preference (weakly) favors the challenger.

Result 2 *The sequential reciprocity equilibrium for $\alpha \geq 0$ is characterized by the strategies specified, and beliefs consistent with these strategies:*

i) If $0 \leq \frac{\alpha}{\beta} \leq \frac{1}{3}$, then $a^*_I = Fn_I$, $a^*_V = IC$, $a^*_C = n_C$.

ii) If $\frac{1}{3} < \frac{\alpha}{\beta} < \frac{1}{2}$, then $a^*_V = p^*_{IC} \cdot IC + (1 - p^*_{IC}) \cdot CC$, where $p^*_{IC} = \frac{\beta}{\alpha} - 2$, $a^*_C = n_C$, and a^*_I is characterized by

a) If $\frac{\alpha}{\beta} < \frac{1}{\delta+2}$, then $a^*_I = Fn_I$.
b) If $\frac{\alpha}{\beta} = \frac{1}{\delta+2}$, then $a^*_I \in \{Fn_I, Nn_I\}$.
c) If $\frac{\alpha}{\beta} > \frac{1}{\delta+2}$, then $a^*_I = Nn_I$.

iii) If $\frac{\alpha}{\beta} \geq \frac{1}{2}$, then $a^*_I = Nn_I, a^*_V = CC, a^*_C = n_C$.

We explain the key points of the derivation here (see Appendix A.1 for the full proof). Crucial to the derivation of Result 2 is that the incumbent can file a dispute before the election, while the election winner has no ability to commit to filing a dispute after the election. The stage 3 equilibrium strategies and beliefs involve neither candidate filing a dispute (i.e. n_C and n_I), so the incumbent can behave kindly to the voter by filing a dispute in the present.[24]

[24]There would be no impact on the interpretation of our result even if the challenger would file a dispute with positive probability but not certainty (this could be modeled with a random shock in challenger's preferences between stage 2 and 3). The incumbent could still be kind to the voter by filing a dispute before the election. The effect on Result 2 would be to scale all the relevant cutoffs by the probability of the challenger not filing the dispute.

Next, we consider the voter's equilibrium strategies. We can immediately rule out the possibility that, if the incumbent plays N, the voter chooses the incumbent (i.e. play CI or II). The reciprocity incentive works against the incumbent because the incumbent he been unkind, and the material incentive also does not favor him because α is nonnegative. That leaves the question of who the voter picks if the incumbent plays F, i.e. whether the voter plays CC or IC. The reciprocity motive strictly favors the incumbent, who has been kind by playing F, and the material motive favors the challenger when $\alpha > 0$. The following equation, derived in the Appendix, illustrates the balance of motives. It shows the change in voter utility when deviating from a strategy a_V to an alternative strategy a'_V, given beliefs consistent with a_V and the equilibrium third-stage actions and beliefs:

$$u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) = \left(\frac{\beta}{2} - \alpha(1 + \frac{p_{IC}}{2})\right) \Delta_{I|F}(a'_V, a_V), \tag{12}$$

where $\Delta_{I|F}$ is the increase in the probability of voting for the incumbent conditional on F when deviating to a'_V. To interpret the equation, the $\frac{\beta}{2}$ term is the gain in kindness from voting for the incumbent, the $-\alpha$ is the loss of material value from voting for the incumbent, and the $-\alpha(\frac{p_{IC}}{2})$ represents the voter's lower perceived kindness from a dispute when the voter anticipates that the incumbent knows the dispute will persuade the voter to pick the materially-undesirable incumbent. When the $\frac{\alpha}{\beta}$ ratio is sufficiently small, the reciprocity motive prevails and the pure strategy IC is the unique voter equilibrium strategy. When the $\frac{\alpha}{\beta}$ ratio is sufficiently large, the material motive dominates and the pure strategy CC is the unique voter equilibrium strategy. For an intermediate range of parameter values, neither pure strategy can be an equilibrium, but there is an equilibrium mixed strategy that progresses from IC to CC as $\frac{\alpha}{\beta}$ increases. The incumbent's equilibrium filing strategy is then easily derived from the voter's equilibrium strategy—the incumbent files only when p^*_{IC} exceeds the cost δ of a dispute.

We additionally characterize the equilibrium when the voter has a small material preference for the incumbent. To preview the results from Figure 3, notice the voter maintains a strategy of IC with some probability even when the voter materially prefers the incumbent, because the voter wants to punish the incumbent for being unkind by not filing the dispute. Once the material preference for the incumbent is sufficiently large relative to the importance of the trade dispute, then the voter plays a pure strategy of II.

Result 3 *The sequential reciprocity equilibrium for $\alpha < 0$ is characterized by the strategies specified, and beliefs consistent with these strategies:*

i) If $\frac{\alpha}{\beta} \leq -\frac{\beta}{2}$*, then* $a_I^* = Nn_I, a_V^* = II, a_C^* = n_C$*.*

ii) If $\frac{\beta}{2} < \alpha < 0$*, then* $a_V^* = p^* \cdot IC + (1 - p^*) \cdot II$*, where* $p_{IC}^* = \frac{2\alpha+\beta}{\alpha+\beta}$*,* $a_C^* = n_C$*, and* a_I^* *is characterized by*

a) If $\frac{\alpha}{\beta} < -\frac{1-\delta}{2-\delta}$*, then* $a_I^* = Nn_I$*.*
b) If $\frac{\alpha}{\beta} = -\frac{1-\delta}{2-\delta}$*, then* $a_I^* \in \{Fn_I, Nn_I\}$*.*
c) If $\frac{\alpha}{\beta} > -\frac{1-\delta}{2-\delta}$*, then* $a_I^* = Fn_I$*.*

In what follows, we discuss the key points of the derivation (see Appendix A.2 for the full proof). The third-stage equilibrium strategies are the same as for Result 2. Next, we consider the voter's equilibrium strategies. We can immediately rule out the possibility that if the incumbent plays F, the voter would choose the challenger (i.e. play CI or CC) for any beliefs—the reciprocity incentive works against the challenger because the incumbent has been kind, and the material incentive does not favor the challenger either because α is negative. That leaves the question of who the voter picks if the incumbent plays N, i.e. whether the voter plays II or IC. The reciprocity motive works strictly against the incumbent who has been unkind by playing N, and the material motive favors the incumbent. The following equation, derived in the Appendix, illustrates the balance of motives when deviating from a strategy a_V to an alternative strategy a'_V, given beliefs consistent with a_V and the equilibrium third-stage actions and beliefs:

$$u_V(N, \cdot, a'_V, \cdot) - u_V(N, \cdot, a_V, \cdot) = \left(\beta(\frac{p_{IC} - 1}{2}) + \alpha(\frac{p_{IC}}{2} - 1)\right) \Delta_{I|N}(a'_V, a_V) \quad (13)$$

where $\Delta_{I|N}$ is the increase in the probability of voting for the incumbent conditional on N when deviating to a'_V. To interpret the equation, the $-\frac{\beta}{2}$ term is the loss in utility from voting for the unkind incumbent, the $\beta\frac{p_{IC}}{2}$ term is the gain in utility from not voting for the challenger whom the voter anticipates will be unkind, the $-\alpha$ term is the gain in material value for voting for the incumbent, and the $\alpha\frac{p_{IC}}{2}$ term is the greater perceived unkindness of N if that action also leads the voter to pick the materially-undesirable challenger. When α is small and negative, the reciprocity motive is more important, and the voter plays a mixed strategy that predominantly features IC. As the $\frac{\alpha}{\beta}$ decreases further away from zero, the reciprocity motive becomes relatively less important, the material motive dominates, and the voter progresses toward a pure strategy of II. Then back in the first stage, the incumbent disputes only if the expected electoral benefit of a dispute, equal to p_{IC}^*, is worth the cost δ.

The theoretical model described above shows that politicians' re-election motives can play a key role in shaping the occurrence of trade disputes between countries. In

our model, an incumbent politician may file a trade dispute before the elections, but only if voters have reciprocal preferences—so that the politician's choice affects their voting decisions—and if they do not have a strong ideological preference in favor of the incumbent or the challenger. One of the key features of the model is that the incumbent's ability to initiate a dispute in the first period provides an advantage over the challenger, who cannot commit to file the dispute if elected.

Comparing the incumbent's behavior in the first term—when he can still be re-elected—and in the second term—when he has no re-election incentives—shows how the desire to remain in office can lead politicians to initiate trade disputes. In our model, politicians can serve two terms lasting one period each. To explain why trade disputes are more likely to be initiated in the last year of a president's first term, we could simply extend the length of each term to two periods and introduce a recency bias in voters' behavior. The existence of this recency bias is supported by a broad theoretical literature (e.g. Fiorina, 1981; Weingast *et al.*, 1981; Ferejohn, 1986; Shepsle *et al*, 2009) and by empirical and experimental studies (e.g. Lewis-Beck and Stegmaier, 2000; Huber *et al.*, 2012; Healy and Lenz, 2014).

Our model can also help to explain our finding that U.S. presidents are more likely to file trade disputes targeted to industries that are important for swing states. When voters' ideological preference for the incumbent or the challenger is strong relative to the importance of the trade dispute, their vote is unaffected by whether or not a dispute has been filed. This implies that politicians will have no electoral incentives to initiate trade disputes in support of industries concentrated in non-swing states. By contrast, filing disputes in support of industries that are important in swing states can boost incumbents' re-election chances.

5 Conclusion

In this paper, we provide systematic empirical evidence that re-election incentives affect the filing of trade disputes. Focusing on WTO disputes initiated by the United States, we find that disputes are more likely to be filed in presidential re-election years and to be targeted at industries that are important to swing states, which play a crucial role in presidential elections. To explain these regularities, we develop a theory of how re-election incentives can lead an incumbent politician to file trade disputes, to exhibit kindness toward voters. The voters' intrinsic reciprocity leads them to return the favor by voting for the incumbent.

Our analysis has broad implications for the effectiveness of WTO rules. One of our

key empirical findings is that U.S. presidents tend to file disputes when they are close to facing re-election. This suggests that politicians may delay a dispute to maximise their chances to retain office. For example, as pointed out in the opening quote from *The Economist*, the Obama administration waited until September 2012 to file a complaint to the WTO against China for unfairly subsidizing car-part exports, even though it knew for years about these subsidies.[25] The cost of this delay can be substantial based on how long a violation is allowed to persist. Recall that the WTO offers no retrospective compensation, and even if it did, there could still be global deadweight loss from not enforcing multilateral trade rules.

According to our theoretical model, WTO commitments will not always be enforced, since filing trade disputes is costly. Our empirical results on the composition of trade disputes suggest that certain violations of WTO rules, which involve industries that are not important for politicians' re-election, are more likely to go unpunished.

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[25] As stated in the U.S. Trade Representative Press Release of September 17, 2012, "[China] made at least $1 billion in subsidies available to auto and auto-part exporters in China during the years 2009 through 2011."

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Appendix

A.1 Proof of Result 2

Proof: The proof proceeds in three steps. First we check the optimality of not filing a complaint in stage 3. Then we derive the voter's stage 2 equilibrium strategy, which depends on $\frac{\alpha}{\beta}$. Lastly, we derive the incumbent's stage 1 strategy, conditional on the voter's equilibrium strategy.

Stage 3, Elected Politicians: Since the politicians bear the costs of filing a complaint, and since they care only about their material payoffs, condition 4 of the equilibrium requires that none of them will file a complaint in stage three.

Stage 2, Voters: Because of step 1 and because of condition 1 of the equilibrium, it must hold that $b_I^* = c_I^{C*} = n_I$ and $b_C^* = c_C^{I*} = n_C$.

Next we consider equilibrium voter behavior when the incumbent plays N. For notational convenience, first define the function $\Delta_{I|N}(a'_V, a_V) \equiv p'_{CI} + p'_{II} - (p_{CI} + p_{II})$ for any voter strategy pair. This function reflects the change in the probability of vote I when the voter changes strategy from a_V to a'_V, given that the incumbent plays N.

Next we show that any equilibrium voter strategy cannot include either CI or II with any probability. We then show that any strategy with $p_{CI} = p_{II} = 0$ is optimal conditional on the incumbent playing N,

- Consider any strategy a_V with $p_{CI} + p_{II} > 0$. We argue that this strategy cannot be an equilibrium. If it were, then by condition 1 of the equilibrium the second-order beliefs must match the strategy, so $c_V^{I*} = c_V^{C*} = a_V$. Using (5),(8), and (9), the voter's utility after the incumbent plays N is

$$\begin{aligned} u_V(N, \cdot, a_V, \cdot, a_V, \cdot) = \alpha(1 - p_{CI} - p_{II}) + \\ \left(p_{CI} + p_{II} - \frac{1}{2}\right)\left(-\frac{\beta + \alpha(p_{CI} - p_{IC})}{2}\right) + \\ \left(-p_{CI} - p_{II} + \frac{1}{2}\right)\left(-\frac{\beta(p_{IC} + p_{CC})}{2}\right). \end{aligned}$$

  Now consider any strategy a'_V such that $\Delta_{I|N}(a'_V, a_V) < 0$. We show that the voter must be strictly better off when deviating to a'_V, while the second-order beliefs remain equal to a_V.

$$\begin{aligned} u_V(N, \cdot, a'_V, \cdot) - u_V(N, \cdot, a_V, \cdot) = \\ \left(-\alpha - \frac{\beta + \alpha(p_{CI} - p_{IC})}{2} + \frac{\beta(1 - p_{CI} - p_{II})}{2}\right)\Delta_{I|N}(a'_V, a_V) = \\ -\left(\alpha\left(1 + \frac{p_{CI}}{2} - \frac{p_{IC}}{2}\right) + \frac{\beta(p_{CI} + p_{II})}{2}\right)\Delta_{I|N}(a'_V, a_V) > 0. \end{aligned}$$

  Because the voter prefers to be unkind to the incumbent for not filing the dispute, the deviation yields a higher reciprocal component of the voter's payoff (the part of the expression multiplied by β). The deviation also yields a weakly positive increase in the voter's material payoff (the part of the expression multiplied by α—recall α is assumed to be nonnegative). Thus, the voter always gains from the deviation, so a strategy with positive $p_{CI} + p_{II}$ can never be an equilibrium.

- Now consider any strategy a_V with $p_{CI} + p_{II} = 0$. Then by condition 1 of the equilibrium the second-order beliefs must match the strategy, so $c_V^{I*} = c_V^{C*} = a_V$. Consider deviation to any strategy a'_V. Since a_V already involves minimal voting for I conditional on N, $\Delta_{I|N}(a'_V, a_V) \geq 0$. Then deviating from a_V to a'_V yields

$$\begin{aligned} u_V(N, \cdot, a'_V, \cdot) - u_V(N, \cdot, a_V, \cdot) = \left(-\alpha - \frac{\beta - \alpha p_{IC}}{2} + \frac{\beta}{2}\right)\Delta_{I|N}(a'_V, a_V) = \\ -\alpha\left(1 - \frac{p_{IC}}{2}\right)\Delta_{I|N}(a'_V, a_V) \leq 0. \end{aligned} \tag{A.1}$$

  So any strategy without CI or II is optimal when the incumbent plays N and also second-order beliefs are consistent with that strategy.

Next we consider voter equilibrium behavior when the incumbent plays F. We

consider only candidate strategies with $p_{CC}+p_{IC}=1$, having ruled out the alternatives.

For notational convenience, first define the function $\Delta_{I|F}(a'_V, a_V) \equiv p'_{IC}+p'_{II}-(p_{IC}+p_{II})$ for any voter strategy pair. This reflects the change in the probability of vote I when the voter changes strategy from a_V to a'_V, given that the incumbent plays F.

Next we derive the general form of the change in utility when the voter deviates to any voter strategy a'_V from strategy a_V, given that the incumbent plays F and the second-order beliefs are consistent with a_V. Using (6), (7), and (11), the voter's utility from a_V is

$$u_V(F,\cdot,a_V,\cdot,a_V,\cdot)=\beta+\alpha p_{CC}+(p_{IC}-\frac{1}{2})(\frac{\beta-\alpha p_{IC}}{2}).$$

The utility of a'_V is

$$u_V(F,\cdot,a'_V,\cdot,a_V,\cdot)=\beta+\alpha(p'_{CC}+p'_{CI})+(p'_{IC}+p'_{II}-\frac{1}{2})(\frac{\beta-\alpha p_{IC}}{2}).$$

The difference in utility then takes the form

$$u_V(F,\cdot,a'_V,\cdot)-u_V(F,\cdot,a_V,\cdot)=\left(\frac{\beta}{2}-\alpha(1+\frac{p_{IC}}{2})\right)\Delta_{I|F}(a'_V,a_V). \tag{A.2}$$

We now establish the voter's equilibrium for the various parameter ranges stated in the result.

i) Suppose $0\leq\frac{\alpha}{\beta}\leq\frac{1}{3}$. We first rule out equilibrium strategies with $p_{IC}<1$. We then confirm that the pure strategy IC is the unique equilibrium.

- Consider a candidate equilibrium strategy a_V with $p_{IC}<1$. Consider an alternative strategy a'_V satisfying $\Delta_{I|F}(a'_V,a_V)>0$ (e.g. the pure strategy IC). Since $\frac{\alpha}{\beta}\leq\frac{1}{3}$ and $p_{IC}<1$, $\frac{\alpha}{\beta}(1+\frac{p_{IC}}{2})\leq\frac{1}{2}$. That combined with $\Delta_{I|F}(a'_V,a_V)>0$ and (A.2) imply that $u_V(F,\cdot,a'_V,\cdot)-u_V(F,\cdot,a_V,\cdot)>0$. Thus, a_V with $p_{IC}<1$ cannot be an equilibrium.
- Consider a candidate equilibrium strategy a_V with $p_{IC}=1$, i.e. the pure strategy IC. Consider any alternative strategy a'_V. It must then hold that $\Delta_{I|F}(a'_V,a_V)\leq 0$. Since $\frac{\alpha}{\beta}\leq\frac{1}{3}$ and $p_{IC}=1$, $\left(\frac{\beta}{2}-\alpha(1+\frac{p_{IC}}{2})\right)\geq 0$. That combined with $\Delta_{I|F}(a'_V,a_V)\leq 0$ and (A.2) imply that $u_V(F,\cdot,a'_V,\cdot)-u_V(F,\cdot,a_V,\cdot)\leq 0$. Thus, IC is an optimal strategy when the incumbent chooses F and second-order beliefs match a_V. Using (A.1), IC is also optimal when the incumbent chooses N. Having ruled out all other possible strategies as equilibria, we conclude that IC is the voter's unique equilibrium when $\frac{\alpha}{\beta}\leq\frac{1}{3}$.

ii) Suppose $\frac{1}{3} < \frac{\alpha}{\beta} < \frac{1}{2}$. Under this parameter restriction, notice that the expression $\left(\frac{\beta}{2} - \alpha(1 + \frac{p_{IC}}{2})\right)$ in (A.2) is a decreasing function of p_{IC}. It ranges from $\frac{\beta}{2} - \alpha > 0$ for $p_{IC} = 0$ to $\frac{\beta - 3\alpha}{2} < 0$ for $p_{IC} = 1$, with 0 obtained at $p^*_{IC} = \frac{\beta}{\alpha} - 2$. We first rule out equilibria with p_{IC} either below or above p^*_{IC} and then confirm that p^*_{IC} characterizes the unique equilibrium.

- Suppose a_V is any strategy with $p_{IC} < \frac{\beta}{\alpha} - 2$ and $p_{CC} = 1 - p_{IC}$. Under this p_{IC} and the parameter restriction it follows that $\left(\frac{\beta}{2} - \alpha(1 + \frac{p_{IC}}{2})\right) > 0$. Consider an alternative strategy a'_V such that $\Delta_{I|F}(a'_V, a_V) > 0$ (e.g. IC). The previous two statements and (A.2) imply $u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) > 0$, so a_V cannot be an equilibrium.
- Suppose a_V is any strategy with $p_{IC} > \frac{\beta}{\alpha} - 2$ and $p_{CC} = 1 - p_{IC}$. Under this p_{IC} and the parameter restriction it follows that $\left(\frac{\beta}{2} - \alpha(1 + \frac{p_{IC}}{2})\right) < 0$. Consider an alternative strategy a'_V such that $\Delta_{I|F}(a'_V, a_V) < 0$ (e.g. CC). The previous two statements and (A.2) imply $u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) > 0$, so a_V cannot be an equilibrium.
- Suppose a_V is the mixed strategy with $p_{IC} = \frac{\beta}{\alpha} - 2$ and $p_{CC} = 1 - p_{IC}$. Consider any alternative strategy a'_V. We can immediately see from (A.2) that under this mixed strategy $u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) = 0$. Thus, a_V is an optimal strategy when the incumbent chooses F and second-order beliefs match a_V. Using (A.1), a_V is also optimal when the incumbent chooses N. Having ruled out all other possible strategies as equilibria, we conclude that a_V with $p_{IC} = \frac{\beta}{\alpha} - 2$ and $p_{CC} = 1 - p_{IC}$ is the voter's unique equilibrium when $\frac{1}{3} < \frac{\alpha}{\beta} < \frac{1}{2}$.

iii) Suppose $\frac{\alpha}{\beta} \geq \frac{1}{2}$. We first rule out equilibrium strategies with $p_{CC} < 1$. We then confirm that the pure strategy CC is the unique equilibrium.

- Consider a candidate equilibrium strategy a_V with $p_{CC} < 1$. Consider an alternative strategy a'_V satisfying $\Delta_{I|F}(a'_V, a_V) < 0$ (e.g. the pure strategy CC). Since $\frac{\alpha}{\beta} \geq \frac{1}{2}$ and $p_{IC} > 0$, $\left(\frac{\beta}{2} - \alpha(1 + \frac{p_{IC}}{2})\right) < 0$. That combined with $\Delta_{I|F}(a'_V, a_V) < 0$ and (A.2) imply that $u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) > 0$. Thus, a_V with $p_{CC} < 1$ cannot be an equilibrium.
- Consider a candidate equilibrium strategy a_V with $p_{CC} = 1$, i.e. the pure strategy CC. Consider any alternative strategy a'_V. It must then hold that $\Delta_{I|F}(a'_V, a_V) \geq 0$. Since $\frac{\alpha}{\beta} \geq \frac{1}{2}$ and $p_{IC} > 0$, $\left(\frac{\beta}{2} - \alpha(1 + \frac{p_{IC}}{2})\right) \geq 0$. That combined with $\Delta_{I|F}(a'_V, a_V) \geq 0$ and (A.2) imply that $u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) \leq 0$. Thus, CC is an optimal strategy when the incumbent

chooses F and second-order beliefs match CC. Using (A.1), CC is also optimal when the incumbent chooses N. Having ruled out all other possible strategies as equilibria, we conclude that CC is the voter's unique equilibrium when $\frac{\alpha}{\beta} \geq \frac{1}{2}$.

Stage 1, Incumbent: In the final step, we find the incumbent's equilibrium pre-election strategy, which depends on the voter's equilibrium strategy.

i) If $0 \leq \frac{\alpha}{\beta} \leq \frac{1}{3}$, then the voter's equilibrium strategy $a_V^* = IC$. The incumbent's optimal action is F, which implies a payoff of $1 - \delta > 0$, while N implies a payoff of 0.

ii) If $\frac{1}{3} < \frac{\alpha}{\beta} < \frac{1}{2}$, then a_V^* is a mixed strategy with $p_{IC}^* = \frac{\beta}{\alpha} - 2$ and $p_{CC}^* = 1 - p_{IC}^*$. The dispute increases the incumbent's re-election probability only when IC is played, after sinking the cost filing the dispute. Thus, the expected value of the dispute is $p_{IC}^* - \delta$, compared to the alternative of not filing which provides payoff of zero. So if $p_{IC}^* > \delta$, then the incumbent plays F, if $p_{IC}^* < \delta$, then the incumbent plays N, and if $p_{IC}^* = \delta$, then the incumbent is indifferent between filing and not filing. The point of indifference can also be expressed as $\frac{\alpha}{\beta} = \frac{1}{\delta+2}$, with disputes occurring only when $\frac{\alpha}{\beta}$ is less than the cutoff.

iii) If $\frac{\alpha}{\beta} \geq \frac{1}{2}$ then the voter's equilibrium strategy is $a_V^* = CC$. The voter picks the challenger regardless of the incumbent's action. Since the dispute is costly, the incumbent plays N.

A.2 Proof of Result 3

Proof: The proof proceeds in three steps, like the proof of Result 2.

Stage 3, Elected Politicians: As in the proof of Result 2, equilibrium requires that none of the politicians will file a complaint in stage 3.

Stage 2, Voters: Because of the previous step and because of condition 1 of the equilibrium, it must hold that $b_I^* = c_I^{C*} = n_I$ and $b_C^* = c_C^{I*} = n_C$.

Next we consider equilibrium voter behavior when the incumbent plays F. We use the function $\Delta_{I|F}(a_V', a_V)$, defined in the proof of Result 2. Next we show that any equilibrium voter strategy cannot include either CI or CC with any probability. We then show that any strategy with $p_{CI} = p_{CC} = 0$ is optimal conditional on the incumbent playing F,

- Consider any strategy a_V with $p_{CI} + p_{CC} > 0$. We argue that this strategy cannot be an equilibrium. If it were, then by condition 1 of the equilibrium the second-order beliefs must match the strategy, so $c_V^{I*} = c_V^{C*} = a_V$. Using (6), (7), and (11), the voter's utility after the incumbent plays F is

$$u_V(F, \cdot, a_V, \cdot, a_V, \cdot) = \beta + \alpha(1 - p_{IC} - p_{II}) + \left(p_{IC} + p_{II} - \frac{1}{2}\right)\left(\frac{\beta + \alpha(p_{CI} - p_{IC})}{2}\right).$$

  Now consider any strategy a'_V such that $\Delta_{I|F}(a'_V, a_V) > 0$. We show that the voter must be strictly better off when deviating to a'_V, while the second-order beliefs remain equal to a_V.

$$\begin{aligned} u_V(F, \cdot, a'_V, \cdot, a_V, \cdot) - u_V(F, \cdot, a_V, \cdot, a_V, \cdot) = \\ \left(-\alpha + \frac{\beta + \alpha(p_{CI} - p_{IC})}{2}\right)\Delta_{I|F}(a'_V, a_V) = \\ \left(\frac{\beta}{2} - \alpha\left(1 - \frac{p_{CI}}{2} + \frac{p_{IC}}{2}\right)\right)\Delta_{I|F}(a'_V, a_V) > 0. \end{aligned}$$

  Because the voter prefers to be kind to the incumbent for filing the dispute, the deviation yields a higher reciprocal component of the payoff (the part of the expression multiplied by β). The deviation also yields a higher material payoff from more voting for the incumbent (the part of the express multiplied by $-\alpha$). Thus, a strategy with positive $p_{CI} + p_{CC}$ can never be an equilibrium.

- Now consider any strategy a_V with $p_{CI} + p_{CC} = 0$. Then by condition 1 of the equilibrium the second-order beliefs must match the strategy, so $c_V^{I*} = c_V^{C*} = a_V$. Consider deviation to any strategy a'_V. Since a_V already involves minimal voting for C conditional on F, $\Delta_{I|F}(a'_V, a_V) \leq 0$. Then deviating from a_V to a'_V yields

$$\begin{aligned} u_V(F, \cdot, a'_V, \cdot) - u_V(F, \cdot, a_V, \cdot) &= \left(-\alpha + \frac{\beta - \alpha p_{IC}}{2}\right)\Delta_{I|F}(a'_V, a_V) \qquad \text{(A.3)} \\ &= \left(\frac{\beta}{2} - \alpha\left(1 + \frac{p_{IC}}{2}\right)\right)\Delta_{I|F}(a'_V, a_V) \leq 0. \end{aligned}$$

  So any strategy without CI or CC is optimal when the incumbent plays F and second-order beliefs are consistent with that strategy.

Next we consider voter equilibrium behavior when the incumbent plays N. We consider only candidate strategies with $p_{II} + p_{IC} = 1$, having ruled out the alternatives. We will again make use of $\Delta_{I|N}(a'_V, a_V)$ defined in the proof of Result 2.

Next we derive the general form of the change in utility when the voter deviates to any voter strategy a'_V from strategy a_V, given that the incumbent plays N and the second-order beliefs are consistent with a_V. Using (5),(8), and (9), the voter's utility from a_V is

$$u_V(N,\cdot,a_V,\cdot,a_V,\cdot) = \alpha p_{IC} + (p_{II} - \frac{1}{2})(\frac{-\beta + \alpha p_{IC}}{2}) + (p_{IC} - \frac{1}{2})(-\frac{\beta p_{IC}}{2}).$$

The utility of a'_V is

$$\begin{aligned} u_V(N,\cdot,a'_V,\cdot,a_V,\cdot) =& \alpha(p'_{IC} + p'_{CC}) + \\ & (p'_{CI} + p'_{II} - \frac{1}{2})(\frac{-\beta + \alpha p_{IC}}{2}) + (p'_{IC} + p'_{CC} - \frac{1}{2})(-\frac{\beta p_{IC}}{2}). \end{aligned}$$

The difference in utility then takes the form

$$u_V(N,\cdot,a'_V,\cdot) - u_V(N,\cdot,a_V,\cdot) = \left(\beta(\frac{p_{IC}-1}{2}) + \alpha(\frac{p_{IC}}{2} - 1)\right)\Delta_{I|N}(a'_V, a_V). \tag{A.4}$$

We now establish the voter's equilibrium for the various parameter ranges stated in the result.

i) Suppose $-\frac{1}{2} < \frac{\alpha}{\beta} < 0$. Under this parameter restriction, notice that the expression $\beta(\frac{p_{IC}-1}{2}) + \alpha(\frac{p_{IC}}{2} - 1)$ in (A.4) is an increasing function of p_{IC} that ranges from $-\frac{\beta}{2} - \alpha < 0$ for $p_{IC} = 0$ to $\frac{\alpha}{2} > 0$ for $p_{IC} = 1$, with 0 obtained at $p^*_{IC} = \frac{2\alpha+\beta}{\alpha+\beta}$. We first rule out equilibria with p_{IC} below and above p^*_{IC} and then confirm that p^*_{IC} characterizes the unique equilibrium.

   - Suppose a_V is any strategy with $p_{IC} < \frac{2\alpha+\beta}{\alpha+\beta}$ and $p_{II} = 1 - p_{IC}$. Under this p_{IC} and the parameter restriction it follows that $\beta(\frac{p_{IC}-1}{2}) + \alpha(\frac{p_{IC}}{2} - 1) < 0$. Consider an alternative strategy a'_V such that $\Delta_{I|N}(a'_V, a_V) < 0$ (e.g. IC). The previous two statements and (A.4) imply $u_V(N,\cdot,a'_V,\cdot) - u_V(N,\cdot,a_V,\cdot) > 0$, so a_V cannot be an equilibrium.
   - Suppose a_V is any strategy with $p_{IC} > \frac{2\alpha+\beta}{\alpha+\beta}$ and $p_{II} = 1 - p_{IC}$. Under this p_{IC} and the parameter restriction it follows that $\beta(\frac{p_{IC}-1}{2}) + \alpha(\frac{p_{IC}}{2} - 1) > 0$. Consider an alternative strategy a'_V such that $\Delta_{I|N}(a'_V, a_V) > 0$ (e.g. II). The previous two statements and (A.4) imply $u_V(N,\cdot,a'_V,\cdot) - u_V(N,\cdot,a_V,\cdot) > 0$, so a_V cannot be an equilibrium.
   - Suppose a_V is the mixed strategy with $p_{IC} = \frac{2\alpha+\beta}{\alpha+\beta}$ and $p_{CC} = 1 - p_{IC}$. Consider any alternative strategy a'_V. We can see from (A.4) that under this mixed strategy $u_V(N,\cdot,a'_V,\cdot) - u_V(N,\cdot,a_V,\cdot) = 0$. Thus, a_V is an optimal

strategy when the incumbent chooses N and second-order beliefs match a_V. Using (A.3), a_V is also optimal when the incumbent chooses F. Having ruled out all other possible strategies as equilibria, we conclude that a_V with $p_{IC} = \frac{2\alpha+\beta}{\alpha+\beta}$ and $p_{II} = 1 - p_{IC}$ is the voter's unique equilibrium when $-\frac{1}{2} < \frac{\alpha}{\beta} < 0$.

ii) Suppose $\frac{\alpha}{\beta} \leq -\frac{1}{2}$. We first rule out equilibrium strategies with $p_{II} < 1$. We then confirm that the pure strategy II is the unique equilibrium.

- Consider a candidate equilibrium strategy a_V with $p_{II} < 1$. Consider an alternative strategy a'_V satisfying $\Delta_{I|N}(a'_V, a_V) > 0$ (e.g. the pure strategy II). Since $\frac{\alpha}{\beta} \leq -\frac{1}{2}$ and $p_{IC} > 0$, $\beta(\frac{p_{IC}-1}{2}) + \alpha(\frac{p_{IC}}{2} - 1) > 0$ That combined with $\Delta_{I|N}(a'_V, a_V) > 0$ and (A.4) imply that $u_V(N, \cdot, a'_V, \cdot) - u_V(N, \cdot, a_V, \cdot) > 0$. Thus, a_V with $p_{II} < 1$ cannot be an equilibrium.
- Consider a candidate equilibrium strategy a_V with $p_{II} = 1$, i.e. the pure strategy II. Consider any alternative strategy a'_V. It must then hold that $\Delta_{I|N}(a'_V, a_V) \leq 0$. Since $\frac{\alpha}{\beta} \leq -\frac{1}{2}$ and $p_{IC} > 0$, $\beta(\frac{p_{IC}-1}{2}) + \alpha(\frac{p_{IC}}{2} - 1) \geq 0$. That combined with $\Delta_{I|N}(a'_V, a_V) \leq 0$ and (A.4) imply that $u_V(N, \cdot, a'_V, \cdot) - u_V(N, \cdot, a_V, \cdot) \leq 0$. Thus, II is an optimal strategy when the incumbent chooses N and second-order beliefs match II. Using (A.3), II is also optimal when the incumbent chooses F. Having ruled out all other possible strategies as equilibria, we conclude that II is the voter's unique equilibrium when $\frac{\alpha}{\beta} \leq -\frac{1}{2}$.

Stage 1, Incumbent: In the final step, we find the incumbent's equilibrium pre-election strategy, which depends on the voter's equilibrium strategy.

i) If $-\frac{1}{2} < \frac{\alpha}{\beta} < 0$, then a_V^* is a mixed strategy with $p_{IC}^* = \frac{2\alpha+\beta}{\alpha+\beta}$ and $p_{II}^* = 1 - p_{IC}^*$. As with the proof of Result 2, the dispute increases the incumbent's re-election probability only when IC is played. Thus, the expected value of the dispute is $p_{IC}^* - \delta$, compared to the alternative of not filing which provides payoff of zero. So if $p_{IC}^* > \delta$, then the incumbent plays F, if $p_{IC}^* < \delta$, then the incumbent plays N, and if $p_{IC}^* = \delta$, then the incumbent is indifferent between filing and not filing. The point of indifference can also be expressed as $\frac{\alpha}{\beta} = -\frac{1-\delta}{2-\delta}$. When $\frac{\alpha}{\beta}$ equals this cutoff, any mixed strategy including N or F can be an equilibrium. When the $\frac{\alpha}{\beta}$ is less than the cutoff, the unique equilibrium pure strategy is N. When $\frac{\alpha}{\beta}$ is greater than the cutoff and less than 0, the unique equilibrium pure strategy is F.

ii) If $\frac{\alpha}{\beta} \leq -\frac{1}{2}$ then the voter's equilibrium strategy is $a_V^* = II$. The voter picks the incumbent regardless of the incumbent's action. Since the dispute is costly, the incumbent plays N.