Suspiciously timed trade disputes[☆]

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A B S T R A C T

This paper shows that electoral incentives crucially affect the initiation of trade disputes. Focusing on WTO disputes filed by the United States during the 1995–2014 period, we find that U.S. presidents are more likely to initiate a dispute in the year preceding their re-election. Moreover, U.S. trade disputes are more likely to involve industries that are important in swing states. To explain these regularities, we develop a theoretical model in which re-election motives can lead an incumbent politician to file trade disputes to appeal to voters motivated by reciprocity.

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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.[1] Not only the timing of the disputes was suspicious, but also the fact that it involved the automobile industry, a large employer in Ohio, a crucial "swing state" in the U.S. presidential election:

> 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.

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).

[1] "Chasing the anti-China vote: a suspiciously timed dispute," *The Economist*, September 22, 2012.

Obama has not been unique among U.S. presidents in filing disputes that figured prominently during a re-election campaign. 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 electoral incentives affect the filing of trade disputes. We study WTO disputes initiated by the United States. 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 control over the decision to initiate WTO disputes. Finally, we can observe variation over time in the electoral importance of different U.S. states and industries.

We construct a database of all WTO disputes initiated by the United States during the 1995–2014 period. To verify whether U.S. trade disputes are "suspiciously timed" close to the president's re-election, we collect each dispute's initiation date. We also match each dispute to one or more NAICS 3-digit codes. This allows us to study industry determinants of U.S. trade disputes. In particular, we can verify whether U.S. presidents are more likely to initiate disputes to support important industries in swing states (e.g. the automotive industry in Ohio). We identify swing states based on the margin of victory in the most recent presidential election. To capture the importance of an industry in these battleground states, we calculate the percentage share of workers over all swing states that are employed in the industry. To capture the importance of an industry in these battleground states, we calculate the industry's employment summed across swing states over total employment in swing states. Crucially, these employment shares vary over time, due both to changes in the identity of the swing states and changes in the employment structure across industries within states.

A first descriptive look at the U.S. dispute history in Fig. 1 already suggests that re-election motives affect the initiation of trade disputes. Each bar represents the number of disputes filed by the U.S. in each year between 1995 and 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, when the presidents faced terms limits and thus had no re-election motive.

Our industry-year panel data analysis of the determinants of U.S. trade disputes provides more systematic evidence of the importance of electoral incentives. Our results confirm that U.S. presidents are more likely to initiate WTO disputes during the last year of their first term (re-election year effect). With respect to sectoral composition, we find that U.S. trade disputes are more likely to involve industries that are important in swing states (swing industry effect). We show that these results are robust to including broad industry fixed effects, different time fixed effects (President or President-term), as well as many different controls accounting for other possible determinants of trade disputes, both at the sectoral level (e.g. the size of the industry in the U.S. at large, its degree of concentration, and the growth rate of imports and exports) and aggregate level (e.g. changes in unemployment and the exchange rate). They also continue to hold when we use alternative econometric methodologies to study the determinants of trade disputes (linear probability model, probit, or negative binomial). In terms of magnitude, the estimates of our

baseline regressions indicate that the re-election year effect and the swing industry effect are sizeable. Trade disputes are between 13.5 and 21.7 percentage points more likely to be initiated in re-election years; and a marginal increase in importance of an industry in swing states raises the probability that the U.S. initiates a dispute involving that industry by between 18.3 and 30.8 percentage points.

To interpret our empirical findings, we develop a tractable political economy model of trade disputes. There are three main actors in the model: 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. Politicians are office motivated and, all else equal, prefer not to file the trade dispute.

The key assumption of our theoretical model is that voters have reciprocal preferences, i.e. they like to act kindly to politicians who have helped them and unkindly to politicians who have harmed them. We build on a vast theoretical literature, which emphasizes the importance of reciprocity and fairness (e.g. Rabin, 1993; Fehr and Schmidt, 1999; Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006).[3] In recent years, experimental economists have gathered overwhelming evidence that individuals reward kind actions and punish unkind ones (e.g. Fehr et al., 1997; Charness and Dufwenberg, 2006; Kube et al., 2012). Models of reciprocity have also been applied to political economy (e.g. Hahn, 2009), and recent influential work by Finan and Schechter (2012) provides strong empirical and experimental evidence that voters like to help politicians who have been kind to them, and to punish politicians who have been unkind to them.

We first show that, if voters have standard preferences (no reciprocity), 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 filed a dispute. We then show that, if voters have reciprocal preferences, 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 sufficiently 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.

Our theoretical model provides a simple explanation for our empirical findings concerning the timing of U.S. trade disputes (the re-election effect) and their composition (the swing industry effect). An alternative rationale for our findings could be provided by a model in which the incumbent politician initiates disputes to signal his trade policy preferences to voters. Our model shows that, even if voters have full information about politicians' preferences, electoral

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[2] As we detail in Section 2, our definition of year accounts for differences in the electoral, inaugural, and conventional calendars.

[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 et al., 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).
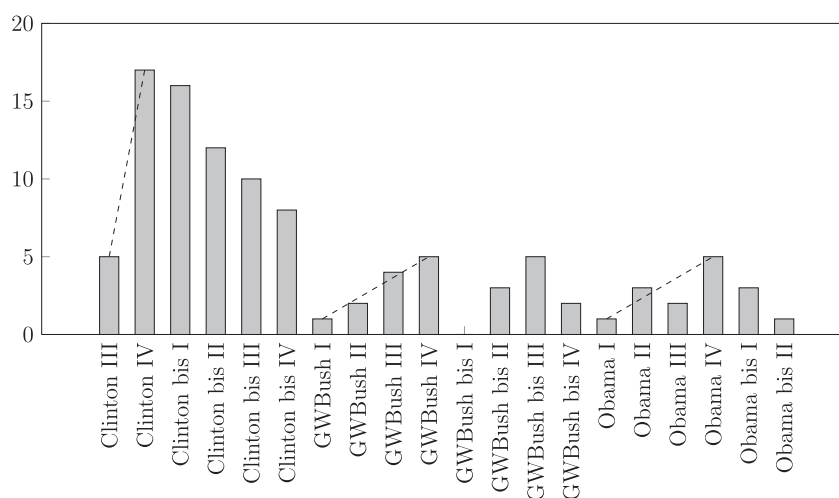
Fig. 1. WTO disputes filed by the U.S., by year of presidency.

incentives can still shape trade policy outcomes. A full information model has particular advantages in our empirical context. First, specifying how politicians signal preferences is much less straightforward for disputes than for conventional trade protection. While higher import tariffs are clearly a more protectionist policy than lower tariffs, trade disputes have more diverse implications. In particular, we can observe that the same president in the same year initiates disputes promoting trade and others aimed at reducing trade.[4] Moreover, our model predicts electoral cycles for all politicians, which is consistent with our results on the re-election year effects. Signaling models would instead predict electoral cycles only for particular types of politicians.[5]

Our paper is related to several streams of literature, beyond the above-mentioned literature on reciprocity. Recent studies examine the determinants of WTO trade disputes (e.g. Horn et al., 2011; Bown and Reynolds, 2015a, Bown and Reynolds, 2015b; Kuenzel, 2017; 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 (2016) consider how swing state incentives affect the import tariffs set in trade agreements. Our paper studies how both 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.[6] Recent studies find evidence of electoral cycles in executives' decisions on inter-state conflicts (Conconi et al., 2014b) and in legislators' voting behavior (Conconi et al., 2014a; Bouton et al., 2014).

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. Dataset and variables

In our empirical analysis, we study the determinants of WTO disputes initiated by the United States. We choose to focus on WTO disputes, disregarding trade disputes filed under the General Agreement on Tariffs and Trade (GATT). This is because under the GATT system, member countries could veto the initiation of a dispute. Moreover, rulings could only be adopted by consensus, implying that a single objection could block the ruling.[7] 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

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[4] For example, Obama's re-election year included two disputes distinctly affecting automotive industry trade with China. The first (DS440) was meant to promote exports by large U.S. car manufacturers, while the second (DS450) was meant to protect U.S. producers of auto parts from Chinese competition. The other three disputes filed that year involved U.S. attempts to remove barriers for exports of agricultural products to India (DS430), imports of rare earths from China (DS431), and exports to Argentina (DS444).

[5] Muûls and Petropoulou (2013) consider voters who are uncertain about whether a politician is a "free trader" or "protectionist" and politicians who also differ in whether their trade policy preferences are weak or strong. Electoral cycles and signals are observed only when incumbent politicians are weak free-traders, who must be in the minority among free traders for the signal to be credible.

[6] 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.

[7] See Schwartz and Sykes (2002) for a discussion on how the impact of GATT disputes were limited primarily to their effects on the reputation of members.

limit our sample to multilateral trade disputes because of the scarcity of disputes in regional trade agreements.[8]

Table A-1 lists all the 107 WTO disputes filed by the United State between 1995 and 2014. The leading targets of the disputes are the European Union with 20 and China with 15, while no other country has been named more than 6 times. Each dispute is filed against one country. There are three instances in which multiple members were named on the same day.[9] We still count these as individual disputes in our analysis, which only works against our results as none occurred in a re-election year. Our results are unaffected if we bundled them into one dispute.

The main dependent variable in our regressions is $Dispute_{i,t}$ a dummy equal to 1 if the U.S. initiates a dispute supporting three-digit NAICS industry i in year t. In some robustness checks, our dependent variable is $Dispute\ Count_{i,t}$, which measures the number of disputes initiated in an industry-year.

We take the date of the request for consultations, the first stage of the WTO dispute settlement process, as the time of the initiation of a case. To verify whether U.S. executives are more likely to initiate trade disputes when they are close to facing re-election, we define the variable $Re\text{-}Election\ Year_t$, a dummy equal to 1 if t is the last year of a president's first term. 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. 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. There are two exceptions to this rule: (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 between Bush and Obama, and we drop these two disputes from our sample.[10]

To examine industry-determinants of the initiation of trade disputes, we match each dispute to one or more 3-digit NAICS code. As explained in Appendix A-1, we use two complementary methods to classify the disputes by industry. First, we use information from the databases of Horn and Mavroidis (2011) and Bown and Reynolds (2015a), who classify WTO disputes according to the industry codes of the harmonized system (HS) and use the concordance table provided by Pierce and Schott (2012) to derive corresponding NAICS codes. Second, we verify the industry allocation of each dispute based on our own reading of the official WTO documents and the comparison with the NAICS classification. The resulting mapping from disputes 3-digit NAICS codes for each WTO disputes initiated by the United States during the 1995–2014 are reported in Table A-1.[11]

We want to verify whether U.S. trade disputes are more likely to concern industries that are important in swing states. These are battleground states in which no single candidate or party has overwhelming support. They receive a large share of the attention and campaigning of political parties in presidential elections, since winning these states is the best opportunity to gain electoral votes. To define swing states, we use information on state-level margins of victory in presidential elections, as in Glaeser and Ward (2006), Conconi et al. (2012), and Ma and McLaren (2016). We most closely follow Ma and McLaren, who define a state to be swing if the vote difference between the two major parties in the previous presidential election is less than 5 percentage points.

We can then use information on state-level employment by industries to capture the importance of different industries in battleground states. In particular, we use data from the Quarterly Census of Employment and Wages conducted by the Bureau of Labor Statistics to construct the variable $Swing\ Industry_{i,t}$. This is the share, expressed in percentage terms, of industry i's employment across all states identified as swing at time t, over total employment in those states.[12]

To examine how the importance of industries in swing states affects the initiation of WTO disputes, we want to include in our analysis only sectors that can be potentially involved in these disputes. We thus exclude non-tradable sectors, which should not be concerned by violations of WTO commitments. As stressed by Mian and Sufi (2014), splitting industries into tradable versus non-tradable is challenging. They provide two independent methods of industry classification which serve as a cross-check on each other. The first classification scheme is based on industry-level trade data for the U.S. and it defines industries to be tradable if the absolute value of trade or the value of trade per worker is above a given threshold.[13] The second is based on an industry's geographical concentration. The idea is that the production of tradable goods requires specialization and scale, so industries producing tradable goods should be more concentrated geographically. They place 4-digit NAICS industries into four categories: tradable, non-tradable, construction, and other. They are deliberately conservative in classifying industries as either tradable or non-tradable, to minimize the Type I error of wrongly classifying an industry as non-tradable (or tradable) when it actually is not.

The sample used in our benchmark regressions includes all sectors in agriculture (NAICS 111–115) and manufacturing (NAICS 311–339), as well as other sectors classified as "tradable" by Mian and Sufi, i.e. Oil and Gas Extraction (NAICS 211), Mining, except Oil and Gas (NAICS 212), and Publishing Industries, except Internet (NAICS 511). We have verified that our analysis is robust to the inclusion of two constructions sectors and four services sectors that Mian and Sufi left unclassified because of the lack of trade data.

Table 1 lists the number of disputes filed in each sector over our entire sample. It also provides information on the importance of each industry in swing states, captured by the average of the $Swing\ Industry_{i,t}$ variable over our sample period. The statistics of Table 1 reveal a correlation between industry size in swing states and the incidence of WTO disputes. For example, the maximum number of disputes (27) is found in food manufacturing, a sector in which the average of $Swing\ Industry_{i,t}$ (1.134) is well above the average for the entire sample (0.473). The simple correlation between the number of disputes filed in an industry and its average size in swing states is

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[8] Chase et al. (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.

[9] 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.

[10] Our results are robust to including these two disputes, classifying them as belonging to either the final year of the Bush administration or the first year of the Obama administration.

[11] In some cases, the alleged violation concerned very broad measures, making it impossible to allocate the dispute to specific industries. This is the case, for example, of DS444, filed in 2012 against Argentina on "Measures Affecting the Importation of Goods".

[12] Given that the variable is expressed as a share of total employment, there is no need to normalize it by the number of swing states. Also notice that swing states are redefined every four years, after the presidential elections. In our empirical analysis, we include President-term fixed effects, which account for changes in the number of swing states.

[13] A 4-digit NAICS industry is classified as tradable if its imports plus exports equal to at least $10,000 per worker, or if total exports plus imports for the NAICS 4-digit industry exceeds $500M.

Table 1
WTO disputes filed by the U.S., by NAICS 3-digit industries.

NAICS	Description	Count	*Swing Industry$_i$*
111	Crop production	21	0.347
112	Animal production	8	0.164
113	Forestry and logging	3	0.054
114	Fishing, hunting and trapping	0	0.004
115	Support activities for agriculture and forestry	0	0.156
211	Oil and gas extraction	0	0.092
212	Mining (except oil and gas)	2	0.189
311	Food manufacturing	27	1.134
312	Beverage and tobacco product manufacturing	6	0.178
313	Textile mills	2	0.279
314	Textile product mills	3	0.148
315	Apparel manufacturing	3	0.265
316	Leather and allied product manufacturing	5	0.038
321	Wood product manufacturing	0	0.462
322	Paper manufacturing	0	0.428
323	Printing and related support activities	0	0.558
324	Petroleum and coal products manufacturing	0	0.078
325	Chemical manufacturing	5	0.706
326	Plastics and rubber products manufacturing	0	0.724
327	Nonmetallic mineral product manufacturing	0	0.433
331	Primary metal manufacturing	2	0.465
332	Fabricated metal product manufacturing	0	1.303
333	Machinery manufacturing	2	1.057
334	Computer and electronic product manufacturing	9	0.958
335	Electrical equipment... manufacturing	0	0.443
336	Transportation equipment manufacturing	11	1.416
337	Furniture and related product manufacturing	0	0.495
339	Miscellaneous manufacturing	0	0.501
511	Publishing industries (except Internet)	2	0.625
	Average		0.473

0.323. The correlation is much higher within 2-digit NAICS industries (e.g. 0.889 in sector 11 and 0.943 in sector 31).

To capture other industry determinants of the initiation of trade disputes, we include in our analysis other variables defined at the same level of disaggregation as *Swing Industry$_{i,t}$* (3-digit NAICS). We follow Bown and Crowley (2013b) for our choice of political-economic controls. To measure the importance of an industry in the U.S. at large, we construct the variable $\ln(Employment_{i,t})$, which measures the total number of employees in industry i in year t. We also include $\ln(Concentration_i)$, which measures the total market share of the four largest firms in an industry i. This variable is time invariant and is not available for agriculture.[14] The variables *Employment Growth Rate$_{i,t-1}$*, *Growth rate imports$_{i,t-1}$* and *Growth rate exports$_{i,t-1}$* capture employment changes and the evolution of imports and exports in industry i prior to the initiation of the dispute (between year $t-2$ and $t-1$). The employment variable comes from the Bureau of Labor Statistics and is available for all years and sectors. The industry trade variables are constructed using data from U.S. customs, which only cover trade in goods.

One possible concern is that re-election year effects could result from omitted variables that also peak in 1996, 2004, and 2012. To deal with this concern, we include two macroeconomic variables, which recent studies suggest might affect the filing of trade disputes: $\Delta\,Unemployment_{t-1}$ and $\Delta\,Exchange\,Rate_{t-1}$.[15] $\Delta\,Unemployment_{t-1}$ is

the change in the annual U.S. unemployment rate from the Current Population Survey of the BLS. $\Delta\,Exchange\,Rate_{t-1}$ 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.[16]

Table 2 provides summary statistics for the main variables used in our empirical analysis. There were disputes in 71 (12%) of the industry-years. Three of the 20 years were re-election years. The table confirms that there is substantial variation in *Swing Industry$_{i,t}$*, our other main variable of interest, and the same is true for all the control variables.

Cross-tabulated data provide preliminary support for our hypotheses. We find that 24% of disputes filed by the U.S. occur in the three presidential re-election years, whereas we would expect to find a 15% share (3 of 20) absent electoral cycles. Disputes occur for 23% of industry-years in the top quartile of *Swing Industry$_{i,t}$*, while they occur in just 9% of the industry-years in the bottom three quartiles.

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 present first our benchmark results using a linear probability model, and then shown that our results are robust to using alternative econometric methodologies.

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[14] The variable comes from the Annual Survey of Manufacturers of the U.S. Census Bureau and is only available for 2002 and 2007. We use 2002, which is in the middle of our sample period.

[15] Bown and Crowley (2013a) 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 rather than quarterly, 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.

[16] We also constructed the variable ΔGDP_{t-1}. However, since it is highly correlated (i.e. 0.76) with $\Delta\,Unemployment_{t-1}$ and it is only available for part of our sample, we only include $\Delta\,Unemployment_{t-1}$ in our regressions.

Table 2
Summary statistics.

Variable	Mean	Std. dev.	Min.	Max.	Observations
$Dispute_{it}$	0.122	0.328	0	1	580
$Dispute\ Count_{it}$	0.191	0.619	0	6	580
$Re\text{-}Election\ Year_t$	0.150	0.357	0	1	580
$Swing\ Industry_{it}$	0.473	0.406	0.003	1.907	580
$\ln(Employment_{i,t})$	12.814	1.568	8.954	1.457	580
$Employment\ Growth\ Rate_{it}$	−0.017	0.044	−0.210	0.101	580
$\ln(Concentration_i)$	2.760	0.620	1.163	3.959	440
$Growth\ rate\ imports_{i,t-1}$	0.074	0.152	−0.481	0.892	548
$Growth\ rate\ exports_{i,t-1}$	0.072	0.161	−0.329	1.235	548
$\Delta\ Unemployment_{t-1}$	0.025	0.982	−0.800	3.500	580
$\Delta\ Exchange\ Rate_{t-1}$	−0.007	0.053	−0.123	0.076	580

3.1. Main results

To study the determinants of the initiation of U.S. trade disputes, we estimate the following linear probability model:

$$Dispute_{i,t} = \gamma_0 + \gamma_1\ Re\text{-}Election\ Year_t + \gamma_2\ Swing\ Industry_{i,t}$$
$$+ \gamma_3\ \mathbf{X}_{i,t} + \gamma_4\ \mathbf{Z}_t + \gamma_5\ \mathbf{I}_i + \varepsilon_{it} \qquad (1)$$

where the dependent variable is the dummy variable $Dispute_{i,t}$, which is equal to 1 if the United States files at least one dispute targeting industry i in year t. The main variables of interests are $Re\text{-}Election\ Year_t$ and $Swing\ Industry_{i,t}$, which capture years and industries that should be more important for a president's re-election. The matrix $\mathbf{X}_{i,t}$ includes additional industry-level controls, while $\mathbf{Z}_t$ captures controls that vary over time only at the national level. These includes macroeconomic variables, as well as fixed effects for each term served by an executive or for his entire presidency.[17] The panel structure of our data allows us to include a matrix of industry fixed effects $\mathbf{I}_i$ at the two-digit level of the NAICS classification.

Table 3 reports our main results. In column (1), we report the results of a parsimonious specification that includes only our key controls of interest, industry fixed effects, and president fixed effects. In column (2), we add other additional industry-level and country-level controls to account for other potential determinants of U.S. trade disputes. In this specification, we only use controls that are available for all industries. In column (3), we include $\ln(Concentration\ Ratio_i)$. As mentioned in Section 2, this variable is time invariant and is not available for agriculture sectors, so including it leads to a drop in the number of observations. In column (4), we add the industry trade controls ($Growth\ rate\ imports_{i,t-1}$ and $Growth\ rate\ exports_{i,t-1}$), which lead to a further drop in the number of observations.[18] In columns (5)–(8), we reproduce the same specifications, substituting president fixed effects with President-term fixed effects.

The results of Table 3 confirm that U.S. trade disputes are "suspiciously-timed." The $Re\text{-}Election\ Year_t$ dummy is always positive and significant at the 1% level, indicating that U.S. executives are more likely to initiate disputes at the end of their first term, when they are close to facing re-election. This result is robust to including President or President-term fixed effects, as well as macroeconomic variables that might affect the timing of the initiation of trade disputes. In terms of magnitude, the estimated coefficients for the

$Re\text{-}Election\ Year_t$ dummy indicate that the likelihood that the U.S. initiates a dispute increases between 13.5 and 21.7 percentage points in the last year of a president's first term

By including only the $Re\text{-}Election\ Year_t$ dummy, we compare the last year of a president's first term with all other years. We have also tried to add the dummy $Election\ Year_t$, which is equal to 1 in the last year of an executive's second term. The estimated coefficient for this dummy was never significant (while the $Re\text{-}Election\ Year_t$ dummy remained positive and significant at the 1% level), suggesting that the executive's desire to retain office is what drives the "suspicious timing" of U.S. trade disputes.

Our results about the $Swing\ Industry_{i,t}$ variable suggests that electoral incentives also affect the sectoral composition of the disputes filed by the United States. The estimated coefficients for this variable are always positive and significant (at least at the 5% level), indicating that industries that are more important in swing states receive more support in fighting against violations of multilateral trade laws. Crucially, this result is robust to controlling for the political importance of an industry in the country at large, by including measures of its overall size and its degree of concentration. The variables $\ln(Employment_{i,t})$ and $\ln(Concentration_i)$ are both positive and significant, suggesting that the U.S. is more likely to initiate trade disputes in support of larger and more concentrated industries. In terms of magnitude, a marginal increase in the variable $Swing\ Industry_{i,t}$ increases the probability that a dispute is initiated by between 18.3 and 30.8 percentage points. If we compare the effects of different industry determinants, we find that a 1 standard deviation change in $Swing\ Industry_{i,t}$ increases the probability that a trade dispute is initiated by between 7.4 and 12.5 percentage points; by contrast, the effect is between 5.1 and 7.3 percentage points for a 1 standard deviation increase in $\ln(Employment_{i,t})$ and between 8.6 and 8.8 percentage points for a 1 standard deviation increase in $\ln(Concentration\ Ratio_i)$.

3.2. Robustness checks

3.2.1. Probit model

We first verify the robustness of our results to using a probit model as an alternative econometric methodology. We estimate the following specification:

$$Pr\left(Dispute_{i,t} = 1 | \cdot\right) = \Phi\left(\lambda_0 + \lambda_1\ Re\text{-}Election\ Year_t + \lambda_2\ Swing\ Industry_{i,t}\right.$$
$$\left. + \lambda_3\ \mathbf{X}_{i,t} + \lambda_4\ \mathbf{Z}_t + \lambda_5\ \mathbf{I}_i\right) \qquad (2)$$

where Φ denotes the standard normal cumulative distribution function.

Table 4 displays the estimated probit coefficients. As with our benchmark regressions of Table 3, the $Re\text{-}Election\ Year_t$ dummy is always positive and significant at 1%, confirming that U.S. executives

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[17] Because of our interest in the variable $Re\text{-}Election\ Year_t$, we cannot include year fixed effects. President-term effects 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). They also allow us to control for the number of swing states, which vary at the term-level.

[18] Trade data for industries 115 and 511 is only available for recent years.

Table 3
Linear probability model.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Re-Election Year$_t$	**0.135*****	**0.162*****	**0.157*****	**0.142*****	**0.160*****	**0.210*****	**0.217*****	**0.198*****
	(0.043)	(0.048)	(0.051)	(0.051)	(0.045)	(0.055)	(0.058)	(0.059)
Swing Industry$_{i,t}$	**0.304*****	**0.183*****	**0.241*****	**0.240*****	**0.308*****	**0.186*****	**0.240*****	**0.239*****
	(0.052)	(0.064)	(0.078)	(0.079)	(0.053)	(0.064)	(0.077)	(0.078)
ln(Employment$_{i,t}$)		0.063***	0.055	0.056*		0.063***	0.057*	0.059*
		(0.018)	(0.033)	(0.034)		(0.018)	(0.032)	(0.033)
Employment Growth Rate$_{i,t-1}$		−0.135	−0.285	−0.234		−0.145	−0.299	−0.311
		(0.386)	(0.506)	(0.503)		(0.384)	(0.502)	(0.501)
ln(Concentration$_i$)			0.138***	0.139***			0.139***	0.140***
			(0.025)	(0.026)			(0.025)	(0.026)
Growth rate imports$_{i,t-1}$				−0.145				−0.074
				(0.115)				(0.121)
Growth rate exports$_{i,t-1}$				0.024				0.032
				(0.104)				(0.108)
Δ Unemployment$_{t-1}$		−0.010	−0.004	−0.011		0.015	0.022	0.015
		(0.017)	(0.021)	(0.021)		(0.020)	(0.025)	(0.027)
Δ Exchange Rate$_{t-1}$		0.336	0.277	0.184		0.384	0.398	0.309
		(0.271)	(0.302)	(0.317)		(0.381)	(0.411)	(0.416)
President FE	Yes	Yes	Yes	Yes				
President-term FE					Yes	Yes	Yes	Yes
Industry FE (2-digit)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	580	580	440	428	580	580	440	428
R^2	0.178	0.194	0.250	0.257	0.183	0.201	0.259	0.263

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. Estimates for the main variables of interest are in bold.

are more likely to initiate trade disputes in the last year of their first term. The estimated coefficient for Swing Industry$_{i,t}$ is also positive and significant, confirming that trade disputes are more likely to involve important industries in swing states.[19]

To help interpret the probit results, at the bottom of Table 4 we report the model's average predicted probabilities for different values of the variables Re-Election Year$_t$ (0 or 1) and Swing Industry$_{i,t}$ (25th to the 75th percentile).[20] All the predicted probabilities are significantly different from each other (within each specification). Comparing the predicted probabilities across the different scenarios confirms that the U.S. is more likely to initiate disputes in re-election years and that the disputes are more likely to involve important industries in swing states. For example, the probabilities reported in column (1) indicate that moving from a no re-election year to a re-election year increases the probability that a dispute is initiated from 10.3% to 23.2%. Similarly, moving the Swing Industry$_{i,t}$ variable from the 25th to the 75th percentile increases the probability that a dispute is initiated from 6.32% to 17.7% (with similar patterns in the other columns).

3.2.2. Count model

In order to exploit the variation from industries involved in more than one dispute in a given year, we estimate a count model using Dispute Count$_{i,t}$ as the dependent variable.[21] This alternative methodology also provides an additional functional form check on our previous results.

We assume Dispute Count$_{i,t}$, conditional on the data, follows a negative binomial distribution with parameters μ_{it} and α such that

$$E\left[Dispute\ Count_{i,t}|\cdot\right] = \mu_{i,t} \equiv exp\left(\beta_0 + \beta_1\ Re\text{-}Election\ Year_t + \beta_2\ Swing\ Industry_{i,t} + \beta_3\ \mathbf{X}_{it} + \beta_4\ \mathbf{Z}_t + \beta_5\ \mathbf{I}_i\right) \quad (3)$$

and $Var\left[Dispute\ Count_{it}|\cdot\right] = \mu_{i,t} + \alpha\mu_{i,t}^2$. We then estimate this model using maximum likelihood.

Table 5 provides the estimates of the negative binomial regressions. In all specifications, the Re-Election Year$_t$ dummy is positive and significant at the 1% level, confirming that the U.S. executives are more likely to initiate WTO disputes in the year before their re-election. The estimates of the Swing Industry$_{i,t}$ variables are also positive and significant at least at the 5% level, confirming that the disputes filed by the U.S. are more likely to involve important industries in swing states.

To get a sense of the magnitude of the effects in the negative binomial regressions, at the bottom of Table 5 we report the model's average predicted counts for different values of the variables Re-Election Year$_t$ (0 or 1) and Swing Industry$_{i,t}$ (25th to the 75th percentile). We additionally test whether differences in predicted counts — corresponding to the re-election effect and the swing industry effect — are statistically different from each other. We find both effects to be significant at the 5% level for columns (1), (2), (3), and (5) and at the 10% level for columns (4) and (6). For columns (7) and (8), which consider the more limited sample, the re-election and swing industry effects are still significant at the 10% level. On balance, the results continue to support the conclusion that the U.S. is more likely to initiate disputes in re-election years and that the disputes are more likely to involve important industries in swing states.

3.2.3. Instrumenting for the employment variables

The results presented so far provide systematic evidence supporting the existence of both a re-election year effect and swing industry

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[19] Notice that the number of observations in columns (4) and (8) is lower than in the corresponding specifications of Table 3. This is because for sector 511 the only disputes involving this sector were filed in 1996 and 1997, but the trade controls for this sector are only available since 2005. The observations corresponding to this sector are thus dropped in the probit model.

[20] When computing the predicted probabilities for different values of a variable of interest, we keep the other variables at their actual values.

[21] We observe more than one dispute in a given industry-year in 20 industry-year observations.

Table 4
Probit results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Re-Election Year$_t$	**0.684*****	**0.925*****	**1.084*****	**1.009*****	**0.890*****	**1.283*****	**1.681*****	**1.556*****
	(0.186)	(0.263)	(0.323)	(0.339)	(0.233)	(0.349)	(0.450)	(0.467)
Swing Industry$_{i,t}$	**1.482*****	**0.763****	**1.041****	**1.022****	**1.505*****	**0.772****	**0.995****	**0.982***
	(0.243)	(0.321)	(0.515)	(0.520)	(0.248)	(0.317)	(0.508)	(0.514)
ln(Employment$_{i,t}$)		0.430***	0.374	0.400		0.439***	0.434	0.451
		(0.125)	(0.278)	(0.280)		(0.121)	(0.275)	(0.277)
Employment Growth Rate$_{i,t}$		−2.095	−3.307	−2.022		−2.155	−3.917	−2.936
		(2.704)	(2.990)	(3.095)		(2.705)	(3.028)	(3.158)
ln(Concentration$_i$)			0.916***	0.918***			0.953***	0.952***
			(0.165)	(0.168)			(0.172)	(0.173)
Growth rate imports$_{i,t-1}$				−2.073				−1.619
				(1.518)				(1.648)
Growth rate exports$_{i,t-1}$				−0.114				−0.008
				(0.944)				(1.011)
Δ Unemployment$_{t-1}$		−0.070	−0.030	−0.151		0.087	0.151	0.025
		(0.123)	(0.151)	(0.165)		(0.138)	(0.170)	(0.190)
Δ Exchange Rate$_{t-1}$		2.570	3.064	1.958		2.672	4.510	3.393
		(2.034)	(2.545)	(2.651)		(2.670)	(3.249)	(3.292)
President FE	Yes	Yes	Yes	Yes				
President-term FE					Yes	Yes	Yes	Yes
Industry FE (2-digit)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	580	580	440	420	580	580	440	420
Pseudo R^2	0.240	0.266	0.345	0.357	0.249	0.276	0.363	0.369
Predicted probabilities								
$\hat{P}$(Re-Election Year$_t$ = 0)	0.103***	0.099***	0.091***	0.093***	0.099***	0.094***	0.085***	0.087***
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)
$\hat{P}$(Re-Election Year$_t$ = 1)	0.232***	0.278***	0.270***	0.253***	0.274***	0.358***	0.390***	0.357***
	(0.034)	(0.057)	(0.061)	(0.060)	(0.050)	(0.083)	(0.098)	(0.097)
$\hat{P}$(Swing Industry$_{i,t}$ = 25th pct)	0.063***	0.082***	0.065***	0.066***	0.063***	0.082***	0.068***	0.068***
	(0.010)	(0.017)	(0.018)	(0.019)	(0.010)	(0.016)	(0.018)	(0.019)
$\hat{P}$(Swing Industry$_{i,t}$ = 75th pct)	0.177***	0.138***	0.128***	0.133***	0.177***	0.138***	0.126***	0.131***
	(0.019)	(0.016)	(0.021)	(0.024)	(0.019)	(0.016)	(0.020)	(0.023)

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 the model's average predicted probabilities, as we condition two variables in the $\hat{P}(\cdot)$ function taking on the specified values while the other variables are taking their actual values. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively. Estimates for the main variables of interest are in bold.

effect in U.S. trade disputes. To deal with concerns about omitted variables, we have included in our regression many national-level and industry-level variables which could be correlated with both the initiation of U.S. trade disputes and our key variables of interest (*Re-Election Year$_t$* and *Swing Industry$_{i,t}$*).

In this last section, we show that our results are also robust to a concern about reverse causality. In particular, one may worry that the initiation of trade disputes involving a particular industry may affect its employment (in swing states and in the U.S. at large).

To address this concern, we use pre-sample data as instruments. Specifically, we construct two instrumental variables, analogs for *Swing Industry$_{i,t}$* and ln(Employment$_{i,t}$), but constructed using employment data from 1994 and swing state classification from the 1992 election, so they vary only by industry. We then use a two-stage least squares estimation which instruments for *Swing Industry$_{i,t}$* and ln(Employment$_{i,t}$).

Table 6 shows the results from the two-stage least squares estimation.[22] They are in line with the results from the ordinary least squares estimation in Table 3 and provide a final confirmation of our main hypotheses.

3.3. Discussion

Our analysis confirms that disputes filed by the U.S. tend to be "suspiciously-timed". In all 32 specifications of Tables 3–6 above, the

Re-Election Year$_t$ dummy is always positive and significant at the 1% level, indicating that U.S. executives are more likely to initiate disputes at the end of their first terms, when they are close to facing re-election.

In principle, there are three possible interpretations of this re-election year effect.

i) Some disputes were "delayed", i.e. they should have been initiated earlier, but the executive waited until the end of his first term, to maximize his re-election chances.
ii) Some disputes were pushed forward "too soon", i.e. they would have been filed anyway at some point in the future, but they were initiated earlier to boost the executive's re-election chances.
iii) Absent re-election motives, some disputes would not have been initiated at all.

Distinguishing between these interpretations is nontrivial. In line with interpretation i), our results suggests that re-election motives, by delaying the filing of some disputes, may imply a cost for the domestic industry involved. For example, as discussed further in the conclusions, producers of car parts had to wait till September 2012 for the Obama administration to initiate a dispute against Chinese export subsidies to car parts, although evidence of the existence of these subsidies had long been available.

The evidence does not seem instead consistent with interpretations ii). This would suggest that disputes brought forward "too soon" by the executive should be weaker cases, i.e. cases that the

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

Table 5
Negative binomial results.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Re-Election Year$_t$	1.147***	1.412***	1.678***	1.634***	1.236***	1.548***	2.023***	1.955***
	(0.235)	(0.353)	(0.426)	(0.448)	(0.329)	(0.472)	(0.594)	(0.615)
Swing Industry$_{i,t}$	2.534***	1.421***	2.218***	2.123**	2.573***	1.475***	2.227***	2.15**
	(0.364)	(0.483)	(0.812)	(0.845)	(0.371)	(0.489)	(0.845)	(0.880)
ln($Employment_{i,t}$)		0.581***	0.243	0.292		0.569***	0.258	0.297
		(0.191)	(0.429)	(0.438)		(0.186)	(0.426)	(0.437)
Employment Growth Rate$_{i,t-1}$		−1.781	−1.638	−1.019		−1.704	−1.750	−1.336
		(4.057)	(4.480)	(4.665)		(4.181)	(4.618)	(4.858)
ln($Concentration_i$)			1.062***	1.064***			1.071***	1.075***
			(0.194)	(0.196)			(0.198)	(0.200)
Growth rate imports$_{i,t-1}$				−1.414				−1.094
				(2.138)				(2.333)
Growth rate exports$_{i,t-1}$				−0.405				−0.274
				(1.194)				(1.248)
Δ Unemployment$_{t-1}$		0.007	0.113	0.005		0.143	0.277	0.174
		(0.198)	(0.223)	(0.250)		(0.220)	(0.245)	(0.277)
Δ Exchange Rate$_{t-1}$		2.711	4.614	4.020		2.279	4.560	4.019
		(2.947)	(3.516)	(3.624)		(3.643)	(4.356)	(4.486)
President FE	Yes	Yes	Yes	Yes				
President-term FE					Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	580	580	440	428	580	580	440	428
Pseudo R^2	0.214	0.229	0.288	0.291	0.218	0.232	0.292	0.295
Predicted counts								
$\hat{C}$(Re-Election Year$_t$ = 0)	0.147***	0.143***	0.125***	0.127***	0.145***	0.140***	0.122***	0.123***
	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
$\hat{C}$(Re-Election Year$_t$ = 1)	0.464***	0.586***	0.669**	0.648**	0.499***	0.659**	0.922*	0.872*
	(0.092)	(0.182)	(0.261)	(0.266)	(0.134)	(0.271)	(0.502)	(0.491)
$\hat{C}$(Swing Industry$_{i,t}$ = 25th pct)	0.085***	0.105***	0.071***	0.072***	0.085***	0.104***	0.071***	0.072***
	(0.014)	(0.023)	(0.015)	(0.016)	(0.014)	(0.023)	(0.016)	(0.017)
$\hat{C}$(Swing Industry$_{i,t}$ = 75th pct)	0.320***	0.220***	0.212***	0.215***	0.324***	0.224***	0.213***	0.218***
	(0.056)	(0.032)	(0.069)	(0.073)	(0.057)	(0.033)	(0.071)	(0.076)

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 the model's average predicted counts, as we condition on specific valued of the variables in the $\hat{C}(\cdot)$ function taking on the specified values while the other variables are taking their actual values. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels respectively. Estimates for the main variables of interest are in bold.

U.S. is more likely to lose. We have examined the outcomes of WTO disputes from two perspectives and found no evidence that cases initiated in re-election years are weaker.

First, we have looked at the status of the disputes, distinguishing cases that (a) are still in consultations, (b) have been withdrawn or settled, and (c) have reached a panel. When comparing disputes filed

Table 6
Two-stage least squares regressions.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Re-Election Year$_t$	0.135***	0.164***	0.163***	0.147***	0.161***	0.210***	0.217***	0.197***
	(0.043)	(0.048)	(0.051)	(0.051)	(0.044)	(0.055	(0.057)	(0.058)
Swing Industry$_{i,t}$	0.372***	0.314***	0.458***	0.463***	0.372***	0.314***	0.458***	0.460***
	(0.060)	(0.079)	(0.110)	(0.112)	(0.060)	(0.080)	(0.109)	(0.111)
ln($Employment_{i,t}$)		0.025	−0.038	−0.042		0.025	−0.038	−0.040
		(0.020)	(0.043)	(0.044)		(0.020)	(0.043)	(0.044)
Employment Growth Rate$_{i,t-1}$		−0.179	−0.463	−0.374		−0.173	−0.448	−0.427
		(0.392)	(0.524)	(0.520)		(0.387)	(0.512)	(0.511)
ln($Concentration_i$)			0.137***	0.138***			0.137***	0.138***
			(0.026)	(0.026)			(0.026)	(0.026)
Growth rate imports$_{i,t-1}$				−0.140				−0.0743
				(0.113)				(0.118)
Growth rate exports$_{i,t-1}$				−0.017				−0.001
				(0.110)				(0.113)
Δ Unemployment$_{t-1}$		−0.012	−0.011	−0.019		0.014	0.018	0.008
		(0.017)	(0.022)	(0.023)		(0.020)	(0.025)	(0.027)
Δ Exchange Rate$_{t-1}$		0.366	0.367	0.254		0.374	0.397	0.296
		(0.272)	(0.308)	(0.325)		(0.380)	(0.410)	(0.414)
President FE	Yes	Yes	Yes	Yes				
President-term FE					Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	580	580	440	428	580	580	440	428
R^2	0.174	0.186	0.233	0.238	0.180	0.193	0.242	0.245

Notes: The table reports two-stage least squares coefficients, with robust standard errors in parentheses. The variables Swing Industry$_{i,t}$ and ln($Employment_{i,t}$) 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.

in re-election years with disputes filed in other years, we found no statistically significant difference in the distribution of outcomes.[23]

We have then looked at the outcome of the panels, using the database of Horn and Mavroidis (2011) that classifies rulings through August 2011. Based on the "Conclusions and Recommendations" section of each panel report, for each article cited in the dispute, they classify the ruling into three categories: (1) claims where the complainant prevailed; (2) claims where the defendant prevailed; and (3) a residual group of claims where the outcome is unclear. Summing up the outcomes, we classify outcomes as outright wins (defendant never prevails), outright defeats (complainant never prevails), or mixed.[24] Whether or not a dispute was filed in a re-election year has no effect on the outcome: of the 8 disputes filed in re-election years that went to panel, 4 were outright victories and 1 was an outright defeat; of the other 28 disputes that went to panel, 14 were outright victories and 2 were outright defeats.

The evidence on the outcomes of trade disputes goes also partly against interpretation iii). Assuming that the strongest cases are generally more likely to be filed, regardless of re-election incentives, we would expect disputes that executives initiate only to remain in office to be weaker cases. However, some disputes could still be consistent with interpretation iii).[25]

Our results on the industry determinants of trade disputes suggest that re-election motives distort not only the timing, but also the composition of disputes initiated by the United States. In all our regressions, the variable $Swing\ Industry_{i,t}$ is positive and significant (at least at the 5% level), indicating that the executives give more weight to voters in swing states.

4. A model of electoral incentives and trade disputes

In this section, we describe a theoretical model that provides a simple explanation for our empirical findings concerning the timing of U.S. trade disputes (the re-election effect) and their composition (the swing industry effect). The key assumption of this model is that voters have reciprocal preferences, i.e. they want to reward politicians who have been kind to them, and punish politicians who have been unkind to them. As mentioned in the introduction, a large theoretical literature has emphasizes the importance of reciprocal preferences (e.g. Rabin, 1993; Dufwenberg and Kirchsteiger, 2004; Falk and Fischbacher, 2006) and many experimental studies have confirmed that individuals like to reward kind actions and punish unkind ones (e.g. Fehr et al., 1997; Charness and Dufwenberg, 2006; Kube et al., 2012). Recent work by Finan and Schechter (2012) provides strong empirical and experimental evidence that voters exhibit reciprocal preferences.

The model is 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.

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) and 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) and 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 $a_C \in A_C$.[26] 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 Fig. 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

4.2.1. 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.[27] 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

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[23] The percentage of cases that go to panel is actually higher for disputes filed in re-election year (53.85% instead of 46.91%).

[24] The outright wins and outright defeats include rulings in the residual category for only one dispute, EC–Hormones, in which the complainant still prevailed for a majority of rulings.

[25] This could be the case if the likelihood of winning is the same across potential disputes, but for some disputes the potential costs (legal, administrative, and political) would may then only be filed in re-election years, but would not be weaker cases in terms of the likelihood of the U.S. winning.

[26] 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.

[27] 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.
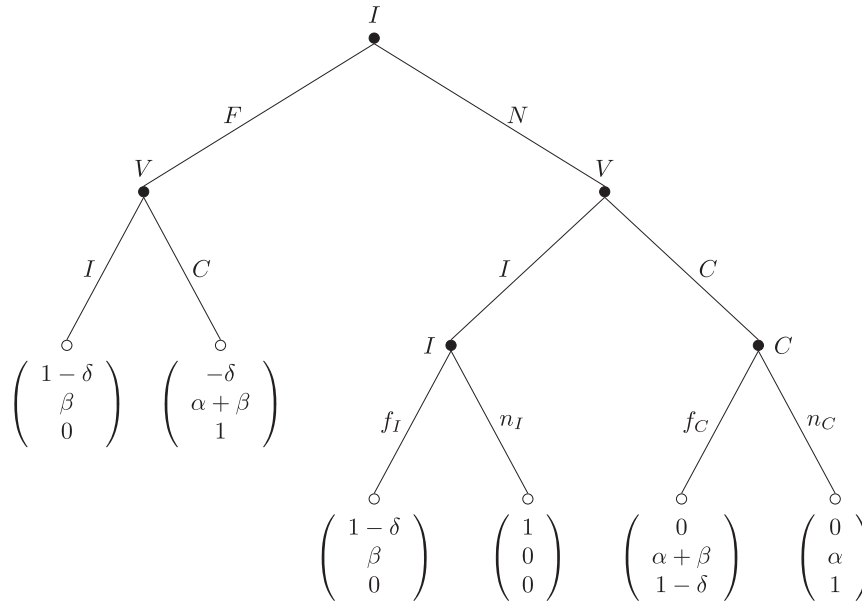
Fig. 2. Extensive form of the game with material payoffs for players I, V, and C.

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 legal expertise. For example, Bown (2009) cites estimated litigation costs exceeding 10 million US$ 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.

4.2.2. 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 choosing strategy a_V is

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

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.

Notice that the reciprocity payoff also depends on c_V^I, the voter's belief of the incumbent's perception of the voter's behavior. In equilibrium (which we later define), this belief c_V^I must be consistent with the voter's behavior. We later show that for certain parameter ranges, the dependence of the voter's payoff on c_V^I leads to a unique equilibrium in which the voter plays a mixed strategy. Unlike typical mixed strategy equilibria, in which each player's mixed strategy implies the other players' indifference, here a belief c_V^I consistent with a mixed strategy can imply the voter's indifference between candidates for at least one decision node.

For example, if the voter materially prefers the challenger and $c_V^I = IC$, then the perceived kindness of an incumbent's dispute is mitigated, because the voter recognizes that the incumbent fully anticipates that his dispute would cause the voter to choose counter to the material preference. If this reduction in perceived kindness would lead the voter to prefer strategy a_V of CC rather than IC, then there cannot be a pure strategy equilibrium with belief $c_V^I = IC$, because that belief would be inconsistent with the voter's preference. But there can be an equilibrium involving a mixed strategy between CC and IC, such that for c_V^I consistent with this mixed strategy, the voter is indifferent between candidates when the incumbent files a dispute.

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 $c_I^C = n_I$.

4.3.1. 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,

$$k_I(a_V \mid N, n_I, n_C) = p_{II} + p_{CI} - \frac{1}{2}(1 + 0) = p_{II} + p_{CI} - \frac{1}{2}.$$

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

If the incumbent instead chooses F in stage 1, then

$$k_I(a_V \mid F, n_I, n_C) = p_{IC} + p_{II} - \delta - \frac{1}{2}((1 - \delta) + (-\delta)) = p_{IC} + p_{II} - \frac{1}{2}.$$

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

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.

4.3.2. 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

$$\kappa_I(F, n_I, n_C, a_V', n_C) = \frac{1}{2}(\beta + \alpha(p_{CI}' - p_{IC}')). \tag{7}$$

$$\kappa_I(N, n_I, n_C, a_V', n_C) = -\frac{1}{2}(\beta + \alpha(p_{CI}' - p_{IC}')). \tag{8}$$

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 $\frac{\beta}{2}$.

4.3.3. 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 $(c_V^{I*}, c_C^{C*}, c_V^{C*}, c_I^{C*})$ 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 $b_C^* = c_C^{C*} = a_C^*$.
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 redices 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

   1 If $\alpha > 0$, then $a_I^* = Nn_I, a_V^* = CC, a_C^* = n_C$.
   2 If $\alpha < 0$, then $a_I^* = Nn_I, a_V^* = II, a_C^* = n_C$.
   3 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 Fig. 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. Fig. 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 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-2 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
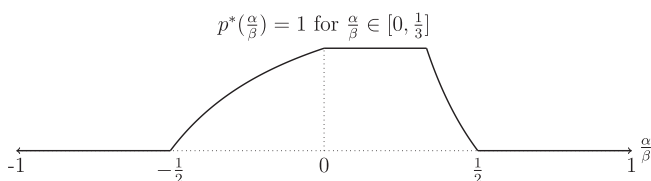
filing a dispute (i.e. n_C and n_I), so the incumbent can behave kindly to the voter by filing a dispute in the present.[28]

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 Appendix A-2, 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:

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

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 Fig. 3, notice that 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 $\frac{\alpha}{\beta} \leq -\frac{1}{2}$, then $a_I^* = Nn_I, a_V^* = II, a_C^* = n_C$.
   ii) If $\frac{1}{2} < \frac{\alpha}{\beta} < 0$, 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 $a_I^* = Fn_I$.

Fig. 3. Probability that the vote depends on incumbent's choice to file a dispute.

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[28] 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 stages 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.

In what follows, we discuss the key points of the derivation (see Appendix A-3 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 Appendix A-3, 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:

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

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). A recency bias in voters' response to trade policy, specifically, is consistent with the protectionist voting record of U.S. senators facing re-election (Conconi et al., 2014a).

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 and swing industry 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 enforcement of WTO rules. As pointed out in the opening quote from *The Economist*, the Obama administration waited until September 2012, less than a month before his re-election date, to file a complaint to the WTO against China for unfairly subsidizing car part exports. The dispute could have been initiated much earlier, given that the Obama administration had long known about these export subsidies,[29] and that WTO rules only require the complaining country to prove the existence of these subsidies.[30] Our results suggests that re-election motives, by delaying the filing of the disputes, imply a cost for the domestic industry involved.[31] Our analysis also suggests that electoral incentives affect the composition of trade disputes. According to our theoretical model, WTO commitments will not always be enforced, since filing trade disputes is costly. Our empirical results suggest that certain violations of WTO rules, which involve industries that are not important for politicians' re-election, are more likely to go unpunished.

Appendix A-1. Construction of the dataset of U.S. WTO disputes

Table A-1 lists all WTO disputes initiated by the United States during our sample period (1995–2014).[32] Here we describe the procedure we used to match these disputes to 3-digit NAICS codes, in order to study industry-level determinants of dispute initiation. The procedure can be articulated in the following steps:

1. Our starting point was the databases by Horn and Mavroidis (2011) and Bown and Reynolds (2015a), which classify WTO disputes according to 2-digit HS industry codes. When available, we retrieved the HS codes associated to each dispute.

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[29] 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."

[30] In the Agreement on Subsidies and Countervailing Measures, subsidies contingent on export performance are classified as "prohibited under all circumstances". To successfully challenge these subsidies in WTO dispute settlement proceedings, the complaining country needs only prove that such a subsidy exists; there is no need to demonstrate that the subsidy has had adverse trade effects.

[31] Recall that the WTO offers no retrospective compensation, so the longer Chinese export subsidies were unchallenged, the larger the cost for U.S. producers of auto parts. This is not to say, however, that a delay in enforcing WTO subsidy rules would lead to lower U.S. and world welfare, given that export subsidies have theoretically ambiguous welfare effects.

[32] We occasionally shorten and abbreviate dispute titles in this table for formatting purposes.

Table A-1
List of WTO disputes initiated by the United States.

DS	Date	Title	Respondent	NAICS
3	04/04/95	Measures concerning the testing and inspection of agricultural products	Korea	111, 311
5	03/05/95	Measures concerning the shelf-life of products	Korea	111, 311
11	07/07/95	Taxes on alcoholic beverages	Japan	312
13	19/07/95	Duties on imports of grains	EU	111, 311
16	28/09/95	Regime for importation, sale and distribution of bananas	EU	111
21	17/11/95	Measures concerning the importation of salmonids	Australia	311
26	26/01/96	Measures concerning meat and meat products (hormones)	EU	311
27	05/02/96	Regime for the importation, sale and distribution of bananas	EU	111
28	09/02/96	Measures concerning sound recordings	Japan	512
31	11/03/96	Certain measures concerning periodicals	Canada	511
35	27/03/96	Export subsidies in respect of agricultural products	Hungary	111, 112, 113, 311
36	30/04/96	Patent protection for pharmaceutical and agricultural chemical products	Pakistan	325
37	30/04/96	Patent protection under the Industrial Property Act	Portugal	N/A
41	24/05/96	Measures concerning inspection of agricultural products	Korea	111, 112, 113, 311
43	12/06/96	Taxation of foreign film revenue	Turkey	512
44	13/06/96	Measures affecting consumer photographic film and paper	Japan	325
45	13/06/96	Measures affecting distribution services	Japan	N/A
50	02/07/96	Patent protection for pharmaceutical and agricultural chemical products	India	325
52	09/08/96	Certain measures affecting trade and investment in the automotive sector	Brazil	336
56	04/10/96	Measures affecting imports of footwear, textiles, apparel and other items	Argentina	313, 314, 315, 316
57	07/10/96	Textile, clothing and footwear import credit scheme	Australia	313, 314, 315, 316
59	08/10/96	Certain measures affecting the automobile industry	Indonesia	336
62	08/11/96	Customs classification of certain computer equipment	EU	334
65	10/01/97	Certain measures affecting trade and investment in the automotive sector	Brazil	336
67	14/02/97	Customs classification of certain computer equipment	UK	334
68	14/02/97	Customs classification of certain computer equipment	Ireland	334
74	01/04/97	Measures affecting pork and poultry	Philippines	311
76	07/04/97	Measures affecting agricultural products	Japan	111, 112, 113, 311
80	02/05/97	Measures affecting commercial telephone directory services	Belgium	511
82	14/05/97	Measures affecting the grant of copyright and neighboring rights	Ireland	N/A
83	14/05/97	Measures affecting the enforcement of intellectual property rights	Denmark	N/A
84	23/05/97	Taxes on alcoholic beverages	Korea	312
86	28/05/97	Measures affecting the enforcement of intellectual property rights	Sweden	N/A
90	15/07/97	Quantitative restrictions on imports of agricultural, textile and industrial products	India	N/A
101	04/09/97	Anti-dumping investigation of high-fructose corn syrup (HFCS) from the U.S.	Mexico	311
102	07/10/97	Measures affecting pork and poultry	Philippines	311
103	08/10/97	Measures affecting the importation of milk and the exportation of dairy products	Canada	311
104	08/10/97	Measures affecting the exportation of processed cheese	EU	311
106	10/11/97	Subsidies provided to producers and exporters of automotive leather	Australia	316
109	11/12/97	Taxes on alcoholic beverages	Chile	312
115	06/01/98	Measures affecting the grant of copyright and neighboring rights	EU	N/A
124	30/04/98	Enforcement of IPR for motion pictures and television programmes	EU	512
125	04/05/98	Enforcement of IPR for motion pictures and television programmes	Greece	512
126	04/05/98	Subsidies provided to producers and exporters of automotive leather	Australia	316
127	05/05/98	Certain income tax measures constituting subsidies	Belgium	N/A
128	05/05/98	Certain income tax measures constituting subsidies	Netherlands	N/A
129	05/05/98	Certain income tax measures constituting subsidies	Greece	N/A
130	05/05/98	Certain income tax measures constituting subsidies	Ireland	N/A
131	05/05/98	Certain income tax measures constituting subsidies	France	N/A
132	05/05/98	Anti-dumping investigation of high-fructose corn syrup (HFCS) from the U.S.	Mexico	311
158	08/05/98	Regime for the importation, sale and distribution of bananas	EU	111
161	01/02/99	Measures affecting imports of fresh, chilled and frozen beef	Korea	311
163	16/02/99	Measures affecting government procurement	Korea	236
164	01/03/99	Measures affecting imports of footwear	Argentina	316
170	06/05/99	Term of patent protection	Canada	N/A
171	06/05/99	Patent protection for pharmaceuticals...	Argentina	325
172	21/05/99	Measures relating to the development of a flight management system	EU	334
173	21/05/99	Measures relating to the development of a flight management system	France	334
174	01/01/99	Protection of trademarks...for agricultural products and foodstuffs	EU	311
175	02/06/99	Measures affecting trade and investment in the motor vehicle sector	India	336
195	23/05/00	Measures affecting trade and investment in the motor vehicle sector	Philippines	336
196	30/05/00	Certain measures on the protection of patents and test data	Argentina	325
197	30/05/00	Measures on minimum import prices	Brazil	N/A
198	30/05/00	Measures on minimum import prices	Romania	N/A
199	30/05/00	Measures affecting patent protection	Brazil	N/A
203	10/07/00	Measures affecting trade in live swine	Mexico	112
204	17/08/00	Measures affecting telecommunications services	Mexico	517, 518
210	12/10/00	Administration of measures establishing customs duties for rice	EU	111
223	25/01/01	Tariff-rate quota on corn gluten feed from the US	EU	311
245	01/03/02	Measures affecting the importation of apples	Japan	111
260	30/05/02	Provisional safeguard measures on imports of certain steel products	EU	331
275	07/11/02	Import licensing measures on certain agricultural products	Venezuela	111, 311
276	17/12/02	Measures relating to exports of wheat and treatment of imported grain	Canada	111, 311
291	13/05/03	Measures affecting the approval and marketing of biotech products	EU	111, 311

Table A-1 (continued)

DS	Date	Title	Respondent	NAICS
295	16/06/03	Definitive anti-dumping measures on beef and rice	Mexico	111, 311
305	23/12/03	Measures affecting imports of textile and apparel products	Egypt	315, 314
308	16/03/04	Tax measures on soft drinks and other beverages	Mexico	312
309	18/03/04	Value-added tax on integrated circuits	China	334
315	21/09/04	Selected customs matters	EU	N/A
316	06/10/04	Measures affecting trade in large civil aircraft	EU	336
334	02/11/05	Measures affecting the importation of rice	Turkey	111
338	17/03/06	Provisional anti-dumping and countervailing duties on grain corn from the U.S.	Canada	111, 311
340	03/04/06	Measures affecting imports of automobile parts	China	333, 334, 336
347	20/02/06	Measures affecting trade in large civil aircraft (second complaint)	EU	336
358	02/02/07	Certain measures granting…exemptions from taxes and other payments	China	N/A
360	06/03/07	Additional and extra-additional duties on imports from the U.S.	India	312
362	10/04/07	Measures affecting the protection and enforcement of intellectual property rights	China	N/A
363	10/04/07	Measures affecting…services for certain publications and AV…products	China	512
373	03/03/08	Measures affecting financial information services…	China	518
375	28/05/08	Tariff treatment of certain information technology products	EU	333, 334
387	19/12/08	Grants, loans and other incentives	China	N/A
389	16/01/09	Certain measures affecting poultry meat and poultry meat products from the U.S.	EU	311
394	23/06/09	Measures related to the exportation of various raw materials	China	212
403	14/01/10	Taxes on distilled spirits	Philippines	312
413	15/09/10	Certain measures affecting electronic payment services	China	522, 518
414	15/09/10	Countervailing and AD duties on grain oriented flat-rolled electrical steel from U.S.	China	331
419	22/12/10	Measures concerning wind power equipment	China	237, 336
427	20/09/11	Anti-dumping and countervailing duty measures on broiler products from the U.S.	China	311
430	06/03/12	Measures concerning the importation of certain agricultural products from the U.S.	India	112, 311
431	13/03/12	Measures related to the exportation of rare earths, tungsten and molybdenum	China	212
440	05/07/12	Anti-dumping and countervailing duties on certain automobiles from the U.S.	China	336
444	21/08/12	Measures affecting the importation of goods	Argentina	N/A
450	17/09/12	Certain measures affecting the automobile and automobile-parts industries	China	336
455	10/01/13	Importation of horticultural products, animals and animal products	India	111, 112, 311
456	06/02/13	Certain measures relating to solar cells and solar modules	Indonesia	334
465	30/08/13	Importation of horticultural products, animals and animal products	Indonesia	111, 112, 311
478	08/05/14	Importation of horticultural products, animals and animal products	Indonesia	111, 112, 311

2. We matched 2-digit HS codes to 3-digit NAICS codes, using the correspondence table provided by Pierce and Schott (2012).[33]

3. We also manually matched each dispute to an industry by reading the legal material provided by the WTO and the U.S. Trade Representative.

4. In most cases, the NAICS codes obtained using the first method (steps 1–2) and the second method (step 3) were the same. For the few instances in which the codes were different, we opted for the NAICS codes from manual matching.[34]

5. For 40 disputes, the two databases do not provide HS codes. When possible, we manual matched these disputes to 3-digit NAICS codes. However, this was not possible for 20 disputes, which were too broad to be allocated to specific sectors.[35]

The final column of Table A-1 presents the results of our matching procedure. Of the 107 disputes initiated during our sample period, we matched 87 to at least one NAICS code. 72% of these were

matched to a single industry. The maximum of industries involved in a dispute is four (DS35, DS41, DS56, DS76, and DS198).

A-2. 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 pay-offs, 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

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[33] The correspondence table often provides multiple matches for the same 2-digit HS code. In these cases, we looked at how many HS10 products within an HS2 sector are matched to a 3-digit NAICS code and used this information to choose the most frequently matched 3-digit NAICS codes. As an example, consider DS11 ("Taxes on alcoholic beverages") filed against Japan in 1995. Both our starting databases assign the dispute to HS22 (beverages, spirits and vinegar). HS22 contains 144 HS10 items, of which (51%) are matched to NAICS 311 (food manufacturing), 47% are matched to NAICS 312 (beverage and tobacco product manufacturing) while a few items are mapped to NAICS 112 (animal production) and 325 (chemical manufacturing).

[34] Consider again DS11. Applying the procedure of steps 1–2 would match this dispute to NAICS 311 (food manufacturing). However, the text of the consultation request refers to "internal taxes imposed by Japan on certain alcoholic beverages pursuant to the Liquor Tax Law. The products in question are shochu and all other distilled spirits and liqueurs falling within HS heading 2208." We thus matched this dispute to NAICS 312 (beverage and tobacco product manufacturing).

[35] For example, DS444 ("Measures affecting the importation of goods") from 2012 involves a series of protectionist measures applying to *all* goods imported into Argentina.

strategy, so $c_V^{I*} = c_V^{C*} = a_V$. Using Eqs. (5), (8), and (9), the voter's utility after the incumbent plays N is

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

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.

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

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 that 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

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

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 Eqs. (6), (7), and (11), the voter's utility from a_V is

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

The utility of a_V' is

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

The difference in utility then takes the form

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

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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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 Eq. (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-3. Proof of Result3

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 Eqs. (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.

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

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

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

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 Eqs. (5), (8), and (9), the voter's utility from a_V is

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

The utility of a_V' is

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

The difference in utility then takes the form

$$u_V(N, \cdot, a'_V, \cdot) - u_V(N, \cdot, a_V, \cdot) = \left(\beta\left(\frac{p_{IC}-1}{2}\right) + \alpha\left(\frac{p_{IC}}{2}-1\right)\right)\Delta_{I|N}(a'_V, a_V).$$
(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 $\beta\left(\frac{p_{IC}-1}{2}\right) + \alpha\left(\frac{p_{IC}}{2}-1\right)$ in Eq. (A.2) 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 $\beta\left(\frac{p_{IC}-1}{2}\right) + \alpha\left(\frac{p_{IC}}{2}-1\right) < 0$. Consider an alternative strategy a'_V such that $\Delta_{I|N}(a'_V, a_V) < 0$ (e.g. IC). The previous two statements and Eq. (A.2) 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 $\beta\left(\frac{p_{IC}-1}{2}\right) + \alpha\left(\frac{p_{IC}}{2}-1\right) > 0$. Consider an alternative strategy a'_V such that $\Delta_{I|N}(a'_V, a_V) > 0$ (e.g. II). The previous two statements and Eq. (A.2) 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 Eq. (A.2) 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 Eq. (A.1), 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 $p_{IC} > 0$, $\beta\left(\frac{p_{IC}-1}{2}\right) + \alpha\left(\frac{p_{IC}}{2}-1\right) > 0$ That combined with $\Delta_{I|N}(a'_V, a_V) > 0$ and Eq. (A.2) 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 $p_{IC} > 0$, $\beta\left(\frac{p_{IC}-1}{2}\right) + \alpha\left(\frac{p_{IC}}{2}-1\right) \geq 0$. That combined with $\Delta_{I|N}(a'_V, a_V) \leq 0$ and Eq. (A.2) 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 Eq. (A.1), 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.

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