# Campaign Contributions for Free Trade

Salient and Non-salient Agendas*

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**Abstract**

Although protectionism became a salient issue in the 2016 presidential election campaign, both Republican and Democratic administrations have been silently promoting free trade for decades. We set up a two-party electoral competition model in a two-dimensional policy space with campaign contributions by a group (exporting/multinational firms) that is interested in promoting free trade, for which voters do not have positive sentiment. Assuming that voters are impressionable to campaign spending for/against candidates, we analyze the optimal contract between the interest group and the candidates on policy issues and campaign contributions. If voters' negative sentiment to free trade is not too strong, the interest group tends to contribute to both candidates to make free trade a nonsalient issue, and the candidates compete over the other (ideological) dimension only. If voters' negative sentiment to free trade is strong, the interest group tends to contribute to a more malleable candidate only.(*JEL Codes* C72, D72, F02, F13)

**Keywords:** electoral competition, campaign contribution, trade negotiation, GATT, preferential trade agreement, populism

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# 1 Introduction

Electoral competition among political parties (candidates) to select policies reflecting citizens' interests is the mechanism that is ubiquitously employed in democratic countries. Unfortunately, however, politicians as far back as from the ancient Athenians recognized that democracy has a fundamental weakness: there is no system to stop a party (or candidate) from attracting a large group of common citizens who are unfamiliar with an agenda by shutting off deliberation on the issues and instead appealing to their sentiments and emotions.

Most economists agree that free trade would improve efficiency and enhance growth, although it may generate winners and losers. Promoting free trade is desirable as long as it is accompanied by appropriate policies that redistribute gains from trade widely and across various groups. However, common citizens have negative sentiments against free trade. This is because they may not weigh the benefits of free trade as high as preventing the factory closings resulting from free trade policies. The benefits of free trade, such as cheaper and greater variety of consumption goods, are ubiquitous yet minor to everybody, while the news of someone losing a job in a factory close-down is shocking, even if the person is not very close to them. Such negative sentiment of free trade is emotional, and it can be overcome only by candidates' patiently educating voters during the policy debates.[1] Thus, there is always an opportunity for a candidate to try to win the election by advocating protectionism to appeal to common citizens' emotions. With this threat, the other candidate's policy is necessarily pulled towards protectionism. As a result, regardless of the candidates' policy preferences, they may be forced to denounce free trade.

However, for many decades, both Republican and Democratic administrations have been promoting free trade, especially after World War II: through multilateral General Agreements on Tariffs and Trade (GATT), and preferential trade agreements such as North American Free Trade Agreement (NAFTA), Trans-Pacific Partnership (TPP), and Transatlantic Trade and Investment Partnership (TTIP). Common citizens feared NAFTA, since it would open up the US market for Mexican goods produced using cheap labor. However, Bill Clinton made tremendous efforts to get approval from

[1] It is perhaps important that free trade promotion is accompanied by policies supporting the losers of free trade.

Congress to ratify NAFTA, which had been signed by George H. W. Bush.[2] TPP and TTIP have been pushed by Barack Obama. The US administrations have viewed promoting free trade as a positive sum game, supporting free trade irrespective of the parties they belong to.[3] As a result, protectionism or free trade has not been a salient issue in the debates by Democratic and Republican presidential candidates until the 2016 Presidential election.[4] The focus of the debates was placed elsewhere, avoiding the distraction of promoting free trade.

How could free trade have been a nonsalient issue in the presidential election if common citizens' sentiment is anti-free-trade?[5] In search for an explanation, we first ask who the main beneficiaries of free trade are. They are clearly exporting firms — if trade barriers by foreign countries are reduced, they can increase exports and profits tremendously. However, foreign countries have no reason to reduce their tariffs unilaterally for the US. They also want to protect their domestic firms. This was precisely the reason that the Reciprocal Trade Agreement Act (RTAA) was passed in 1934. In the early 1930s, high tariffs caused by the Smoot-Hawley Act contributed to the downward spiral of trade, as other countries retaliated against the United States. Passing RTAA, Congress effectively gave up control over US tariffs, authorizing President Franklin Roosevelt to enter into tariff agreements with foreign countries to reduce import duties in order to speed recovery

[2] In the 1992 Presidential election, neither Bush nor Clinton talked much about NAFTA, although a third party candidate, Ross Perot, denounced NAFTA strongly.

[3] Promoting free trade by applying the principle of reciprocity is politically desirable for national security and building world peace. The post-World War II promotion of free trade by the *General Agreement on Tariffs and Trade* and preferential trade agreements by the US is based on the view that broad international economic collaboration was necessary to avoid the "beggar-thy-neighbor" policies that followed World War I, which were thought to have led to the economic inequities and resulting resentments that contributed to the start of World War II (see Irwin 2012). Moreover, tariff wars can affect countries unevenly. Smaller countries are damaged by the tariff wars more, which can destabilize world peace. For the welfare analysis of tariff wars with recent data, see Ossa (2014).

[4] "Both Parties Used to Back Free Trade. Now They Bash It." *New York Times*, July 29, 2016.

[5] In this paper, we say that free trade is nonsalient if two candidates commit to similar trade policies: high levels of pro-free trade. Since their positions are similar in this dimension, free trade does not become the key issue in the election. We are not talking about a situation where the candidates are purposely leaving their positions ambiguous unlike in Alesina and Cukierman (1990), Glazer (1990), and Berliant and Konishi (2005).

from the Depression.[6] Irwin (2015) argues: "The RTAA explicitly linked foreign tariff reductions that were beneficial to exporters to lower tariff protection for producers competing against imports. This enabled exporters to organize and oppose high domestic tariffs because they want to secure lower foreign tariffs on their products." (Irwin, 2015, pp. 242) After World War II, the GATT broadened the tariff negotiation talks to a multilateral system under the "reciprocity" and "nondiscrimination" principles through the "most-favored-nation" (MFN) clause (Bagwell and Staiger, 1999).[7] RTAA and GATT helped to bolster the lobbying position of exporters in the political process, and expanding trade through tariff reductions increased the size of export industries and decreased the size of import-competing industries (Irwin, 2015). As long as negotiation tables with other countries are set up and a good negotiation team is appointed, exporting firms can lobby for lowering the tariff rates. Thus, exporting firms have incentives to make campaign contributions to both presidential candidates so that they keep the free trade/globalization issue nonsalient, whenever possible.

To describe the above mechanism, we set up a two-candidate (presidential) electoral competition model over two-dimensional issues: the ideological dimension and the "free trade" dimension in which both presidential candidates have positive optimal levels of free trade, while voters' sentiments are anti-free trade. We introduce another key player, the Interest Group (IG), the group of large corporates (mainly exporting and multinational firms), that can provide campaign contributions to candidates who would effectively enhance their likability by financing political advertisements.[8] We do not

[6] Anderson and Zanardi (2009) point out that this delegation of political power could also be explained by political pressure deflection — incumbent congressmen avoided revealing their preferences on trade policy in fear of opposing lobbies that could confer viability on a challenger sympathetic to their position.

[7] Bagwell and Staiger (1999) present a general theory of GATT with reciprocity and MFN to evaluate whether or not regional trade agreements would be good for achieving efficient multinational outcomes. Bagwell, Bown, and Staiger (2016) survey research on international trade agreements to date, concluding strong support to GATT (WTO).

[8] In the basic model, we do not consider campaign contributions by import competing firms (we will introduce them in Section 7). Protectionism can hurt even import competing industries since actual production of goods have been transfered to developing countries. Ford aborting its planned plant in Mexico after Donald Trump was elected as a new president may describe it. "*Ford Motors court Donald Trump by Scrapping a Planned Plant in Mexico,*" *Economist* January 5th, 2017. Likewise, even in agricultural sector, Iowa farmers are concerned about tariff war with Mexico. *"Why Iowans are so nervous about Trump's Imports Tax," The Des Moines Register* January 26th, 2017.

model the subsequent lobbying/trade negotiation stage explicitly: we simply assume that the IG correctly expects the outcome of trade negotiations.[9] The IG asks the candidates to commit to certain levels of free trade in return for campaign contributions. If both party candidates receive campaign contributions, the risk of electoral competition endangering free trade is removed, making free trade nonsalient. We will explore (i) when the interest group offers campaign contributions to both parties, one candidate, or none, (ii) whether or not the parties have incentives to accept the interest group's campaign contributions, and (iii) which candidate gets more campaign contributions when both parties accept the offers. To concentrate on this process, we abstract from subsequent lobbying activities in trade negotiations in this paper.

We first characterize voting equilibrium with refinement (we call it *political equilibrium*) in every subgame under different scenarios and calculate the subgame perfect equilibrium payoffs in our model. Although a candidate's expected payoff function is nonconcave inherent to probabilistic voting models, calculating numerical solutions for his/her optimal strategy is not difficult in our simple setting. There are four main parameters in the numerical analysis: each candidate's ideal level of free trade (the policy bliss point), how likely it is for each candidate to win (*ex ante* bias on the winning probabilities), and how sensitive voters, and candidates, are on the issue of free trade. If candidates' ideal levels of free trade are not high and voters are not too sensitive in the free trade dimension, then it is optimal for IG to make offers to both candidates and make the free trade dimension *nonsalient*. In contrast, if both candidates prefer high levels of free trade, then IG makes no offer. If one candidate supports free trade avidly yet has a similar chance to win, IG could choose to approach only one candidate — that is, free trade becomes a *salient* issue. In this case, IG *always* asks the less pro-free trade candidate to promote more free trade. This is because the more pro-free trade candidate tends to choose a higher level of free trade especially when his/her opponent commits to a high level of free trade.[10] All things equal, if one candidate has a better chance to win *ex ante*, IG contributes more to the candidate. If one candidate is more sensitive (inflexible) on the issues of free trade, then IG

[9] Kim (2017) analyzes this lobbying process by applying the protection-for-sale model from Grossman and Helpman (1994). See the next subsection.

[10] Given the past record, it is not clear whether Republican or Democratic candidates are more for free trade. Although Democrats have support from unions and environmentalists, each candidate's position for free trade is perhaps more candidate-specific.

contributes more to the other candidate.

Recently, we observe an increasing trend of negative sentiments toward globalism in the US and other Western countries. Autor, Dorn, and Hanson (2013) report that the rise of competition with China and other developing countries explains 25% of decline in the US manufacturing employment between 1990 and 2007.[11] In the 2016 US presidential campaign, anti-globalism/protectionism became one of the most salient issues, and industries' contributions to the two party nominees showed quite different patterns relative to prior presidential election years. In prior presidential election years (Tables 2 and 3), for almost all sectors/industries, the top two recipients of campaign contributions are most likely to be the Republican and Democratic party nominees, but in the 2016 presidential election race, Donald Trump received significantly lower contributions from industries that have interests in trade agreements (Table 1). These observations make it interesting to conduct a comparative static analysis of the increase in voters' sensitivity on trade issues.[12] In our model, when voters are less sensitive to issues related to free trade and candidates are symmetric, IG contributes to both candidates. As the voters' sensitivity increases, IG contributes to only one candidate, then to none. In particular, if one candidate is flexible on the issues while the other is not, then IG makes contributions only to the former, and the latter candidate advocates protectionism policies to get popular votes. This pattern can explain what happened in the 2016 presidential race, and helps to explain why issues related to protectionism and globalism becoming more and more salient.

The rest of Section 1 reviews related literature. We introduce the model in Section 2. We model this political contribution game sequentially: IG first decides its offer to candidates and then candidates decide to commit or not. After these decisions, the valence uncertainty is realized and the two candidates compete for victory given the decisions made before. In Section 3, by identifying the critical voters, we define and characterize the *political equilibrium*. In Section 4, we calculate political equilibrium strategies in each scenario. We analyze party candidates' decisions on whether or not to cooperate with IG in Section 5, and discuss the optimal IG contract under different circumstances via numerical analysis in Section 6. We introduce a

[11] Bown (2016) argues that the other part of lost jobs were caused by automation, switching to cleaner energy, and the reduction of construction jobs by the Lehman shock.

[12] See Appendix C for interesting observations in the 2016 presidential race.

possibility of contributions from import-competing firms or unions to support a candidate if he/she does not take contributions from IG in Section 7. Section 8 concludes.

## 1.1 Related Literature

Reciprocity is one of the key principles of international negotiations in tariff reductions in GATT and preferential trade agreements (Bagwell and Staiger 1999). For exporting firms to enjoy foreign countries' low tariff rates, the home country also needs to reduce its tariff rates. Otherwise, the negotiation will not be agreeable. In a recent paper, Kim (2017) finds that the variation in US applied tariff rates arises within industry, and explains how product differentiation leads to firm-level lobbying in tariff reduction. Using a quasi-linear product differentiation model by Melitz and Ottaviano (2008), he analyzes reciprocity in two-country trade negotiation (Bagwell and Staiger, 1999). Kim (2017) shows that productive exporting firms are more likely to lobby to reduce tariffs than less productive firms when products are more differentiated, and he provides empirical evidence for his predictions. He obtains this result by employing the protection-for-sale model in Grossman and Helpman (1994) as a proxy of the tariff negotiation process between two countries, assuming that the countries are symmetric.

Kim's paper shows that as long as countries are on negotiation tables for trade deals, productive exporting firms can lobby hard for lower tariffs for their products, gaining access to large foreign markets.[13] However, the presence of international negotiation tables is not always assured, as under the tariff wars in the early 1930s. Without a negotiation table, exporting firms have no way to lobby for lower tariff rates levied by foreign countries. GATT provided this service with the principles of reciprocity and most favored nations clause (MFN), and preferential trade agreements such as NAFTA, TPP, and TTIP provide additional negotiation tables.[14] Thus, it is indeed in exporting firms' interests to have a president who is willing to commit to promoting free trade.

[13] Hansen and Mitchell (2000) investigate the determinants of different corporate political activities such as campaign contributions (through PACs) and lobbying expenses. Many firms with PACs have a lobbying presence in Washington.

[14] Although GATT's article 24 allows regional trade agreements as exceptions of the MFN principle, Bagwell and Staiger (1999) and Bagwell, Bown, and Staiger (2016) are more cautious about regional trade agreements.

Our framework is built on an influential electoral competition model with interest groups by Grossman and Helpman (1996), but there are a number of differences. Following Baron (1994), Grossman and Helpman (1996) assume that there are informed and uninformed voters, and that uninformed voters' voting behaviors are affected by campaign contributions (*impressionable voters*). Although Grossman and Helpman (1996) allow general policy space with multiple lobbies, our model restricts the attention to a special policy space with two dimensions — (a) a free-trade dimension in which candidates and the interest group agree to promote (at least up to some levels) while voter sentiment disagrees, and (b) the standard Hotelling-type ideological dimension. Grossman and Helpman (1996) assume that lobbies influence the parties' policy platforms through contribution functions, while we simply use take-it-or-leave-it offers instead. They analyze one lobby case extensively, and show that the lobby contributes more to a candidate who has a better chance to win, though it makes contributions to both candidates.[15] We also mainly focus on one lobbying (exporting firms) case, and derive the same result despite the differences in setup.

In the voting stage, we need to use a two-dimensional voter space. It is hard to assure the existence of simple majority voting equilibrium of multiple dimensional voter spaces even with a probabilistic voting model, and it is even harder to establish policy divergent equilibria (Wittman 1983, Lindbeck and Weibull 1989, Roemer 2001, and Krasa and Polborn 2012, 2014).[16] We assume that voters differ in their intensities of distaste for free trade relative to the difference in their ideological positions. Although we need to adopt a simplifying assumption ("symmetry" in voter distribution), we manage to establish a reasonably tractable electoral competition model with both office- and policy-motivated candidates with a natural equilibrium definition (named political equilibrium), applying the result in Davis, deGroot, and Hinch (1972) in a creative manner to the space of voter preferences. Introducing an additional random valence term, committing to a policy becomes costly for each party candidate — there are cases a candidate loses by committing to a policy where he/she could have won if he/she did not commit. Thus, IG must provide enough campaign contributions to compensate

[15] Grossman and Helpman (1996) analyze the multi-lobby case by applying the insights developed in a single lobby case.

[16] For the probabilistic voting model, policy convergence is a more common feature. Krasa and Polborn (2012) characterize the domain of voter preference which is sufficient and necessary for policy convergence in a parametrized probabilistic voting model.

for this. Moreover, it encourages a candidate to take the deal if its opponent party candidate takes campaign contributions. Candidates can choose whether or not to commit to free trade policies by taking political contributions, and the decisions must be *incentive compatible*. Although the timing of valence realization may not be ideal, our setup is perhaps the easiest way to get both policy divergence and existence in multidimensional voter space.

There is a large body of literature about campaign spending which can be roughly divided into two approaches. The first one assumes that the contribution "impresses" voters directly. In addition to Grossman and Helpman (1996), an incomplete list of this branch includes Meirowitz (2008), Ashworth and Bueno de Mesquita (2009), and Pastine and Pastine (2012). The second approach considers *informative* campaign spending. For example, Austen-Smith (1987) considers contributions as advertising efforts which can reduce uncertainty when voters observe candidates' proposed policies. Prat (2002a and 2002b) models contributions as a signal of unobservable candidate valences. Coate (2004) considers campaign spending as an informative advertisement about policy positions. Our paper contributes to the first branch of this literature.

# 2 The Model

There are three types of players: the interest group, two party candidates $L$ and $R$, and the voters.

We assume that voters care about *ideological* policy, *free trade policy*, and *campaign money* spent. Formally, suppose that $\hat{p} \in \mathcal{P} \subseteq \mathbb{R}$ stands for the ideological policy, $\hat{a} \in \mathcal{A} \subseteq \mathbb{R}_+$ for free trade policy, $\hat{C}$ for the campaign money spent, and a preference parameter $\theta$ stands for the *salience* of free trade policy. Here we follow Grossman and Helpman (1996) to assume that voters are *impressionable*. Each voter is characterized by his/her bliss point $p \in \mathcal{P}$ in ideological space and her salience parameter $\theta \in [\underline{\theta}, \bar{\theta}] \equiv \Theta$ for free trade policy. The voters are assumed to prefer less free trade: the lower $\hat{a}$ is the better. Even though there are obviously voters who are executives or entrepreneurs, we assume they make up negligibly small fraction of voters. We consider a continuum of (worker-)voters distributed on the type space $\mathcal{T} = \mathcal{P} \times \Theta$ with density function $f$. A $(p, \theta)$-type voter's payoff when policy is $(\hat{p}, \hat{a}, \hat{C})$ is represented by

$$-(\hat{p} - p)^2 - \theta\hat{a} + \hat{C}$$

There is a single Interest Group (IG) that cares exclusively about free trade policy $\hat{a} \in \mathcal{A}$, and prefers higher levels of free trade. We assume that they have identical preferences. IG proposes $(a_L, C_L)$ and $(a_R, C_R)$ to candidates $L$ and $R$, respectively, where $a_j \in \mathcal{A}$ is the free trade policy and $C_j \geq 0$ is the political contribution contingent to candidate $j$'s commitment to implementing policy $a_j$ ($C_j$ will be spent as campaign expenses in the election). We denote $(a_j, C_j) = (\emptyset, 0)$ if IG decides not to make the offer to candidate $j$. Candidate $j$ needs to decide whether to take IG's offer $(a_j, C_j)$ or not. If candidate $j$ chooses *not* to take the offer, she can choose $p_j$ and $a_j$ freely, but needs to run her campaign without IG's contribution. In this case, we normalize the campaign spending to 0. On the other hand, if she chooses to take the offer, she can only compete with the $p_j$ (since $a_j$ is committed), but with $C_j$ as his covered campaign expenses.[17]

We assume that there is uncertainty in election outcomes by introducing a valence term for candidate $R$. For the sake of simplicity of analysis, we assume that the valence term $\epsilon$ follows a uniform distribution with a wide support $\epsilon \sim U[b-\bar{\epsilon}, b+\bar{\epsilon}]$, where $\bar{\epsilon} > 0$ is large enough for both candidates to have a chance to win the election whichever policy bundle they choose ($\bar{\epsilon}$ will be discussed more in detail later in Assumption 2), and $b \in \mathbb{R}$ is the average of $\epsilon$, which is voters' bias toward candidate $R$. *In the following, we will set* $b = 0$, *except for one part where we analyze the effect of bias on the result.* A $(p, \theta)$-type voter evaluates $R$ by

$$u_R(p_R; p, \theta) = -\left(p_R - p\right)^2 - \theta a_R + C_R + \epsilon,$$

and candidate $L$ by

$$u_L(p_L; p, \theta) = -\left(p_L - p\right)^2 - \theta a_L + C_L.$$

If candidate $j$ wins the election, he/she gets the utility

$$W_j = Q - \left(p_j - \bar{p}_j\right)^2 - \beta_j \left|a_j - \bar{a}_j\right|,$$

where $(\bar{p}_j, \bar{a}_j) \in \mathcal{P} \times \mathcal{A}$ is the policy bliss point of candidate $j$, $Q > 0$ is a payoff from winning the office, and $\beta_j$ is the intensity of candidate $j$'s free-

[17] If $(a_j, C_j) = (\emptyset, 0)$, there is no offer to commit. Therefore, $j$ can freely choose $p_j$ and $a_j$ in the election as if it rejects the empty offer.

trade preference.[18] We assume that $Q > \bar{p}_j^2 + \beta_j \bar{a}_j$, i.e., even if $j$ chooses policy vector $(0,0)$, $j$ still receives a positive payoff. If the candidate loses, he/she gets 0 as his/her payoff. We assume $1 = \beta_R \leq \beta_L$.

The interest group IG proposes the offer $(a_L, a_R, C_L, C_R)$ to candidates. If candidate $j$ accepts the offer, the free trade policy $a_j$ has to be respected. However, when proposing this offer to both candidates, IG is uncertain about the valence bias $\epsilon$. Therefore, when IG designs its proposal, it maximizes the *expected* payoff

$$V = \Pi_L \times u(a_L) + \Pi_R \times u(a_R) - C_L - C_R$$

where $u(\cdot)$ is a monotonic and strictly concave vNM utility, and $\Pi_j$ is the probability that candidate $j$ wins for $j = L, R$.

The sequence of moves is as follows:

Stage 1 : The IG proposes $(a_L, a_R, C_L, C_R)$ to candidates (no offer to $j$ is $(a_j, C_j) = (\emptyset, 0)$).

Stage 2 : Candidates simultaneously decide whether to take the offer or not.

Stage 3 : Nature plays and $\epsilon$ realizes.

Stage 4 : If candidate $j$ accepts the offer in the Stage 2, then it chooses $p_j \in \mathcal{P}$ under fixed $a_j$ and $C_j$. Otherwise, it chooses $(p_j, a_j) \in \mathcal{P} \times \mathcal{A}$ under $C_j = 0$. The two candidates choose their policies simultaneously.

Stage 5 : Every voter votes sincerely according to their preferences and all payoffs realize.

The equilibrium concept adopted is the subgame perfect Nash equilibrium (SPNE), though we will refine Stage 4 equilibrium in the spirit of weakly undominated equilibrium. We solve the political game by a backward induction.

[18] The following analysis applies to more general cases, in which $W_j = Q - (|p_j - \bar{p}_j|)^2 - \varphi(|a_j - \bar{a}_j|)$ and $u_j = -(|p_j - \bar{p}|)^2 - \theta\phi(a_j) + C_j$ for any strictly increasing and convex $\varphi$ and $\phi$ functions, including quadratic functions (geometric utility case). We adopt the quasi-linear functional form for simplicity of calculations.

# 3 The Voting Stage

During the voting stage, voters compare two candidates by $(p_j, a_j, C_j)_{j=L,R}$ given the realized valence bias. That is, a $(p, \theta)$-type voter votes for $L$ if and only if

$$-(p_L - p)^2 - \theta a_L + C_L \geq -(p_R - p)^2 - \theta a_R + C_R + \epsilon.$$

This is equivalent to

$$p \leq \frac{\theta(a_R - a_L) - (C_R - C_L) - \epsilon}{2(p_R - p_L)} + \frac{p_L + p_R}{2} = I(\theta; (p_j, a_j, C_j)_{j=L,R}, \epsilon)$$

when $p_L < p_R$.[19] We refer to $I(\theta; (p_j, a_j, C_j)_{j=L,R}, \epsilon)$ as the set of *indifferent voters.* Notice that $I(\theta; (p_j, a_j, C_j)_{j=L,R}, \epsilon)$ is a line in $\mathcal{T}$ with slope $\frac{a_R - a_L}{2(p_R - p_L)}$ when $p_L < p_R$. Intuitively, since all voters prefer smaller $a$, for those voters with higher $\theta$, the indifferent voters must be inclined to $R$ on the ideological spectrum when $a_R > a_L$. As a result, the line composed of *indifferent voters* is upward (downward) sloping if and only if $a_R > (<) a_L$.

Using the idea from Davis, deGroot, and Hinch (1972), we assume the following voter distribution.

**Assumption 1.** *Voters are distributed over $\mathcal{T} = \mathcal{P} \times \Theta$ with continuous density function $f : \mathcal{P} \times \Theta \to \mathbb{R}_+$ and $f(0, \theta^m) > 0$ such that for all $e = (e_1, e_2)$ with $\sqrt{e_1^2 + e_2^2} = 1$, and all $t > 0$, $f((0, \theta^m) + te) = f((0, \theta^m) - te)$ holds, where $\theta^m = \frac{1}{2}\left(\underline{\theta} + \bar{\theta}\right)$.*

That is, voter distribution is symmetric at voter $(0, \theta^m)$, who will play the role of the **median voter** (see Figure 1). Condition $f(0, \theta^m) > 0$ requires that there is a positive measure of voter population around the median voter ($f$ is continuous). With a valence realization $\epsilon$, let $S_i\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right)$ be the vote share candidate $i$ receives under the candidates' policy vectors $(p_j, a_j, C_j)_{j=L,R}$. Depending on line $I(\theta; (p_j, a_j, C_j)_{j=L,R}, \epsilon)$ relative to the median voter, we can see which candidate wins the election (see Figure 1).

[**Figure 1 here**]

It is straightforward that if $S_L > S_R$ ($S_L < S_R$), candidate $L$ ($R$) wins the election. In fact, we show that the voter type $(0, \theta^m)$ is critical in our

[19] Appendix A collects all formulas in different situations of policy competition outcomes.

model.[20] Notice that the $(0, \theta^m)$-type prefers $L$ if

$$\theta^m (a_R - a_L) + \left(p_R^2 - p_L^2\right) - (C_R - C_L) > \epsilon.$$

Let

$$\epsilon^m((p_j, a_j, C_j)_{j=L,R}) \equiv \theta^m(a_R - a_L) - (C_R - C_L) + \left(p_R^2 - p_L^2\right),$$

which is a critical valence level. As long as the policies chosen by the two candidates are not identical, voter type $(0, \theta^m)$ indeed acts as if she is the median voter.

**Lemma 1.** *For all policy combinations $(p_j, a_j, C_j)_{j=L,R}$, we have*

$$S_L((p_j, a_j, C_j)_{j=L,R}, \epsilon^m((p_j, a_j, C_j)_{j=L,R})) = S_R\left((p_j, a_j, C_j)_{j=L,R}, \epsilon^m((p_j, a_j, C_j)_{j=L,R})\right) = \frac{1}{2}.$$

*If $\epsilon < \epsilon^m((p_j, a_j, C_j)_{j=L,R})$, the median voter $(0, \theta^m)$ prefers candidate $L$ and candidate $L$ wins, while if $\epsilon > \epsilon^m((p_j, a_j, C_j)_{j=L,R})$, the median voter $(0, \theta^m)$ prefers candidate $R$ and candidate $R$ wins.*

This key lemma implies that to win the election, what each candidate can do is satisfy the median voter as much as possible. Given this, the following lemma is a straightforward. We call a candidate **winnable given a valence realization** $\epsilon$ if there always exists a strategy for him to win the election given the other candidate's strategy and $\epsilon$.

**Lemma 2.** *The election is winnable with certainty for candidate $L$ ($R$) given a valence realization $\epsilon$, if (1) $\epsilon^m(0, 0, 0, 0, 0, 0) > (<)\epsilon$ when neither $L$ nor $R$ accepted IG's offer, (2) $\epsilon^m(0, a_L, C_L, 0, 0, 0) > (<)\epsilon$ when only $L$ accepted IG's offer, (3) $\epsilon^m(0, 0, 0, 0, a_R, C_R) > (<)\epsilon$ when only $R$ accepted IG's offer, (4) $\epsilon^m(0, a_L, C_L, 0, a_R, C_R) > (<)\epsilon$ when both $L$ and $R$ accepted IG's offer.*

Thus, in each case, we can find which candidate is winnable with certainty, unless $\epsilon$ is exactly the same as the critical $\epsilon^m$, which is a measure zero event. Still, the winnable candidate with certainty might want to choose a policy combination among those that allow him/her to win. That is, the winnable

[20] A similar approach is proposed in Davis, DeGroot, and Hinich (1972). However, in our model, preferences of voters are not quadratic and not homogeneous.

candidate would pick the payoff-maximizing policy combination (the closest to his/her bliss point) given that its vote-share exceeds 50%. Following the standard convention in contract theory, we assume that *if the vote shares are 50% and 50%, then the winnable candidate wins the election with certainty* (the tie-breaking rule). Thus, the winnable candidate would try to pull the policy position towards his/her bliss point as much as possible, up to the level where the vote shares are exactly 50% and 50%, unless he/she can win by proposing his/her own bliss point. From now on, we call a winnable candidate with certainty a **winning candidate** and the other candidate a **losing candidate** under $\epsilon$, ignoring the measure zero event of complete tie cases. This motivates the following equilibrium concept in stage 4 as a variation of Nash equilibrium.

**Definition 1.** *Let candidate $j$ be the winning candidate. Given both candidates' decisions to accept offers or not, a* ***political equilibrium*** *is a policy profile such that (i) candidate $j$ maximizes his/her payoff keeping his/her vote share no lower than 50% given candidate $i$'s policy combination, and (ii) candidate $i$ maximizes his/her vote share given candidate $j$'s policy combination.*

The following proposition characterizes the political equilibrium.

**Proposition 1.** *In every political equilibrium, the winning candidate $j$ chooses his/her policy $(p_j, a_j)$ that maximizes $W_j = Q-(p_j - \bar{p}_j)^2 - \beta_j |a_j - \bar{a}_j|$ subject to $S_j \geq \frac{1}{2}$ and a constraint on $a_j$ if candidate $j$ accepted IG's offer. Moreover, when $S_j = S_i = \frac{1}{2}$ in equilibrium, the losing candidate $i$ chooses $(0, a_i^*)$ where $a_i^* = 0$ if candidate $i$ did not accept the IG's offer, while $a_i^* = a_i$ if he/she accepted the IG's offer by committing $a_i$.*[21]

# 4 The Policy Competition

There are three cases in this stage: (1) both candidates accept the IG's offers, (2) only one candidate accepts an offer, and (3) neither candidate accepts

[21] If the winning candidate wins by more than 50% in an equilibrium, the vote-share-maximizing strategy of the losing candidate may not be $(0, a_i^*)$. However, in those equilibria, the winning candidate will simply propose his/her own bliss point. Therefore, the losing candidate's strategy is irrelevant to our analysis. We will detail this argument in Section 5.

an offer. In this section, we analyze what the equilibrium policy proposals are after observing $\epsilon$. In order to give both candidates a chance to win for any policy combination *ex ante*, we assume that the tail of the distribution is long enough.

**Assumption 2.** *Let* $a^* \equiv \arg\max_a (u(a) - \theta^m a)$*, which is the maximum amount of contributions IG can make. For all* $\bar{a}_L, \bar{a}_R \in \mathcal{A}$*, and all* $\bar{p}_j \in \mathcal{P}$*, parameters* $b$*,* $\bar{\epsilon}$*, and* $Q$ *satisfy:*

1. *The valence term* $\epsilon$ *follows a uniform distribution with a wide support* $\epsilon \sim U[b - \bar{\epsilon}, b + \bar{\epsilon}]$ *such that*

$$\min\{|b - \bar{\epsilon}|, |b + \bar{\epsilon}|\} > \max_{j \in \{L,R\}} (u(a^*) - \theta^m a^* + \bar{p}_j^2 + \theta^m \bar{a}_j).$$

2. $a^* \geq \bar{a}_j$ *and* $Q > \beta_j \left(a^* - \bar{a}_j + \frac{2\bar{\epsilon}}{\theta^m}\right)$ *for all* $j \in \{L, R\}$.

Note that $u(a^*)$ is the upper-bound of total contribution for IG, and the first part of the assumption guarantees that neither candidate can win with certainty even when one candidate rejects to commit. The second part means that the winning payoff is large so that neither of the candidates will accept an offer with 0 political contribution, even in the case $a_j = \bar{a}_j$.[22]

In order to see how policy competition works in our model, let's focus on the case where only one candidate accepts an offer. *All systematic analysis of other possible cases is collected in Appendix A.*

Let us consider the case where candidate $R$ commits to $a_R$ and receives $C_R$. Lemma 2 tells us that candidate $L$ $(R)$ wins if $\epsilon^m(0,0,0,0,a_R,C_R) > (<)\epsilon$ holds. At $\epsilon = \epsilon^m(0,0,0,0,a_R,C_R)$, the two candidates have equal chance to win. Once $\epsilon$ exceeds $\epsilon^m(0,0,0,0,a_R,C_R)$, candidate $R$ wins with certainty, and candidate $L$ chooses $(p_L^*, a_L^*) = (0,0)$ by Proposition 1. Since candidate $R$ solves

$$\max_{p_R} Q - (p_R - \bar{p}_R)^2 - \beta_R |\bar{a}_R - a_R| \tag{1}$$
$$\text{subject to } \epsilon - \epsilon^m(0,0,0,p_R,a_R,C_R) = \epsilon - \theta^m a_R - p_R^2 + C_R = 0$$

[22] This means that the winning payoff is so large that, whenever IG asks for a candidate to commit to some trade policy other than the status quo, the candidate needs some political contributions to compensate for the loss in expected payoff. See the proof of Lemma 4 in Appendix B.

Thus, candidate $R$'s the best response, $p_R^* = \sqrt{-\theta^m a_R + C_R + \epsilon}$, increases as $\epsilon$ increases.

The second case is that candidate $L$ is the winning candidate. By Lemma 2, $L$ is winnable when $\epsilon^m(0,0,0,0,a_R,C_R) > \epsilon$. Since candidate $R$ is losing, $p_R^* = 0$ holds, and the political equilibrium is found by solving the following maximization problem ($\bar{a}_L \leq a_L$ must hold):

$$\max_{p_L,a_L} Q - (p_L - \bar{p}_L)^2 - \beta_L(\bar{a}_L - a_L) \tag{2}$$

$$\text{subject to } \epsilon^m(p_L,a_L,0,0,a_R,C_R) - \epsilon = \theta^m(a_R - a_L) - p_L^2 - C_R - \epsilon = 0$$

The solution to this problem is straightforward. Since the utility is quasi-linear, candidate $L$'s best response curve is kinked twice: as $\epsilon$ goes down from $\epsilon^m(0,0,0,0,a_R,C_R)$, $L$ first chooses to polarize in ideology (see Figure 2). Once tangency between the median voter's indifference curve and candidate $L$'s indifference curve has been achieved, then $L$ starts to propose more free trade when the advantage is moderate as $\epsilon$ goes down. Next, once $a_L$ reaches $\bar{a}_L$, $L$ again polarizes his/her proposed ideology $p_L$ to his/her ideological bliss point $\bar{p}_L$ as $\epsilon$ further goes down. Finally, as $(\bar{p}_L, \bar{a}_L)$ is reached by this process, the best response stays as is, since it is the candidate's bliss point. Formally, candidate $L$'s best response $(p_{L,NA}^*, a_{L,NA}^*)$ is described as:

$$\begin{cases} (-\sqrt{-\epsilon - C_R + \theta^m a_R}, 0) & \text{if } \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0,a_R,C_R\right) \\ & < \epsilon \leq \epsilon^m(0,0,0,0,a_R,C_R) \\ \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \frac{-\epsilon - C_R - \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L\right)^2 + \theta^m a_R}{\theta^m}\right) & \text{if } \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right) \\ & \leq \epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,a_R,C_R\right) \\ (-\sqrt{-\epsilon - C_R + \theta^m(a_R - \bar{a}_L)}, \bar{a}_L) & \text{if } \epsilon^m(\bar{p}_L, \bar{a}_L, 0,0,a_R,C_R) \\ & \leq \epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0,0,a_R,C_R\right) \\ (\bar{p}_L, \bar{a}_L) & \text{if } \epsilon \leq \epsilon^m(\bar{p}_L, \bar{a}_L, 0,0,a_R,C_R) \end{cases}$$

In contrast, if neither candidate accepts the offer, then $(a_R, C_R) = (0,0)$ holds as well. Thus, the critical epsilon becomes $\epsilon^m(0,0,0,0,0,0)$, and both parties have a kinked best response (Figure 3). Notice the difference between Figures 2 and 3 is the vertical segment of $R$'s best response only. The derivations of the optimal policies in the above and other cases are detailed in Appendix A.

**[Figures 2 and 3 here]**

# 5 Incentive Compatibility and The Optimal Contract

## 5.1 Both Candidates Receive Contributions

At the time the offer is being made, the valence bias has not been realized. Therefore, given the offer $(a_i, a_j, C_i, C_j)$, candidate $i$ only accepts the offer in the situation where he can be *ex ante* weakly improved in the subsequent subgame. The candidate's expected utility can be calculated by integrating his/her utility along the best response path for different values of $\epsilon$. Let $V_{j,s}$ denote the expected utility of candidate $j$ if the decision in Stage 3 is $s = \{AA, NA, AN, NN\}$, where $A$ stands for acceptance and $N$ for rejection, and the first character is $L$'s decision and the second is for $R$. Notice that, with quasi-linear utilities together with uniformly distributed valence with a wide support, disutilities from ideological differences cancel out in calculating a candidate's incentive compatibility constraint of accepting an offer. (Recall Figures 2 and 3: the difference for candidate $R$ is just a vertical segment due to uniform distribution.)

Therefore, the incentive constraint can be written in a simple form thanks to quasi-linear utility and uniform valence distribution.[23]

**Lemma 3.** *Suppose that IG makes offers to candidates L and R. Candidate L accepts the offer given that candidate R accepts the offer if*

$$\begin{aligned} &V_{L,AA} - V_{L,NA} = \\ &\frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_L + C_L)Q - (\bar{\epsilon} + \theta^m(a_R - a_L) - (C_R - C_L))\beta_L|a_L - \bar{a}_L| \\ &\qquad +\theta^m \bar{a}_L \beta_L \left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2}\right)\Big] \geq 0, \end{aligned} \tag{3}$$

[23] Our method should work perfectly for general vNM utility functions and for a more general valence distribution, but it would complicate numerical calculations without the above property.

*and candidate R accepts the offer given that candidate L accepts the offer if*

$$\begin{aligned} &V_{R,AA} - V_{R,AN} = \\ &\frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_R + C_R)Q - (\bar{\epsilon} - \theta^m(a_R - a_L) + (C_R - C_L))|a_R - \bar{a}_R| \\ &\qquad + \theta^m \bar{a}_R\left(\frac{\bar{p}_R^2}{1+\theta^m} + \frac{\bar{a}_R}{2}\right)\Big] \geq 0. \end{aligned} \tag{4}$$

For IG, he maximizes his payoff

$$\begin{aligned} V_{IG,AA} &\equiv \Pi_L u(a_L) + (1-\Pi_L)u(a_R) - C_L - C_R \\ &= \frac{1}{2\bar{\epsilon}}\Big[\big(\theta^m(a_R - a_L) - (C_R - C_L) + \bar{\epsilon}\big)u(a_L) \\ &+ \big(\bar{\epsilon} - \theta^m(a_R - a_L) + (C_R - C_L)\big)u(a_R)\Big] - C_L - C_R \end{aligned} \tag{5}$$

by designing $(a_L, a_R, C_L, C_R)$ given (3) and (4) are satisfied. That is,

$$V^*_{IG,AA} \equiv \max_{a_L, a_R, C_L, C_R} V_{IG,AA} \text{ subject to (3) and (4)} \tag{6}$$

Note that two incentive conditions are nonconvex in nature. Thus, even if $\bar{a}_L = \bar{a}_R$ and $\bar{p}_L = -\bar{p}_R$, it does not necessarily mean that the optimal solution is symmetric. Therefore, despite the simplistic appearance of the maximization problem, we must rely on numerical analysis to see the properties of the solutions. The following technical lemma assures that both candidates' incentive compatibility constraints are binding in all optimal offers they both accept.

**Lemma 4.** *Suppose that IG makes offers to both candidates, and that they accept the offers. At the optimum, both* (3) *and* (4) *are binding.*

## 5.2 One Candidate Receives Contribution

Now, we turn to the case where only one candidate receives a contribution from IG. It may be because it is too expensive for IG to contribute to both candidates, or because it is not necessary to offer to one of candidates (say, $\bar{a}_j$ is very high). As in the previous subsection, $L$ accepts the offer only if he is *weakly* improved by committing to the contract *given R rejecting the offer.*[24] Therefore, similar to Lemma 3, we have:

[24] The cases of $R$ not being approached or being offered an empty contract are identical.

**Lemma 5.** *Suppose that IG makes an offer to candidate L only. Candidate L accepts the offer if*

$$
\begin{aligned}
& V_{L,AN} - V_{L,NN} \\
& = \frac{1}{2\bar{\epsilon}} \Big[ \left(-\theta^m a_L + C_L\right) Q - \left(\bar{\epsilon} - \theta^m a_L + C_L\right) \beta_L \left|a_L - \bar{a}_L\right| \\
& + \theta^m \bar{a}_L \beta_L \left( \frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2} \right) \Big] \geq 0
\end{aligned} \tag{7}
$$

*Similarly, suppose that IG makes an offer to candidate R only. Candidate R accepts the offer if*

$$
\begin{aligned}
& V_{R,NA} - V_{R,NN} \\
& = \frac{1}{2\bar{\epsilon}} \Big[ \left(-\theta^m a_R + C_R\right) Q - \left(\bar{\epsilon} - \theta^m a_R + C_R\right) \left|a_R - \bar{a}_R\right| \\
& + \theta^m \bar{a}_R \left( \frac{\bar{p}_R^2}{1 + \theta^m} + \frac{\bar{a}_R}{2} \right) \Big] \geq 0
\end{aligned} \tag{8}
$$

The IG's expected payoff when candidate $L$ accepts the offer (while candidate $R$ receives no offer) is

$$
\begin{aligned}
V_{IG,AN} = & \frac{1}{2\bar{\epsilon}} \left[ \int_0^{\theta^m \bar{a}_R} u\left(\frac{a}{\theta^m}\right) da + \left( \bar{\epsilon} - \theta^m \left(\bar{a}_R - a_L\right) - C_L - \left( \frac{\theta^m \bar{p}_R}{1+\theta^m} \right)^2 \right) u(\bar{a}_R) \right. \\
& \left. + \left(\bar{\epsilon} - \theta^m a_L + C_L\right) u(a_L) \right] - C_L
\end{aligned}
$$

Thus, the IG's maximization problem when only candidate $L$ receives an offer is formulated as

$$
V^*_{IG,AN} \equiv \max_{a_L, C_L} V_{IG,AN} \text{ subject to (7)}
$$

Similarly, the IG's maximization problem when only candidate $R$ receives an offer is formulated as

$$
\begin{aligned}
V^*_{IG,NA} \equiv & \max_{a_R, C_R} \frac{1}{2\bar{\epsilon}} \left[ \int_0^{\theta^m \bar{a}_L} u\left(\frac{a}{\theta^m}\right) da + \left( \bar{\epsilon} - \theta^m \left(\bar{a}_L - a_R\right) - C_R - \left( \frac{\theta^m \bar{p}_L}{\beta_L + \theta^m} \right)^2 \right) u(\bar{a}_L) \right. \\
& \left. + \left(\bar{\epsilon} - \theta^m a_R + C_R\right) u(a_R) \right] - C_R \\
& \text{subject to (8)}
\end{aligned}
$$

### 5.3 No Candidate Receives Contribution

In this case, we do not need to consider incentive constraints. Therefore, the candidates' election strategies are described in Proposition 4 in Appendix A.

As a result, the IG's expected payoff when no candidate accepts the offer is

$$V_{IG,NN} = \frac{1}{2\bar{\epsilon}} \left[ \int_0^{\theta^m \bar{a}_L} u\left(\frac{a}{\theta^m}\right) da + \int_0^{\theta^m \bar{a}_R} u\left(\frac{a}{\theta^m}\right) da \right. \\ \left. + \left(\bar{\epsilon} - \theta^m \bar{a}_L - \left(\frac{\theta^m \bar{p}_L}{\beta_L + \theta^m}\right)^2\right) u(\bar{a}_L) + \left(\bar{\epsilon} - \theta^m \bar{a}_R - \left(\frac{\theta^m \bar{p}_R}{1 + \theta^m}\right)^2\right) u(\bar{a}_R) \right] \tag{9}$$

### 5.4 Interest Group's Optimization

With all the values previously defined, the IG makes an offer to both candidates if $V^*_{IG,AA} = \max\left\{V^*_{IG,AA}, V^*_{IG,AN}, V^*_{IG,NA}, V_{IG,NN}\right\}$, candidate $L$ only if $V^*_{IG,AN} = \max\left\{V^*_{IG,AA}, V^*_{IG,AN}, V^*_{IG,NA}, V_{IG,NN}\right\}$, candidate $R$ only if $V^*_{IG,NA} = \max\left\{V^*_{IG,AA}, V^*_{IG,AN}, V^*_{IG,NA}, V_{IG,NN}\right\}$, and makes no offer if $V_{IG,NN} = \max\{ V^*_{IG,AA}, V^*_{IG,AN}, V^*_{IG,NA}, V_{IG,NN}\}$.

# 6 Results

Since the case of both candidates accepting offers is nonlinear and nonconvex, we need to use numerical methods to compare the four above cases. Here, we will specify the IG's vNM utility function $u(a) = ka^\alpha$ where $0 < \alpha < 1$. In the following numerical example, we set $Q = 10$, $\theta^m = 0.45$, $\alpha = 0.6$, $k = 1.5$, and $\bar{p} = -\bar{p}_L = \bar{p}_R = 0.2$. We first start with the symmetric case.

**Symmetric Case:** $\bar{a}_L = \bar{a}_R$ **and** $\beta_L = \beta_R = 1$

Figure 4 compares IG's payoffs for different types of offers. We consider a comparative static exercise: raising $\bar{a}_L = \bar{a}_R = \bar{a}$ from 0 to 0.3, i.e., candidates' preferences are made more and more in line with IG.[25] Then, for $\bar{a} < 0.13$, IG offers two identical contracts to the candidates, which provide

[25] For $\bar{a} \geq 0.3$, the optimal contract does not change anymore.

the same campaign contributions for a common higher level of free trade policy $a > \bar{a}$. This is a complete policy non-salience case.

If $0.13 < \bar{a} < 0.177$, then IG makes a contribution to only one of candidates. This is because $\bar{a}$ is now high enough such that even if an unsupported candidate wins, she is not likely to pursue an extreme protectionist policy. Thus, instead of having two candidates committing to a moderate $a$, it is worthy for IG to ask only one candidate to commit to a higher $a$. Since the unsupported candidate is likely to play a (mild) protectionist strategy, the supported candidate demands a higher contribution for a high level of $a$, and its winning probability will be boosted by that. Thus, both $a_j$ and $C_j$ are high when only candidate $j$ is supported. Once $\bar{a}$ exceeds 0.177, IG does not contribute to any candidate. In this situation, the expected equilibrium policy outcome is not too bad, even without any contributions, so IG has no incentives to contribute. See Figure 5 for the equilibrium offers and winning probabilities.

[**Figures 4 and 5 here**]

**Asymmetric Case:** $\bar{a}_L \neq \bar{a}_R$ **and** $\beta_L = \beta_R = 1$

Next, we consider the case where $\bar{a}_L \neq \bar{a}_R$, but there are no differences in candidates' sensitivities to advancing free trade $\beta_L = \beta_R = 1$. Here, we consider $\bar{a}_L$ fixed at some values and increase $\bar{a}_R$ from 0 to 0.3 to discern the optimal offer for IG. We mainly consider three representative cases where $\bar{a}_L = 0.05$, 0.15, and 0.25 respectively. Those values are chosen because they stand for different optimal offers in the symmetric cases (see Figure 4). Therefore, this exercise allows us to see how the optimal offer changes when we depart from symmetry for these three different values.

[**Figure 6 here**]

Figure 6 depicts the case for $\bar{a}_L = 0.05$. When $0.05 \leq \bar{a}_R < 0.126$, contributing to both candidates is optimal for IG. However, for $\bar{a}_R > 0.126$, providing contribution *only* for $L$ is optimal. This is because when $\bar{a}_R$ is large, $R$ (who gets 0 contribution) does not propose extreme protectionism policies unless the competition is very tight. Therefore, IG should only approach $L$, who has a lower $\bar{a}_L$, to ensure a sufficiently high level of free trade when $L$ wins.

Next, we turn to the offers' contents. In Figure 7, when IG makes an offer to both candidates, the candidate preferring a higher level of free trade is the one being asked to commit to a *lower* level of free trade. This result is somewhat counterintuitive. This can be explained by examining $R$'s incentive constraint (4). Recall that both constraints (3) and (4) are binding according to Lemma 4. We start from the point $\bar{a}_L = \bar{a}_R = 0.05$ and consider an increase of $\bar{a}_R$. The net partial effect of this increase on (4) is $\bar{\epsilon} - \theta^m(a_R^* - a_L^*) + (C_R - C_L) + \theta^m \bar{a}_R$, which is positive. This comes from the fact that a higher $\bar{a}_R$ means $R$'s preference is more in line with IG and, as a result, makes the previously incentive-binding contract more preferable for $R$. Since (4) has to be binding in equilibrium, $-\theta^m a_R^* + C_R^*$ has to decrease when $\bar{a}_R$ increases. Also, note that the political contribution is a cost for IG. So, it is intuitive that $C_R^*$ has to decrease. On the other hand, a reduction in $-\theta^m a_R^* + C_R^*$ means that $R$'s winning probability decreases as well. When IG maximizes its expected payoff, it chooses a lower $a_R^*$ and, consequently, a higher $a_L^*$. Finally, since $L$'s incentive constraint has to be binding, $C_L^*$ needs to increase to compensate $L$ for a higher $a_L^*$.

[**Figure 7 here**]

When $\bar{a}_R > 0.126$, conditions are similar to the symmetric case. Since IG does not need to approach $R$, it focuses on $L$ only, asking candidate $L$ to commit to a high $a_L$, while compensating $L$ with a higher $C_L$. There is a policy jump-up similar to Figure 7.

For the case with $\bar{a}_L = 0.15$, offering to only one candidate is robust *for all* $\bar{a}_R < 0.15$. Moreover, IG always provides to the candidate with a *lower* preferred free trade policy. For reasons similar to the previous case, as the preference of the candidate with the offer more in line with IG, IG asks for a lower level of free trade policy and provides less contribution.

Finally, we consider the case with $\bar{a}_L = 0.25$. In this case, the optimal offer only involves $R$ when $\bar{a}_R < 0.171$. This pattern is consistent with Figure 6, where IG provides an offer to the candidate with the lower bliss point when $\bar{a}_R$ and $\bar{a}_L$ have larger differences. When $\bar{a}_R > 0.178$, IG does not contribute, since both candidates do not propose extreme protectionism policies often, which is again consistent with the pattern shown in Figure 4, where both candidates' preferences are more in line with IG.

**Asymmetric Case: $\bar{a}_L = \bar{a}_R$ and $\beta_L > \beta_R$**

Since a higher $\beta_L$ means that $L$ is less flexible about deviating from $\bar{a}_L$, IG needs to provide more contribution and ask for less extreme $a_L$ to convince $L$. Therefore, it pays less for IG to get $L$ on board. Figure 8 depicts the situation where $\bar{a}_L = \bar{a}_R = 0.125$ with $\beta_R = 1$ and $1 < \beta_L < 1.5$. Note that, according to Figure 4, we see *both* candidates are offered when $\beta_L$ is close to 1. However, as $\beta_L$ becomes larger ($\beta_L > 1.08$ in this case), IG eventually gives up offering to $L$ and concentrates only on $R$. Therefore, the parameter upper bound for the two-party offer, i.e., the policy non-salience case, reduces when $\beta_L$ becomes larger. Finally, since it costs more for IG to convince $L$, $a_L < a_R$ and $C_L < C_R$ in a two-party offer, i.e., the trade policy becomes more salient even when both parties commit to IG. The contents of the offer is depicted in Figure 9.

[**Figure 8 and 9 here**]

A similar effect can be observed in the case where $\bar{a}_L \neq \bar{a}_R$. For example, consider the case where $\beta_R = 1$ and $\beta_L \in [1, 1.5]$, $\bar{a}_L = 0.125 < 0.15 = \bar{a}_R$. Note that, as $\beta_L$ increases from 1, the payoff curves of the $L$-only offer and the two-candidate offer are decreasing. When $\beta_L$ is close to 1, IG still offers to $L$ ($\bar{a}_L < \bar{a}_R$), but IG stops offering to $L$ and switches to $R$ when $\beta_L$ is large enough ($\beta_L > 1.41$ in this case). In summary, high $\beta_L$ tends to make IG to support the more flexible candidate $R$ only, and makes the two-candidate offer less probable.[26]

**The effect of voters' likability bias for candidate $R$**

So far, we have been assuming that the valence term $\epsilon$ has zero mean ($b = 0$). This means that both candidates are equally likable for voters *ex ante*. In this subsection, we consider the case where candidate $R$ is *ex ante* more likable ($b > 0$). Due to the uniform distribution of $\epsilon$, the presence of $b > 0$ gives $R$ a higher winning probability but does not change the winning probability *difference* between taking an offer or not. Therefore, the incentive constraints (3) and (4) are modified as

[26] This may explain one-sided campaign contributions in Table 1 in the 2016 presidential election.

$$V_{L,AA} - V_{L,NA} = \frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_L + C_L)Q - (\bar{\epsilon} + \theta^m(a_R - a_L) - (C_R - C_L) - b)\beta_L|a_L - \bar{a}_L| + \theta^m \bar{a}_L \beta_L \left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2}\right)\Big] \geq 0,$$

and

$$V_{R,AA} - V_{R,AN} = \frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_R + C_R)Q - (\bar{\epsilon} - \theta^m(a_R - a_L) + (C_R - C_L) + b)|a_R - \bar{a}_R| + \theta^m \bar{a}_R \left(\frac{\bar{p}_R^2}{1 + \theta^m} + \frac{\bar{a}_R}{2}\right)\Big] \geq 0.$$

Similarly, one can easily modify (7) and (8) to accommodate the effect of $b$.

Observing the above two inequalities, the effect of *ex ante* bias $b > 0$ makes $R$'s incentive constraint tighter which tends to increase $C_R$ and $a_R$ and decrease $C_L$ and $a_L$. Our numerical analysis confirms that, when $R$ gets offers, IG offers $R$ with higher $a_R$ and $C_R$ as $b$ increases. In contrast, if $L$ gets the offer, $a_L$ and $C_L$ decreases as $b$ increases.[27] Moreover, $R$ will get offers in a wider parameter space, since $R$ becomes more valuable for IG. For example, consider the case where $\bar{a}_L = 0.05$ and $\bar{a}_R = 0.15$. When $b < 0.04$, offering to $L$ is optimal for IG, as previously mentioned. When $0.04 < b < 0.17$, offering to both candidates becomes optimal. Finally, if $b > 0.17$, proposing to $R$ only is IG's best choice.

### The effect of median voter's preference, $\theta^m$

The rising sentiment against globalization has recently been a key feature in US and European politics. In our framework, this trend can be described as an increase in (median) voters' preference intensity (sensitivity) on free trade, $\theta^m$. It is straightforward that an increase in $\theta^m$ decreases candidates' incentives to accept an offer from IG. Therefore, one should expect that IG can make the free trade nonsalient only when $\theta^m$ is low and stand on the

[27] This result is reminiscent of Proposition 2 in Grossman and Helpman (1996), albeit with a different setup.

sideline when $\theta^m$ is high. Figure 10 depicts the case for $\bar{a}_L = \bar{a}_R = 0.15$ and $\theta^m \in [0.3, 0.6]$. The optimal contract is two-candidate when $\theta^m$ is relatively low, one-candidate, and then no offer as $\theta^m$ increases.

A similar intuition applies to asymmetric cases. Consider the case where $\bar{a}_L = \bar{a}_R = 0.125$ with $\beta_L = 1.3 > \beta_R = 1$ and $\theta^m \in [0.3, 0.6]$. When $\theta^m$ is relatively low, IG proposes to both parties.[28] As $\theta^m$ increases, it costs more for IG to get both candidates on board. In this situation, IG focuses on the candidate $R$ who is more flexible about the trade policy. As $\theta^m$ increases further, the cost of convincing $R$ is too high, and IG chooses to stand aside. This may be a partial reason for rising protectionism in the U.S. — voters become more resistant to free trade such that IG does not have enough capacity to convince candidates. Figure 11 depicts the above case.

[**Figures 10 and 11 here**]

In summary, a candidate who is less pro-free-trade receives more contributions than his/her opponent. Moreover, he/she gets more contributions in a wider parameter range since he/she needs more money to be persuaded. All other thing equal, more likable and more flexible in free trade dimension gets more contributions. Finally, when voters' sensitivity against free trade increases, IG tends to contribute more to the candidate who is more flexible in adjusting his/her free trade policy.

# 7 Import-Competing Firms

So far, our benchmark model considered the case with only one interest group, or several interest groups with common interest — say, exporting and multinational firms. This narrative may be justifiable if exporting industries are much stronger than import-competing industries in their political influence. However, in free trade agreement talks, the treatment of import-competing firms is always a hot issue. Although exporting firms may have deeper pockets than import-competing firms and their unions, the presence of the latter in the political arena is not negligible.

In this section, in addition to IG, we will include another interest group — the *import-competing firms, IM*, which prefer *less degree of free trade.* This group prefers that a protectionist candidate wins so that the trade

[28] Recall that the benchmark case is set at $\theta = 0.45$, where providing an offer to $R$ only is the optimal for IG. See Figure 8.

negotiation table can be removed. We will analyze the effect of such a lobby in a simplistic manner, given the complexity of the benchmark model. We focus on a special case where IM can ask $L$ or $R$ (but *not both*) to *not* take IG's offer and provide a fixed amount of contribution $M$ in return, where $M$ is the maximum amount IM can contribute if it can stop IG luring both candidates to high levels of $a_i$s by donating contributions.[29] If candidate $j$ decides to take IM's offer, he/she receives $M$ as campaign money and can choose $(p_j, a_j)$ freely. This nature of IM's offer maximizes the chance to block IG's offer. The sequence of moves is similar to the benchmark model, but we add another stage before Stage 1:

Stage 0: IM offers contribution $M$ to $L$ or $R$ for not taking IG's offer.

Moreover, the Stage 4 is modified as:

Stage $4'$: If candidate $j$ accepts IG's offer in Stage 2, then he/she chooses $p_j \in \mathcal{P}$ under fixed $a_j$ and $C_j$. If he/she accepts IM's offer, he/she chooses $(p_j, a_j) \in \mathcal{P} \times \mathcal{A}$ under $C_j = M$. If he/she declines both offers or no offer is made to him/her, then he/she chooses $(p_j, a_j)$ under $C_j = 0$. The two candidates choose their policies simultaneously.

We will focus on the case where $\bar{a}_L < \bar{a}_R$ and $\beta_L \leq \beta_R$. Without IM, we know from previous results that either $L$ is the only candidate getting IG's offer, or $a_L$ and $C_L$ are both higher than $a_R$ and $C_R$ in a two-candidate offer.

Note that if candidate $j = L, R$ is approached by IM, she will at least take IM's offer since it is better than taking no offer. Comparing the offers from IM and IG given that IG is also providing one, IM's offer only changes the probability of winning while candidate $j$ is still free to choose $(a_j, p_j)$. Thus, if candidate $j$ takes IM's offer, it is as if he/she becomes more likable.

There are four possible cases to be investigated: (Case I) IG makes offers to both candidates; (Case II) IG makes an offer to the candidate who is not supported by IM; (Case III) IG makes an offer to the candidate who is supported by IM; and (Case IV) IG does not make an offer.

(Case I) According to the analysis similar to that in Section 5, $L$'s incentive constraint given receipt of IM's offer and $R$'s acceptance of $(a_L, a_R, C_L, C_R)$

[29] Given that $M$ is the maximum contribution budget, IM's offers to a party should not exceed $M$ in total. If that is the case, it would be better for IM to concentrate contributions to ask one party not to accept IG's offer.

is

$$V_{L,AA} - V_{L,MA} =$$
$$\frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_L + C_L - M)Q - (\bar{\epsilon} + \theta^m(a_R - a_L) - (C_R - C_L))\beta_L|a_L - \bar{a}_L|$$
$$+\theta^m \bar{a}_L \beta_L \left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2}\right)\Big] \geq 0. \tag{10}$$

In this case, candidate $R$'s incentive constraint given $L$'s acceptance of IG's offer is the same as (4). IG maximizes its expected utility (5) subject to (10) and (4).

(Case II) In this case, IG offers a contract $(0, 0, a_R, C_R)$ only to candidate $R$, candidate $L$ takes IM's offer $M$, candidate $R$'s incentive constraint is

$$V_{R,MA} - V_{R,MN} =$$
$$\frac{1}{2\bar{\epsilon}}\Bigg[(-\theta^m a_R + C_R)\,Q - (\bar{\epsilon} - \theta^m a_R + C_R - M)\,|a_R - \bar{a}_R|$$
$$+\,\theta^m \bar{a}_R \left(\frac{\bar{p}_R^2}{1 + \theta^m} + \frac{\bar{a}_R}{2}\right)\Bigg] \geq 0 \tag{11}$$

That is, IG's maximization problem is

$$V^*_{IG,MA} \equiv \max_{a_R, C_R} \frac{1}{2\bar{\epsilon}}\Bigg[\int_0^{\theta^m \bar{a}_L} u\left(\frac{a}{\theta^m}\right) da + \Bigg(\bar{\epsilon} - \theta^m(\bar{a}_L - a_R) - C_R \tag{12}$$
$$+M - \left(\frac{\theta^m \bar{p}_L}{\beta_L + \theta^m}\right)^2\Bigg) u(\bar{a}_L) + (\bar{\epsilon} - \theta^m a_R + C_R - M)\,u(a_R)\Bigg] - C_R$$

subject to (11)

(Case III) IG chooses to enter a bidding war with IM: IG offers a contract $(a_L, C_L, 0, 0)$ only to candidate $L$ when candidate $L$ gives up IM's offer $M$. In this case, the incentive constraint of $L$ is

$$V_{L,AN} - V_{L,MN} =$$
$$\frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_L + C_L - M)Q - (\bar{\epsilon} - \theta^m a_L + C_L)\beta_L|a_L - \bar{a}_L|$$
$$+\theta^m \bar{a}_L \beta_L \left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2}\right)\Big] \geq 0. \tag{13}$$

Then, IG's optimization problem in this case is

$$V^*_{IG,MN} \equiv \max_{a_L, C_L} \frac{1}{2\bar{\epsilon}} \left[ \int_0^{\theta^m \bar{a}_R} u\left(\frac{a}{\theta^m}\right) da + \left( \bar{\epsilon} - \theta^m \left(\bar{a}_R - a_L\right) \right.\right.$$
$$\left.\left. - C_L - \left(\frac{\theta^m \bar{p}_L}{1+\theta^m}\right)^2 \right) u(\bar{a}_R) + \left(\bar{\epsilon} - \theta^m a_L + C_L\right) u(a_R) \right] - C_L$$
subject to (13)

(Case IV) IG chooses to be inactive as before.

We can conduct the same numerical analysis to decide IG's optimal offer given IM's action. Predicting the reaction of IG, IM chooses to render an offer to the candidate who minimizes the expected level of free trade.

In general, if IM proposes to candidate $j$, IG's payoff on a $j$-only offer will be pressed down relatively more than the one for a two-candidate offer or an $i$-only offer, and the payoff for no offer will be affected the least. We set $M = 0.05$, and we will discuss the cases where $\bar{a}_L = 0.05$, and 0.15 to compare with those results in asymmetric case without IM ($\bar{a}_L \neq \bar{a}_R$ and $\beta_L = \beta_R = 1$).[30] First, we consider $\bar{a}_L = 0.05$, $\bar{a}_R \in (0.05, 0.3]$. Recall that without IM, IG proposes to both candidates when $\bar{a}_R < 0.126$ and to $L$ only otherwise. This pattern does not change much since $M$ is small. However, with $M$, proposing to both candidates is IG's optimal strategy only for $\bar{a}_R < 0.1$ (the range shrinks). Interestingly, if $\bar{a}_R > 0.1$, IG proposes to $L$ only, *no matter which candidate IM proposes to* (as is seen below, this result is specific to the case of $\bar{a}_L = 0.05$). An interesting consequence of IG's making offer to $L$ is that IM proposes to $R$ when $\bar{a}_R > 0.1$. Figures 12 compares IG's offers given IM proposing to $L$. If IM also makes an offer to candidate $L$, then IG responds by proposing a much higher $C_L$, along with a high $a_L$. In contrast, if IM proposes to $R$, then IM can effectively lower $a_L$, since $R$ can use protectionist policies more often with extra campaign funding $M$. Therefore, IG and IM *endogenously* support different candidates in our framework.[31] For the case of $\bar{a}_R \in (0.05, 0.1]$, notice that as $\bar{a}_R$ increases, $a_R$

[30] The case for $\bar{a}_L = 0.25$ is trivial. Since IG is inactive even without the presence of IM, what IM should do is propose to $L$ to ensure that the candidate who prefers less free trade can win more often.

[31] The interaction between various interest groups in an election framework has not been fully investigated in the literature. In Rivas (2016), he *exogenously* assumes two

and $\Pi_R$ both decrease, since the incentive constraint for $R$ is more slack (see Section 6.4). For $L$, it is the opposite. Therefore, IM should again propose to $R$. As before, we still have the case of non-salience when $\bar{a}_L$ and $\bar{a}_R$ are both small.

[**Figures 12 Here**]

Next, we consider the case for $\bar{a}_L = 0.15$ and $\bar{a}_R \in (0.15, 0.3]$. As before, IG always proposes to $L$ without IM. If IM proposes to $L$, the payoff from an $L$-only offer is pressed down quite a bit for IG, resulting that IG chooses to be inactive when $0.156 < \bar{a}_R$, and proposes to $R$ instead of $L$ when $0.15 < \bar{a}_R \leq 0.156$. In contrast, if IM proposes to $R$, IG chooses to be inactive only for $0.243 < \bar{a}_R$, and still proposes to $L$ when $0.15 < \bar{a}_R \leq 0.243$. This is because IM's proposal to $R$ has less impact on IG's payoff of its $L$-only offer. Thus, IM should propose to $L$ and keep IG out of competition when $\bar{a}_R > 0.156$, even though $M$ is low compared to what IG can afford. When $0.15 < \bar{a}_R \leq 0.156$, IG and IM always proposes to different candidates. However, since $\bar{a}_R$ is higher, as $\bar{a}_R$ increases, $a_L$ increases due to the incentive constraint slackening as before. In order to avoid an even higher free trade level, IM should proposes to $R$ instead of $L$ when $\bar{a}_R \in (0.15, 0.156]$.

Finally, we consider another asymmetric case where $\bar{a}_L = \bar{a}_R = 0.08$ but $\beta_R = 1 < \beta_L \in (1.0, 1.5]$. Since $\bar{a}_L$ and $\bar{a}_R$ are relatively low, it would be optimal for IG to make offers to both parties *no matter what IM's decision is* when $\beta_L$ is close to 1. This is similar to the case described above. However, when $\beta_L$ increases, it becomes more and more difficult for $IG$ to convince $L$. Especially when $\beta_L > 1.425$, it is optimal for IG to make an offer to $R$ only *no matter what IM's decision is.* Figure 13 depicts IG's payoff in this situation. Moreover, since IM does not enter into a bidding war with IG, it chooses to contribute to $L$. That is, exporting firms contribute to the candidate who is more flexible in trade policy, while import competing firms contribute to the other candidate which allows the less flexible candidate to pursue protectionism and further limits the level of free trade — a policy salience case.

In summary, in our setup, IG tends to propose to the candidate who has a lower bliss point or more flexible on the issue of free trade, while IM

interest groups contributes to the affiliated party for winning the election. On gun-control or birth-control issues, this assumption mirrors empirical contribution behavior. However, in our framework, we endogenously generate this pattern.

contributes to the other candidate. Moreover, the presence of IM limits IG's ability to keep free trade a nonsalient issue, promoting free trade.

[**Figures 13 Here**]

# 8 Conclusion

Despite anti-free trade sentiment among the general public, international trade and globalization have not been salient issues in the US presidential elections until 2016. This paper provides an explanation for this puzzling phenomenon by focusing on the exporting firms' campaign contributions to ensure the continuity of trade promotion policies. We use numerical analysis to illustrate that the exporting firms contribute to both candidates if they are less excited about free trade, since they need to be persuaded to commit to a high level of free trade by campaign contributions. As one of the candidates or both become more excited about free trade, the interest group may reach an agreement with only one party or none, and the trade policy becomes salient. The same tendency holds as voters become more strongly against free trade. Thus, our model can provide several partial explanations for the rise of vocal protectionism in Europe and in the US.

In this paper we tried to find explanations for many years of nonsalience on the issues of free trade in the US presidential elections, and for their becoming the major salient issue in the last year's election. However, the mechanism we discussed in this paper is not limited to free trade and globalism: it can be applied to various different issues. For example, voters can be concerned about whether or not the government would regulate new automation technologies that can potentially replace many workers' jobs by machines. Our theory predicts that these issues can be kept nonsalient as long as voters do not become too sensitive to the issues, if politicians care about campaign contributions for their election bids.

Here, we simplified our framework by assuming that the uncertainty is resolved before the voting stage. One possible extension may be to consider the uncertainty of candidates' valence being resolved after candidates' policy positions are determined. Although the analysis will be much harder in such an extension, we expect that the logic in our result would still work as the interest group is risk averse.

# Appendix A: Electoral Competition in Different Cases

This appendix presents the detailed analysis of Section 3 and 4. Given each policy-contribution profile $(p_j, a_j, C_j)_{j=L,R}$ and a realization of valence term $\epsilon$, the vote shares for $L$ and $R$ are denoted as follows:

1. If $p_L < p_R$

$$S_L\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = \int_{-\infty}^{I(\theta;(p_j,a_j,C_j)_{j=L,R},\epsilon)} \int_{\underline{\theta}}^{\bar{\theta}} f(p,\theta) d\theta d\bar{p}$$
$$\text{and } S_R\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = \int_{I(\theta;(p_j,a_j,C_j)_{j=L,R},\epsilon)}^{\infty} \int_{\underline{\theta}}^{\bar{\theta}} f(p,\theta) d\theta d\bar{p}.$$

   Also note that since the candidates are policy motivated and $\bar{p}_L < 0 < \bar{p}_R$, $p_L < p_R$ in any political equilibrium.

2. If $p_L = p_R$ and $a_R > a_L$,

$$S_L\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = \int_{-\infty}^{\infty} \int_{\theta\left((p_j,a_j,C_j)_{j=L,R},\epsilon\right)}^{\bar{\theta}} f(p,\theta) d\theta d\bar{p}$$
$$\text{and } S_R\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = \int_{-\infty}^{\infty} \int_{\underline{\theta}}^{\theta\left((p_j,a_j,C_j)_{j=L,R},\epsilon\right)} f(p,\theta) d\theta d\bar{p},$$

   where

$$\theta\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) \equiv \frac{C_R - C_L + \epsilon}{a_R - a_L};$$

   The case for $a_L > a_R$ is similar.

3. If $p_L = p_R$ and $a_R = a_L$,

$$S_L\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = 1 \text{ if } C_L > C_R + \epsilon$$
$$S_L\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = 0 \text{ if } C_L < C_R + \epsilon$$
$$\text{and } S_L\left((p_j, a_j, C_j)_{j=L,R}, \epsilon\right) = \frac{1}{2} \text{ if } C_L = C_R + \epsilon.$$

Using these and the critical valence level that determines the winning candidate

$$\epsilon^m((p_j, a_j, C_j)_{j=L,R}) \equiv \theta^m(a_R - a_L) - (C_R - C_L) + \left(p_R^2 - p_L^2\right),$$

we can analyze candidates' best responses and their expected payoffs by utilizing Lemmas 1 and 2, and Proposition 1. There are three cases in this stage: (1) both candidates accept IG's offers, (2) only one candidate accepts an offer, and (3) neither candidate accepts an offer.

## Both Parties Accept Offers

First, we start from the case where both candidates accept IG's offers. In this case, candidates compete by proposing $p_j$. This is essentially a one-dimensional policy competition. If $L$ is the winning candidate, by Lemma 2, the realized valence $\epsilon$ satisfies

$$\epsilon^m(0, a_L, C_L, 0, a_R, C_R) > \epsilon$$

By Proposition 1, in a 50%-50% equilibrium, the losing candidate $R$ proposes $(0, a_R)$ according to IG's contract. Let $p^*_{L,AA}$ stands for the equilibrium strategy of $L$ when both candidates accept the offer. Then, $p^*_{L,AA}$ solves the following equation

$$\begin{aligned} &- p^{*2}_{L,AA} + \theta^m(a_R - a_L) - (C_R - C_L) - \epsilon = 0 \\ \Rightarrow &p^*_{L,AA} = -\sqrt{\theta^m(a_R - a_L) - (C_R - C_L) - \epsilon} \end{aligned} \tag{14}$$

Note that this policy maximizes candidate $L$'s payoff given the losing candidate $R$'s policy.

The winning $L$ proposes the above strategy as long as the realized $\epsilon$ satisfies $\epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R) \leq \epsilon < \epsilon^m(0, a_L, C_L, 0, a_R, C_R)$. When the realized $\epsilon$ becomes smaller than the threshold $\epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R)$, $L$ has a strong valence advantage so that it can win by proposing its bliss point policy $\bar{p}_L$. In this case, the losing candidate's strategy is irrelevant.[32]

The equilibrium in which $R$ wins and both candidates accept the IG's offer can be solved in a similar way. We summarize the policy competition in the following proposition.

[32] In this case, proposing $p_R = 0$ is generally not vote-share maximizing. However, his best response is irrelevant in the sense that whatever his proposal is does not change $L$'s payoff or strategy.

**Proposition 2.** *If both candidates take the offer* $(a_L, a_R, C_L, C_R)$*,* $L(R)$ *is the winning candidate if and only if* $\epsilon < (>)\epsilon^m(0, a_L, C_L, 0, a_R, C_R)$*. Moreover, candidate L's winning strategy is*

$$p^*_{L,AA} = \begin{cases} -\sqrt{\theta^m(a_R - a_L) - (C_R - C_L) - \epsilon} & \text{if } \epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R) \\ & \quad \leq \epsilon < \epsilon^m(0, a_L, C_L, 0, a_R, C_R), \\ \bar{p}_L & \text{if } \epsilon \leq \epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R), \end{cases}$$

*and candidate R's winning strategy is*

$$p^*_{R,AA} = \begin{cases} \sqrt{-\theta^m(a_R - a_L) + (C_R - C_L) + \epsilon} & \text{if } \epsilon^m(0, a_L, C_L, 0, a_R, C_R) \\ & \quad \leq \epsilon < \epsilon^m(0, a_L, C_L, \bar{p}_R, a_R, C_R), \\ \bar{p}_R & \text{if } \epsilon^m(0, a_L, C_L, \bar{p}_R, a_R, C_R) \leq \epsilon. \end{cases}$$

## One Candidate Accepts an Offer

This case has been discussed in the main text. We have the following result formally.

**Proposition 3.** *(I) Suppose that only the winning candidate accepts the offer. L is the winning candidate if and only if* $\epsilon < \epsilon^m(0, a_L, C_L, 0, 0, 0)$*. Moreover, candidate L's winning strategy is*

$$p^*_{L,AN} = \begin{cases} -\sqrt{-\theta^m a_L + C_L - \epsilon} & \text{if } \epsilon^m(\bar{p}_L, a_L, C_L, 0, 0, 0) \\ & \quad \leq \epsilon < \epsilon^m(0, a_L, C_L, 0, 0, 0), \\ \bar{p}_L & \text{if } \epsilon \leq \epsilon^m(\bar{p}_L, a_L, C_L, 0, 0, 0). \end{cases}$$

*R is the winning candidate if and only if* $\epsilon > \epsilon^m(0, 0, 0, 0, a_R, C_R)$*. Moreover, candidate R's winning strategy is*

$$p^*_{R,NA} = \begin{cases} \sqrt{-\theta^m a_R + C_R + \epsilon} & \text{if } \epsilon^m(0, 0, 0, 0, a_R, C_R) \\ & \quad \leq \epsilon < \epsilon^m(0, 0, 0, \bar{p}_R, a_R, C_R), \\ \bar{p}_L & \text{if } \epsilon^m(0, 0, 0, \bar{p}_R, a_R, C_R) \leq \epsilon, \end{cases}$$

*(II) Suppose that only the losing candidate accepts the offer. If candidate*

*L is the winner, his/her winning strategy* $(p^*_{L,NA}, a^*_{L,NA})$ *is equal to:*

$$
\begin{cases}
(-\sqrt{-\epsilon - C_R + \theta^m a_R}, 0) & \text{if } \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0, 0, 0, a_R, C_R\right) \\
& < \epsilon \leq \epsilon^m(0,0,0,0,a_R,C_R) \\
\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \frac{-\epsilon - C_R - \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L\right)^2 + \theta^m a_R}{\theta^m}\right) & \text{if } \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right) \\
& \leq \epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0, 0, a_R, C_R\right) \\
(-\sqrt{-\epsilon - C_R + \theta^m(a_R - \bar{a}_L)}, \bar{a}_L) & \text{if } \epsilon^m(\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R) \\
& \leq \epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R\right) \\
(\bar{p}_L, \bar{a}_L) & \text{if } \epsilon \leq \epsilon^m(\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R)
\end{cases}
$$

*If candidate R is the winner, his/her winning strategy* $(p^*_{R,AN}, a^*_{R,AN})$ *is equal to:*

$$
\begin{cases}
(\sqrt{\epsilon - C_L + \theta^m a_L}, 0) & \text{if } \epsilon^m(0, a_L, C_L, 0, 0, 0) \\
& < \epsilon \leq \epsilon^m\left(0, a_L, C_L, \frac{\theta^m}{1+\theta^m}\bar{p}_R, 0, 0\right) \\
\left(\frac{\theta^m}{1+\theta^m}\bar{p}_R, \frac{\epsilon - C_L - \left(\frac{\theta^m}{1+\theta^m}\bar{p}_R\right)^2 + \theta^m a_L}{\theta^m}\right) & \text{if } \epsilon^m\left(0, a_L, C_L, \frac{\theta^m}{1+\theta^m}\bar{p}_R, 0, 0\right) \\
& \leq \epsilon \leq \epsilon^m\left(0, a_L, C_L, \frac{\theta^m}{1+\theta^m}\bar{p}_R, \bar{a}_R, 0\right) \\
(\sqrt{\epsilon - C_L + \theta^m(a_L - \bar{a}_R)}, \bar{a}_R) & \text{if } \epsilon^m\left(0, a_L, C_L, \frac{\theta^m}{1+\theta^m}\bar{p}_R, \bar{a}_R, 0\right) \\
& \leq \epsilon \leq \epsilon^m(0, a_L, C_L, \bar{p}_R, \bar{a}_R, 0) \\
(\bar{p}_R, \bar{a}_R) & \text{if } \epsilon^m(0, a_L, C_L, \bar{p}_R, \bar{a}_R, 0) \leq \epsilon
\end{cases}
$$

**Proof of Proposition 3.** Note that, from the constraint in (2), we have

$$\frac{da_L}{dp_L} = -\frac{2p_L}{\theta^m}$$

which stands for the marginal cost of increasing $p_L$ in terms of $a_L$. This value is close to zero around $p_L = 0$. On the other hand, the marginal rate of substitution of the payoff function is

$$\left.\frac{da_L}{dp_L}\right|_V = \frac{2(p_L - \bar{p}_L)}{\beta_L}$$

which is non-zero around $p_L = 0$. Therefore, when considering the case $\epsilon < \epsilon^m(0, 0, 0, 0, a_R, C_R)$, $L$ should initially decrease $p_L$, only keeping $a_L = 0$ as $\epsilon$ goes down. This yields the best response

$$p^*_{L,NA} = -\sqrt{-\epsilon - C_R + \theta^m a_R}, \text{ and } a^*_{L,NA} = 0. \tag{15}$$

He continues using this strategy until we have (i) $-\sqrt{-\epsilon - C_R + \theta^m a_R} = \bar{p}_L$ ($L$'s bliss point), or (ii) $\frac{\sqrt{-\epsilon - C_R + \theta^m a_R}}{\theta^m} = \frac{-\bar{p}_L - \sqrt{-\epsilon - C_R + \theta^m a_R}}{\beta_L}$ ($\frac{da_L}{dp_L} = \frac{da_L}{dp_L}\Big|_V$ when $a_L = 0$), depending on which of (i) and (ii) becomes binding first. It is easy to see that (ii) binds first *for any* $\theta^m > 0$ *and* $\beta_L \geq 1$. When (ii) holds, we have $\epsilon = -\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L\right)^2 - C_R + \theta^m a_R = \epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0, 0, 0, a_R, C_R\right)$. For $\epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0, 0, 0, a_R, C_R\right)$, $L$ should increase *only* on the free trade dimension as $\epsilon$ goes down due to quasi-linearity in $a_L$, as long as $a_L \leq \bar{a}_L$. As a result, when $\epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0, 0, 0, a_R, C_R\right)$, $L$'s best response becomes

$$p^*_{L,NA} = \frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \text{ and } a^*_{L,NA} = \frac{-\epsilon - C_R - \left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L\right)^2 + \theta^m a_R}{\theta^m} \tag{16}$$

Candidate $L$ keeps applying this strategy as $\epsilon$ goes down until $\epsilon$ reaches $\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right)$. For an $\epsilon$ smaller than this threshold, $L$ proposes his/her preferred $\bar{a}_L$ in the free trade dimension, and polarizes on the ideological dimension again (decreases $p_L$) as $\epsilon$ goes down. That is, for $\epsilon < \epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R\right)$, $L$ proposes

$$p^*_{L,NA} = -\sqrt{-\epsilon - C_R + \theta^m(a_R - \bar{a}_L)}, \text{ and } a^*_{L,NA} = \bar{a}_L \tag{17}$$

Finally, with an even stronger $\epsilon$, i.e., $\epsilon \leq \epsilon^m(\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R)$, $L$ simply proposes its own bliss point $(\bar{p}_L, \bar{a}_L)$.

The analysis for $R$ being the winning candidate without committing to an offer is similar when replacing $\beta_R = 1$. $\square$

## Neither Candidate Accepts an Offer

This situation is similar to the case (II) with one candidate accepting the offer. First of all, by Proposition 1, the losing candidate always proposes

$(0,0)$ in a 50%-50% equilibrium. The winning candidate $j$ first polarizes on the ideological dimension then promotes free trade policy and switches back to ideological policy until he reaches his bliss point $(\bar{p}_j, \bar{a}_j)$. For a strong valance advantage, he proposes his own bliss point, $(\bar{p}_j, \bar{a}_j)$. We sum up the equilibrium in this subgame in the following proposition.

**Proposition 4.** *If candidate $L$ is the winner, his/her winning strategy $(p^*_{L,NN}, a^*_{L,NN})$ is equal to:*

$$\begin{cases} (-\sqrt{-\epsilon}, 0) & \text{if } \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0,0,0\right) \\ & \quad < \epsilon \leq \epsilon^m(0,0,0,0,0,0) \\ \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \frac{-\epsilon-\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L\right)^2}{\theta^m}\right) & \text{if } \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0,0,0\right) \\ & \quad \leq \epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0,0\right) \\ (-\sqrt{-\epsilon-\theta^m\bar{a}_L}, \bar{a}_L) & \text{if } \epsilon^m(\bar{p}_L, \bar{a}_L, 0,0,0) \\ & \quad \leq \epsilon \leq \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0,0,0\right) \\ (\bar{p}_L, \bar{a}_L) & \text{if } \epsilon \leq \epsilon^m(\bar{p}_L, \bar{a}_L, 0,0,0) \end{cases}$$

*If candidate $R$ is the winner, his/her winning strategy $(p^*_{R,NN}, a^*_{R,NN})$ is equal to:*

$$\begin{cases} (\sqrt{\epsilon}, 0) & \text{if } \epsilon^m(0,0,0,0,0,0) \\ & \quad < \epsilon \leq \epsilon^m\left(0,0,0,\frac{\theta^m}{1+\theta^m}\bar{p}_R, 0,0\right) \\ \left(\frac{\theta^m}{1+\theta^m}\bar{p}_R, \frac{\epsilon-\left(\frac{\theta^m}{1+\theta^m}\bar{p}_R\right)^2}{\theta^m}\right) & \text{if } \epsilon^m\left(0,0,0,\frac{\theta^m}{1+\theta^m}\bar{p}_R, 0,0\right) \\ & \quad \leq \epsilon \leq \epsilon^m\left(0,0,0,\frac{\theta^m}{1+\theta^m}\bar{p}_R, \bar{a}_R, 0\right) \\ (\sqrt{\epsilon-\theta^m\bar{a}_R}, \bar{a}_R) & \text{if } \epsilon^m\left(0,0,0,\frac{\theta^m}{1+\theta^m}\bar{p}_R, \bar{a}_R, 0\right) \\ & \quad \leq \epsilon \leq \epsilon^m(0,0,0,\bar{p}_R, \bar{a}_R, 0) \\ (\bar{p}_R, \bar{a}_R) & \text{if } \epsilon^m(0,0,0,\bar{p}_R, \bar{a}_R, 0) \leq \epsilon \end{cases}$$

# Appendix B: Proofs

**Proof of Lemma 1.** First consider the case of $p_L < p_R$. For each $\theta' \in [\underline{\theta}, \bar{\theta}] \backslash \{\theta^m\}$ and each $e' = (e'_1, e'_2)$ with $e'_2 > 0$, let $t(e', \theta') = \frac{\theta' - \theta_m}{e'_2}$. Then, $t(e', \theta') \times e' + (0, \theta^m)$ is on the horizontal line $\theta = \theta'$ for any $e'$. Since $p_L \neq p_R$, $I(\cdot; (p_j, a_j, C_j)_{j=L,R}, \epsilon)$ has a nonzero slope. Let $\bar{e} = (\bar{e}_1, \bar{e}_2)$ with $\bar{e}_2 > 0$ be a unit vector of which slope is the same as $I(\cdot; (p_j, a_j, C_j)_{j=L,R}, \epsilon)$. Any point on a horizontal half line $\theta = \theta'$ to the left of $t(\bar{e}, \theta') \times \bar{e} + (0, \theta^m)$ can be represented by $t(e', \theta') \times e' + (0, \theta^m)$ for some $e'$ with $e'_1 < \bar{e}_1$ and $e'_2 = \bar{e}_2$. By Assumption 1, $f((0, \theta^m) + te) = f((0, \theta^m) - te)$ holds, so the distribution of $f$ on the horizontal half line to the left of $t(\bar{e}, \theta') \times \bar{e} + (0, \theta^m)$ is completely symmetric with the distribution of $f$ on the horizontal half line to the right of $-t(\bar{e}, \theta') \times \bar{e} + (0, \theta^m)$. Thus, $\int_{-\infty}^{t(\bar{e}, \theta') \times \bar{e}_1} f(\bar{p}, \theta')\, d\bar{p} = \int_{-t(\bar{e}, \theta) \times \bar{e}_1}^{\infty} f(\bar{p}, \theta^m - (\theta' - \theta^m))\, d\bar{p}$. This is true for any $\theta' \neq \theta^m$. When $\theta = \theta^m$, it is obvious from Assumption 1 that we have $\int_{-\infty}^{0} f(\bar{p}, \theta^m)\, d\bar{p} = \int_{0}^{\infty} f(\bar{p}, \theta^m)\, d\bar{p}$. Thus, we conclude $S_L((p_j, a_j, C_j)_{j=L,R}, \epsilon^m((p_j, a_j, C_j)_{j=L,R})) = S_R((p_j, a_j, C_j)_{j=L,R}, \epsilon^m((p_j, a_j, C_j)_{j=L,R}))$, and noting that $S_L + S_R = 1$, $S_L = S_R = \frac{1}{2}$ holds. We can treat the case of $p_L > p_R$ symmetrically.

Second, consider the case of $p_L = p_R$. In this case, the distribution of $f$ on a horizontal line $\theta = \theta'$ is completely symmetric with the distribution of $f$ on a horizontal line $\theta = \theta^m - (\theta' - \theta^m)$ for all $\theta' \in [\theta^m, \bar{\theta}]$. Thus, $\int_{-\infty}^{\infty} f(\bar{p}, \theta')\, d\bar{p} = \int_{-\infty}^{\infty} f(\bar{p}, \theta^m - (\theta' - \theta^m))\, d\bar{p}$, which further implies that $S_L = S_R = \frac{1}{2}$ holds when $\epsilon = \epsilon^m((p_j, a_j, C_j)_{j=L,R})$.

Third, if $\epsilon < \epsilon^m((p_j, a_j, C_j)_{j=L,R})$ holds, the median voter belongs to candidate $L$'s support group, and by continuity of $f$ and $f(0, \theta^m) > 0$ (in the neighborhood of $(0, \theta^m)$, there is a positive measure of voters), $S_L > S_R$ holds. Similarly, if $\epsilon > \epsilon^m((p_j, a_j, C_j)_{j=L,R})$ holds, the median voter belongs to candidate $R$'s support group, $S_L < S_R$ holds. We have completed the proof.□

**Proof of Lemma 2.** Recall that the median voter $(0, \theta^m)$ prefers candidate $L$ if

$$\epsilon^m((p_j, a_j, C_j)_{j=L,R}) \equiv \theta^m (a_R - a_L) + \left(p_R^2 - p_L^2\right) - (C_R - C_L) > \epsilon.$$

Moreover, if the median voter prefers candidate $L$, then more than half of voters prefer candidate $L$ and $L$ will win the election. We will consider four cases in the following.

1. Neither $L$ nor $R$ accepted IG's offer: In this case, suppose $(p_L, a_L) = (0, 0)$. Then, candidate $L$ wins when

$$\epsilon^m(0, 0, 0, p_R, a_R, 0) \equiv \theta^m a_R + p_R^2 - (C_R - C_L) > \epsilon.$$

The value of $\epsilon^m$ is minimized at $p_R = a_R = 0$. This concludes that $\epsilon^m(0, 0, 0, 0, 0, 0) > \epsilon$ holds; candidate $L$ can then win regardless of what candidate $R$ does.

2. Only $L$ accepted IG's offer: In this case, suppose that $p_L = 0$. Then candidate $L$ wins if

$$\epsilon^m(0, a_L, C_L, p_R, a_R, 0) \equiv \theta^m a_R - \theta^m a_L + p_R^2 + C_L > \epsilon.$$

The value of $\epsilon^m$ is minimized at $p_R = a_R = 0$. This concludes that $\epsilon^m(0, a_L, C_L, 0, 0, 0) > \epsilon$ holds; candidate $L$ can then win regardless of what candidate $R$ does.

3. Only $R$ accepted IG's offer: In this case, suppose $(p_L, a_L) = (0, 0)$. Then, candidate $L$ wins when

$$\epsilon^m(0, 0, 0, p_R, a_R, C_R) \equiv \theta^m a_R + p_R^2 - C_R > \epsilon.$$

The value of $\epsilon^m$ is minimized at $p_R = 0$. This concludes that $\epsilon^m(0, 0, 0, 0, a_R, C_R) > \epsilon$ holds; candidate $L$ can then win regardless of what candidate $R$ does.

4. Both $L$ and $R$ accepted IG's offer: In this case, suppose that $p_L = 0$. Then candidate $L$ wins if

$$\epsilon^m(0, a_L, C_L, p_R, a_R, C_R) \equiv \theta^m a_R^2 - \theta^m a_L^2 + p_R^2 - (C_R - C_L) > \epsilon.$$

The value of $\epsilon^m$ is minimized at $p_R = 0$. This concludes that $\epsilon^m(0, a_L, C_L, 0, a_R, C_R) > \epsilon$ holds; candidate $L$ can then win regardless of what candidate $R$ does.

The proof for $R$ winning the election is symmetric. Thus, we have completed the proof.□

**Proof of Proposition 1.** For the first part, suppose the winning candidate $j$ does not maximize the payoff $W_j$ given the constraint $S_j \geq \frac{1}{2}$ in equilibrium.

Candidate $j$ can then simply deviate to the utility maximizer $(p', a')$ and still win the election. Therefore, this can not be the equilibrium.

For the second part, suppose the losing candidate $i$ did not accept IG's offer and propose $(p_i', a_i') \neq (0,0)$ in a 50%-50% equilibrium. Then, by Lemma 1, $\epsilon^m$ equals the realized $\epsilon$ in this stage, i.e.,

$$\epsilon^m(p_L^*, a_L^*, C_L, p_R', a_R', C_R) \equiv \theta^m(a_R' - a_L^*) + ((p_R')^2 - (p_L^*)^2) - (C_R - C_L) = \epsilon.$$

That is, the voter $(0, \theta^m)$ is indifferent to the winning candidate's policy $(p_j^*, a_j^*)$ and $(p_i', a_i')$. Without loss of generality, we label the losing party as $R$. It is obvious that, by Lemma 1, $R$ can make $\epsilon^m < \epsilon$ by decreasing $a_R$ or $p_R$ and win the election, which contradicts the presumption. Therefore, any $(a_R', p_R') \neq 0$ cannot be in a $50\% - 50\%$ equilibrium when the losing candidate rejects the offer. The argument for the case where the losing candidate accepts the offer is similar. $\square$

**Proof of Lemma 3.** Let $g$ stand for the density function of $\epsilon$'s distribution. Consider the case for candidate $L$. Given that both accept the offer, $L$ wins when $\epsilon < \epsilon^m(0, a_L, C_L, 0, a_R, C_R)$. In this case,

$$\begin{aligned} V_{L,AA} = & \int_{\epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R)}^{\epsilon^m(0, a_L, C_L, 0, a_R, C_R)} \left[Q - \beta_L|a_L - \bar{a}_L| - (\bar{p}_L - p_{L,AA}^*)^2\right] g(\epsilon) d\epsilon \\ & + G(\epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R)[Q - \beta_L|a_L - \bar{a}_L|] \\ = & \frac{\bar{\epsilon} + \epsilon^m(0, a_L, C_L, 0, a_R, C_R)}{2\bar{\epsilon}}[Q - \beta_L|a_L - \bar{a}_L|] \\ & - \int_{\epsilon^m(\bar{p}_L, a_L, C_L, 0, a_R, C_R)}^{\epsilon^m(0, a_L, C_L, 0, a_R, C_R)} (\bar{p}_L - p_{L,AA}^*)^2 g(\epsilon) d\epsilon \end{aligned} \tag{18}$$

On the other hand, if $L$ rejects the offer, his expected utility is

$$\begin{aligned} V_{L,NA} = & \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0,0,0,a_R,C_R\right)}^{\epsilon^m(0,0,0,0,a_R,C_R)} \left[Q - \beta_L \bar{a}_L - (\bar{p}_L - p_{L,NA}^*)^2\right] g(\epsilon) d\epsilon \\ & + \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0,0,0,a_R,C_R\right)} \left[Q - \beta_L(\bar{a}_L - a_{L,NA}^*) - \left(\frac{\beta_L}{\beta_L + \theta^m}\right)^2 \bar{p}_L^2\right] g(\epsilon) d\epsilon \\ & + \int_{\epsilon^m(\bar{p}_L, \bar{a}_L, 0,0,a_R,C_R)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right)} [Q - (\bar{p}_L - p_{L,NA}^*)^2] g(\epsilon) d\epsilon \\ & + G(\epsilon^m(\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R))Q \end{aligned}$$

Rewriting this, we have

$$
\begin{aligned}
V_{L,NA} = & \frac{\bar{\epsilon} + \epsilon^m\left(0,0,0,0,a_R,C_R\right)}{2\bar{\epsilon}} Q \\
& - \frac{\epsilon^m\left(0,0,0,0,a_R,C_R\right) - \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, 0, a_R, C_R\right)}{2\bar{\epsilon}} \beta_L \bar{a}_L \\
& + \beta_L \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0, a_R, C_R\right)} a^*_{L,NA} g(\epsilon) d\epsilon \\
& - \left(\frac{\beta_L}{\beta_L+\theta^m}\right)^2 \bar{p}_L^2 \frac{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0, a_R, C_R\right) - \epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right)}{2\bar{\epsilon}} \\
& - \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0, a_R, C_R\right)}^{\epsilon^m(0,0,0,0,a_R,C_R)} (\bar{p}_L - p^*_{L,NA})^2 g(\epsilon) d\epsilon \\
& - \int_{\epsilon^m(\bar{p}_L, \bar{a}_L, 0,0, a_R, C_R)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0, a_R, C_R\right)} (\bar{p}_L - p^*_{L,NA})^2 g(\epsilon) d\epsilon \qquad (19)
\end{aligned}
$$

Due to a uniformly distributed $\epsilon$ and its wide support ($\bar{\epsilon}$ is large enough), the last line of (18) and the last two lines of (19) take the same value. Thus, $L$ accepts the offer if

$$
\begin{aligned}
& V_{L,AA} - V_{L,NA} = \\
& \frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_L + C_L)Q - (\bar{\epsilon} + \theta^m(a_R - a_L) - (C_R - C_L))\beta_L |a_L - \bar{a}_L| \\
& \qquad + \theta^m \bar{a}_L \beta_L \left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2}\right)\Big] \geq 0
\end{aligned}
$$

The first term in the above equation represents the benefit from taking the offer, and the second term is the loss from the free trade policy specified in it. However, since $\bar{a}_L \neq 0$, there is one additional term. The last term represents the cost of proposing $a_L \leq \bar{a}_L$ when the election outcome is a close win for $L$, given that $L$ rejects the offer.

The case for candidate $R$ is symmetric, and therefore the proof is straightforward.□

**Proof of Lemma 4.** The first-order conditions for (6) are

$$\frac{\partial \mathcal{L}}{\partial a_L} = \theta^m(u(a_R) - u(a_L)) + (\theta^m(a_R - a_L) - (C_R - C_L) + \bar{\epsilon})u'(a_L)$$
$$+ \mu_L[-\theta^m(Q - \beta_L |a_L - \bar{a}_L|) - \beta_L(\theta^m(a_R - a_L) - (C_R - C_L) + \bar{\epsilon})]$$
$$+ \mu_R(-\theta^m|a_R - \bar{a}_R|) = 0 \tag{20}$$

$$\frac{\partial \mathcal{L}}{\partial a_R} = \theta^m(u(a_L) - u(a_R)) + (\bar{\epsilon} - \theta^m(a_R - a_L) + (C_R - C_L))u'(a_R)$$
$$+ \mu_R[-\theta^m(Q - |a_R - \bar{a}_R|) - (\bar{\epsilon} - \theta^m(a_R - a_L) + (C_R - C_L))]$$
$$+ \mu_L(-\theta^m\beta_L |a_L - \bar{a}_L|) = 0 \tag{21}$$

$$\frac{\partial \mathcal{L}}{\partial C_L} = (u(a_L) - u(a_R) - 2\bar{\epsilon}) + \mu_L(Q - \beta_L |a_L - \bar{a}_L|) + \mu_R(|a_R - \bar{a}_R|) = 0 \tag{22}$$

$$\frac{\partial \mathcal{L}}{\partial C_R} = (u(a_R) - u(a_L) - 2\bar{\epsilon}) + \mu_R(Q - |a_R - \bar{a}_R|) + \mu_L(\beta_L|a_L - \bar{a}_L|) = 0 \tag{23}$$

with all complementary slackness conditions where $\mathcal{L}$ is the Lagrangian and $\mu_L \geq 0$ and $\mu_R \geq 0$ are Lagrangian Multipliers for the corresponding candidate's incentive constraint.

Suppose that there is no optimal solution in which both candidates' incentive compatibility constraints are binding. Without loss of generality, assume that there is a solution where candidate $R$'s incentive constraint is not binding. Since $\mu_R = 0$, the above system becomes

$$\frac{\partial \mathcal{L}}{\partial a_L} = \theta^m(u(a_R) - u(a_L)) + (\theta^m(a_R - a_L) - (C_R - C_L) + \bar{\epsilon})u'(a_L)$$
$$+ \mu_L[-\theta^m(Q - \beta_L |a_L - \bar{a}_L|) - \beta_L(\theta^m(a_R - a_L) - (C_R - C_L) + \bar{\epsilon})] = 0$$

$$\frac{\partial \mathcal{L}}{\partial a_R} = \theta^m(u(a_L) - u(a_R)) + (\bar{\epsilon} - \theta^m(a_R - a_L) + (C_R - C_L))u'(a_R)$$
$$+ \mu_L(-\theta^m\beta_L |a_L - \bar{a}_L|) = 0$$

$$\frac{\partial \mathcal{L}}{\partial C_L} = (u(a_L) - u(a_R) - 2\bar{\epsilon}) + \mu_L(Q - \beta_L |a_L - \bar{a}_L|) = 0$$

$$\frac{\partial \mathcal{L}}{\partial C_R} = (u(a_R) - u(a_L) - 2\bar{\epsilon}) + \mu_L(\beta_L|a_L - \bar{a}_L|) = 0$$

$$\frac{1}{2\bar{\epsilon}}\Big[(-\theta^m a_L + C_L)Q - (\bar{\epsilon} + \theta^m(a_R - a_L) - (C_R - C_L))\beta_L|a_L - \bar{a}_L|$$
$$+\theta^m \bar{a}_L\left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \frac{\bar{a}_L}{2}\right)\Big] = 0$$

We will show that there is a continuum of optimal solutions for the above problem if $\mu_R = 0$. First, IG's objective function is

$$\Pi_L u(a_L) + (1 - \Pi_L)u(a_R) - C_L - C_R$$

Note that $\Pi_L$ and $\Pi_R$ are linear functions in $C_L$ and $C_R$. Therefore, IG's indifference curve on $C_L - C_R$ space is written as

$$\left(\frac{u(a_L) - u(a_R) - 2\bar{\epsilon}}{2\bar{\epsilon}}\right) dC_L + \left(\frac{u(a_R) - u(a_L) - 2\bar{\epsilon}}{2\bar{\epsilon}}\right) dC_R = 0.$$

By using $\frac{\partial \mathcal{L}}{\partial C_L} = 0$ and $\frac{\partial \mathcal{L}}{\partial C_R} = 0$, the above is rewritten as

$$\frac{\mu_L}{2\bar{\epsilon}}(Q - \beta_L\,|a_L - \bar{a}_L|)dC_L + \frac{\mu_L}{2\bar{\epsilon}}(\beta_L|a_L - \bar{a}_L|)dC_R = 0.$$

Second, the candidate $L$'s incentive compatibility condition also has the same slope:

$$\frac{1}{2\bar{\epsilon}}(Q - \beta_L\,|a_L - \bar{a}_L|)dC_L + \frac{1}{2\bar{\epsilon}}(\beta_L|a_L - \bar{a}_L|)dC_R = 0.$$

That is, the indifference curve and candidate $L$'s incentive constraint coincide with each other at the optimum. Since we assumed that $R$'s incentive constraint is not binding and Assumption 2.2 holds, we have that if $(a_L^*, C_L^*; a_R^*, C_R^*)$ is an optimal solution, then any $(a_L^*, C_L^* - \frac{\beta_L|a_L^* - \bar{a}_L|}{Q - \beta_L|a_L^* - \bar{a}_L|}s; a_R^*, C_R^* + s)$ is also optimal for all $s > 0$. One such optimal solutions is $(a_L^*, 0; a_R^*, C_R^* + \frac{Q - \beta_L|a_L^* - \bar{a}_L|}{\beta_L|a_L^* - \bar{a}_L|}C_L^*)$. That is, under our presumption, candidate $L$ should be willing to accept an offer to commit to $a_L^*$ even though $C_L = 0$, *and* this behavior is compatible with the IG's payoff maximization. However, observe that if $\bar{a}_L = 0$, $C_L = 0$ implies $a_L = 0$. Moreover, by Assumption 2.1, the partial derivative of (3) with respect to $\bar{a}_L$ give $a_L = 0$ and $C_L = 0$ is $\frac{\partial IC_L}{\partial \bar{a}_L} = -(\bar{\epsilon} + \theta^m a_R - C_R)\beta_L + \theta^m \beta_L\left(\frac{\bar{p}_L^2}{\beta_L + \theta^m} + \bar{a}_L\right) < 0$. Therefore, for $L$ with $\bar{a}_L > 0$ will not accept offer $a_L = 0$ and $C_L = 0$. We further consider the partial derivative of (3) with respect to $a_L$ give $a_L < \bar{a}_L$ and $C_L = 0$,

$\frac{\partial IC_L}{\partial a_L} = -\theta^m Q + \beta_L(\bar{\epsilon} - \theta^m(a_L - a_R) - C_R) + \theta^m \beta_L(\bar{a}_L - a_L)$ which is again negative by Assumption 2.2. Notice that Assumption 2 is based on the fact that IG never contributes more than $u(a)$. The inequality above means that, for $L$ to accept $C_L = 0$, it requires some $C_R$ that violates Assumption 2 which is inconsistent with IG's maximization. This is a contradiction. Therefore, all incentive constraints are binding in the optimum given that both parties accept IG's offer.□

**Proof of Lemma 5.** We derive the incentive constraint for the case where only one candidate accepts the offer. Without loss of generality, we assume that $L$ takes the offer and $R$ rejects. In this case, if $L$ accepts the offer, his payoff is

$$\begin{aligned} V_{L,AN} = &\int_{\epsilon^m(\bar{p}_L, a_L, C_L, 0,0,0)}^{\epsilon^m(0, a_L, C_L, 0,0,0)} \left[Q - (a_L - \bar{a}_L) - (\bar{p}_L - p^*_{L,AN})^2\right] g(\epsilon) d\epsilon \\ &+ G(\epsilon^m(\bar{p}_L, a_L, C_L, 0, 0, 0)[Q - (a_L - \bar{a}_L)] \\ = &\frac{\bar{\epsilon} + \epsilon^m(0, a_L, C_L, 0, 0, 0)}{2\bar{\epsilon}}[Q - (a_L - \bar{a}_L)] \\ &- \int_{\epsilon^m(\bar{p}_L, a_L, C_L, 0,0,0)}^{\epsilon^m(0, a_L, C_L, 0,0,0)} (\bar{p}_L - p^*_{L,AN})^2 g(\epsilon) d\epsilon \end{aligned}$$

On the other hand, if candidate $L$ rejects the offer, its payoff is:

$$\begin{aligned} V_{L,NN} = &\int_{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0,0,0,0,0\right)}^{\epsilon^m(0,0,0,0,0,0)} \left[Q - \bar{a}_L - (\bar{p}_L - p^*_{L,NN})^2\right] g(\epsilon) d\epsilon \\ &+ \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \bar{a}_L, 0,0,0\right)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, 0,0,0,0,0\right)} \left[Q - (\bar{a}_L - a^*_{L,NN}) - \left(\frac{\beta_L}{\beta_L + \theta^m}\right)^2 \bar{p}_L^2\right] g(\epsilon) d\epsilon \\ &+ \int_{\epsilon^m(\bar{p}_L, \bar{a}_L, 0,0,0,0)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L + \theta^m}\bar{p}_L, \bar{a}_L, 0,0,0\right)} [Q - (\bar{p}_L - p^*_{L,NN})^2] g(\epsilon) d\epsilon \\ &+ G(\epsilon^m(\bar{p}_L, \bar{a}_L, 0, 0, 0, 0))Q \end{aligned}$$

Rewriting this, we have

$$\begin{aligned}
V_{L,NN} &= \frac{\bar{\epsilon}}{2\bar{\epsilon}} Q \\
&- \frac{\epsilon^m (0,0,0,0,0,0) - \epsilon^m \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0,0,0,0\right)}{2\bar{\epsilon}} \bar{a}_L \\
&+ \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L,0,0,0\right)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L,0,0,0,0,0\right)} a^*_{L,NN} g(\epsilon) d\epsilon \\
&- \left(\frac{\beta_L}{\beta_L+\theta^m}\right)^2 \bar{p}_L^2 \frac{\epsilon^m \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, 0,0,0,0,0\right) - \epsilon^m \left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L, \bar{a}_L, 0,0,0\right)}{2\bar{\epsilon}} \\
&- \int_{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L,0,0,0,0,0\right)}^{\epsilon^m(0,0,0,0,0,0)} (\bar{p}_L - p^*_{L,NA})^2 g(\epsilon) d\epsilon \\
&- \int_{\epsilon^m(\bar{p}_L,\bar{a}_L,0,0,0,0)}^{\epsilon^m\left(\frac{\theta^m}{\beta_L+\theta^m}\bar{p}_L,\bar{a}_L,0,0,0\right)} (\bar{p}_L - p^*_{L,NA})^2 g(\epsilon) d\epsilon
\end{aligned}$$

Similar to Lemma 3, the last term in $V^*_{L,AN}$ and the last two terms in the above equation are canceled out due to the uniform distribution. Therefore, the incentive constraint is affected by the expected winning payoff difference, the policy cost of commitment to $a_L$, and a term that is related to the policy bliss point. That is, candidate $L$'s incentive compatibility condition for acceptance of the contract given $R$ not committing to IG is

$$\begin{aligned}
&V_{L,AN} - V_{L,NN} \\
&= \frac{1}{2\bar{\epsilon}} \left[ \left(-\theta^m a_L + C_L\right) Q - \left(\bar{\epsilon} - \theta^m a_L + C_L\right) |a_L - \bar{a}_L| + \theta^m \bar{a}_L \left( \frac{\bar{p}_L^2}{1+\theta^m} + \frac{\bar{a}_L}{2} \right) \right] \geq 0
\end{aligned}$$

Candidate $R$'s incentive compatibility constraint given $L$ not committing to IG can be derived similarly.□

# Appendix C: The 2016 Presidential Race

*The Center of Responsive Politics* provides detailed information in the US politics (https://www.opensecrets.org/). We can get information on sector/industry-level contributions to each candidate who ran in presidential races (detailed decompositions are available from at least 2008 on). Each sector/industry provides contributions to a number of candidates including both parties' presidential nominees and other candidates who drop out as party primaries proceed. Sector/industries often have a party bias.

In usual presidential election years (Tables 2 and 3), for almost all sectors/industries, the two top recipients of contribution money are often Republican and Democratic party nominees, but other candidates in the two major parties also collected significant amounts of contribution money before they drop out.

In the 2016 presidential election race, the two candidates who got most total campaign contributions (from industries and other sources) are Hilary Clinton and Donald Trump ($770M and $408M, respectively). But sector/industry contributions to Clinton and Trump in 2016 display a different pattern relative to presidential campaigns in prior years. Clinton got the highest amount of contributions in most sectors/industries, but this is not a particularly interesting observation. The financial sector (commercial banks, hedge funds, insurance, and security invest) tends to contribute to many candidates from early stage, but in the end they contribute the highest amounts to the two candidates nominated by the two parties. However, in 2016, the financial sector gave significantly higher contributions to Clinton than to Trump. For example, Clinton's contributions from hedge funds were 100 times that of Trump, and Jeb Bush and Marco Rubio's contributions from hedge funds were also much higher than hedge fund's contributions to Trump. In terms of the financial sector's campaign contributions to Republican candidates, Trump ranked 4th (commercial banks), 11th (hedge funds), 4th (insurance), and 10th (securities and investment). Even in the oil and gas industry, Trump got less money than Clinton and Jeb Bush who got 10 times more than what Clinton got. The agricultural business sector is usually a Republican stronghold, but Trump got less than Clinton (4th in Republican party). These observations are consistent with the idea that Donald Trump was a very unconventional Republican candidate. Industries usually contribute some money to most candidates in the initial stages of their campaigns. Thus, we can safely say that these industries did not contribute money to Trump after he was nominated, although the available data are on cumulative contributions only.

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| 2016 | 1 | 2 | 3 | Clinton | **Trump** |
|---|---|---|---|---|---|
| commercial banks | Clinton 2.8 | Bush 1.1 | Rubio 0.4 | 2.8 (1) | 0.37 (5) |
| electronics/mfg equipment | Clinton 13 | Rubio 5.6 | Paul 2.4 | 13 (1) | 0.6 (6) |
| internet | Clinton 6.3 | Sanders 0.9 | Bush 0.22 | 6.3 (1) | 0.06 (9) |
| hedge funds & private equity | Clinton 59 | Bush 17 | Rubio 16 | 59 (1) | 0.3 (12) |
| insurance | Bush 12 | Rubio 5.7 | Clinton 2.5 | 2.5 (3) | 0.7 (4) |
| oil gas | Bush 11 | Perry 1.6 | Kaisch 1.6 | 0.9 (6) | 0.8 (8) |
| pharma/health products | Clinton 12 | Bush 1.5 | Cruz 0.8 | 12 (1) | 0.3 (7) |
| securities & investment | Clinton 87 | Bush 34 | Rubio 20 | 87 (1) | 1.1 (11) |
| telephone utilities | Clinton 0.7 | Sanders 0.2 | Cruz 0.1 | 0.7 (1) | 0.1 (4) |
| TV/movies/music | Clinton 24 | Rubio 2.3 | Sanders 1.5 | 24 (1) | 0.4 (5) |

**Table 1.** *2016 Selected Industry Contributions*
(https://www.opensecrets.org/)
The top three recepients of campaign contributions, and the two party nominees (unit million dollars: numbers in parentheses are the rankings).

| 2012 | 1 | 2 | 3 | **Obama** | Romney |
|---|---|---|---|---|---|
| commercial banks | Romney 4.8 | Obama 1.7 | Perry 0.2 | 1.7 (2) | 4.8 (1) |
| computer/internet | Obama 5.9 | Romney 3.2 | Paul 0.6 | 5.9 (1) | 3.2 (2) |
| hedge funds & private equity | Romney 7.7 | Obama 1.8 | Pawlenty 0.2 | 1.8 (2) | 7.7 (1) |
| insurance | Romney 4.7 | Obama 1.7 | Perry 0.5 | 1.7 (2) | 4.7 (1) |
| oil gas | Romney 5.9 | Perry 1.0 | Obama 0.8 | 0.8 (3) | 5.9 (1) |
| pharma/health products | Obama 2.0 | Romney 2.0 | Perry 0.9 | 2.0 (1) | 2.0 (2) |
| securities & investment | Romney 23 | Obama 6.8 | Pawlenty 0.7 | 6.8 (2) | 23 (1) |
| telephone utilities | Obama 0.5 | Romney 0.5 | Paul 0.0 | 0.5 (1) | 0.5 (2) |
| TV/movies/music | Obama 6.5 | Romney 1.1 | Sanders 1.5 | 6.5 (1) | 1.1 (2) |

**Table 2.** *2012 Selected Industry Contributions*
(https://www.opensecrets.org/)
The top three recepients of campaign contributions, and the two party nominees (unit million dollars: numbers in parentheses are the rankings).

| 2008 | 1 | 2 | 3 | **Obama** | McCain |
|---|---|---|---|---|---|
| commercial banks | Obama 3.4 | McCain 2.3 | Clinton 1.5 | 3.4 (1) | 2.3 (2) |
| computer/internet | Obama 9.7 | Clinton 2.3 | McCain 1.7 | 9.7 (1) | 1.7 (3) |
| hedge funds & private equity | Obama 3.7 | McCain 2.1 | Clinton 1.8 | 3.7 (1) | 2.1 (2) |
| insurance | McCain 2.8 | Obama 2.6 | Clinton 1.2 | 2.6 (2) | 2.8 (1) |
| oil gas | McCain 2.7 | Obama 1.0 | Giuliani 0.7 | 1.0 (2) | 2.7 (1) |
| pharma/health products | Obama 2.4 | McCain 0.8 | Clinton 0.7 | 2.4 (1) | 0.8 (2) |
| securities & investment | Obama 16.6 | McCain 9.3 | Clinton 7.3 | 16.6 (1) | 9.3 (2) |
| telephone utilities | Obama 0.6 | McCain 0.5 | Clinton 0.3 | 0.7 (1) | 0.5 (2) |
| TV/movies/music | Obama 9.9 | Clinton 3.5 | McCain 1.1 | 9.9 (1) | 1.1 (3) |

**Table 3.** *2008 Selected Industry Contributions*
(https://www.opensecrets.org/)
The top three recepients of campaign contributions, and the two party nominees (unit million dollars: numbers in parentheses are the rankings).

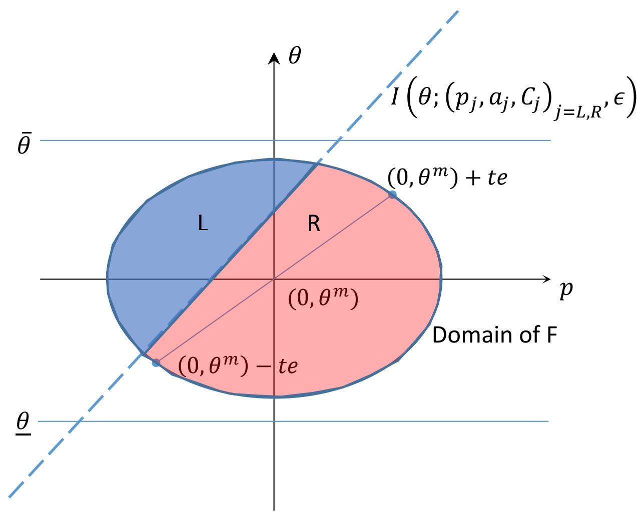


Figure 1: The voter space and the set of indifferent voters

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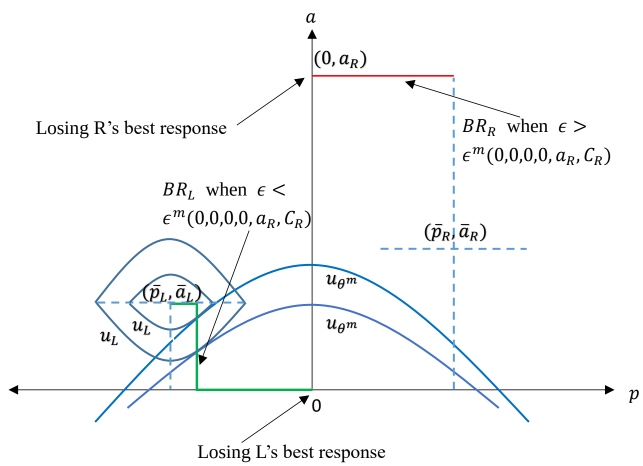


Figure 2: $L$ and $R$'s best response given $R$ accepted IG' offer
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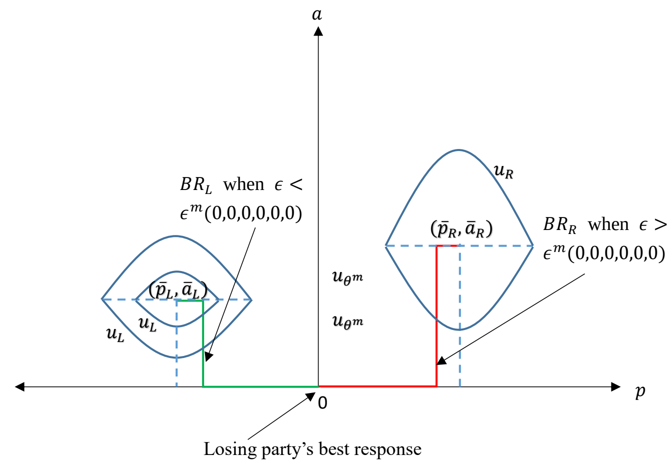


Figure 3: $L$ and $R$'s best response if they both reject IG's offer.

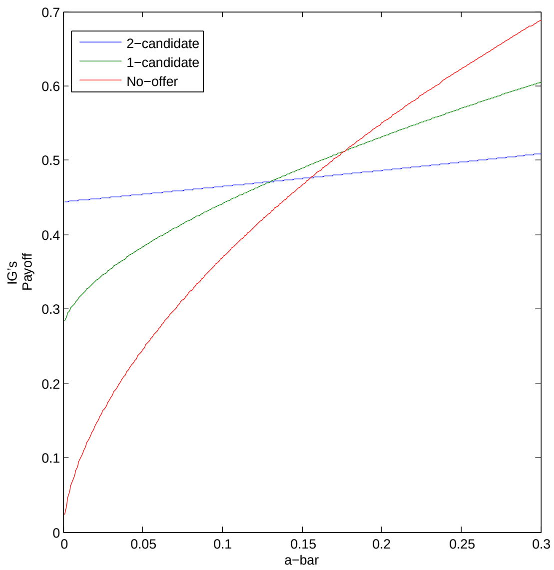


Figure 4: IG's optimal offer, $\bar{a}_L = \bar{a}_R$.

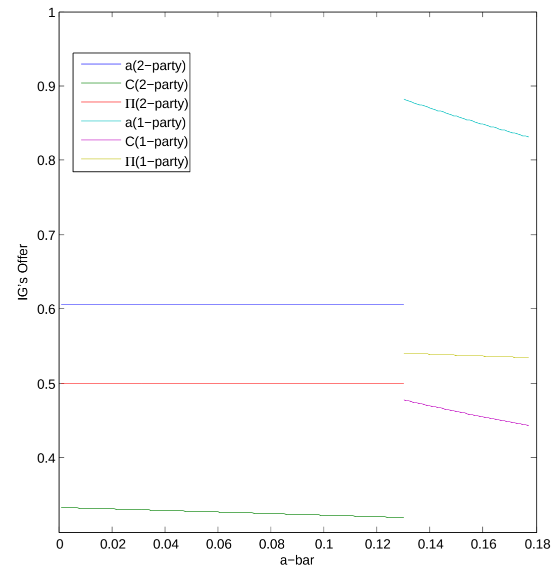


Figure 5: The contents of offer, $\bar{a}_L = \bar{a}_R$.

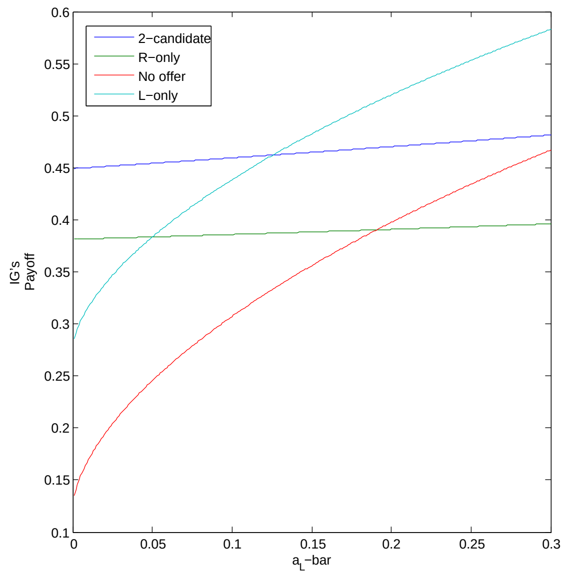


Figure 6: IG's optimal offer, $\bar{a}_L = 0.05$ and $\bar{a}_R \in [0, 0.3]$.

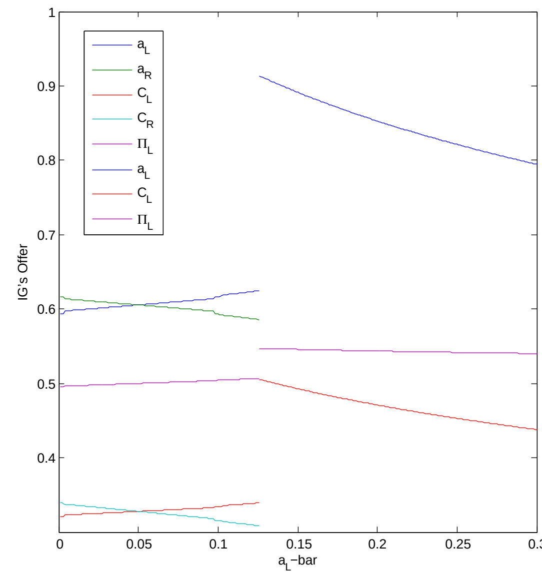


Figure 7: The contents of offer, $\bar{a}_L = 0.05$ and $\bar{a}_R \in [0, 0.3]$.

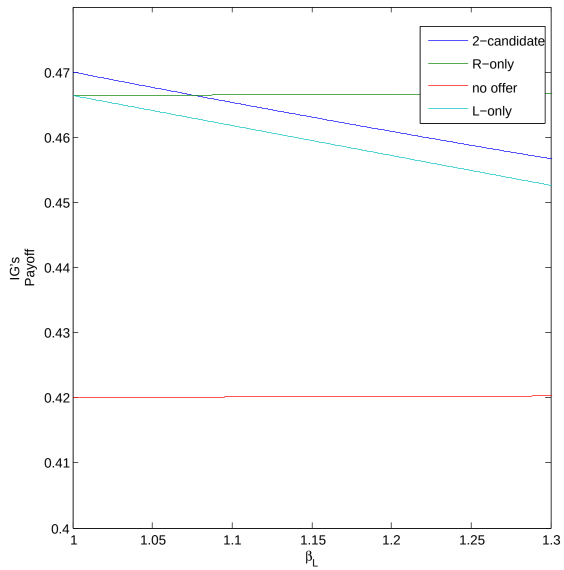


Figure 8: IG's optimal offer, $\beta_R = 1 < \beta_L \in (1, 1.5]$ and $\bar{a}_L = \bar{a}_R = 0.125$.

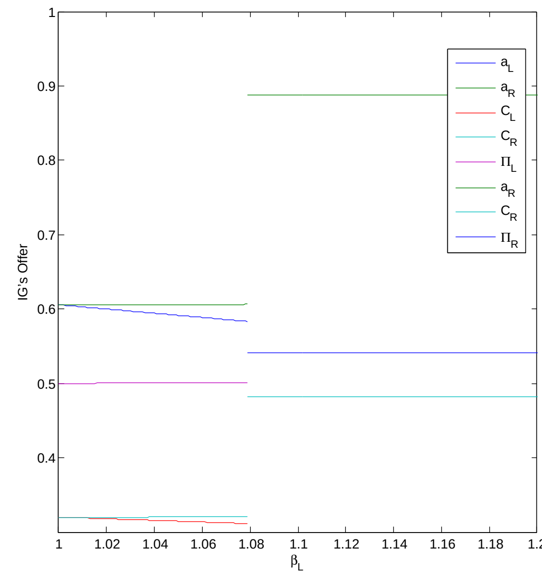


Figure 9: The contents of offer, $\beta_R = 1 < \beta_L \in (1, 1.5]$ and $\bar{a}_L = \bar{a}_R = 0.125$.

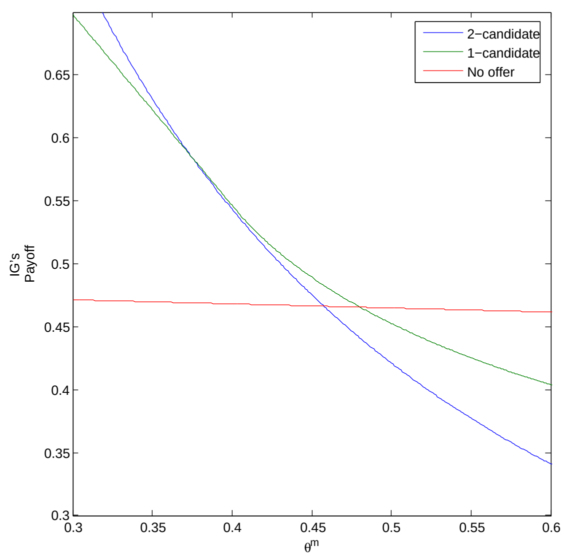


Figure 10: IG's optimal offer for increasing $\theta^m$, $\bar{a}_L = \bar{a}_R$.

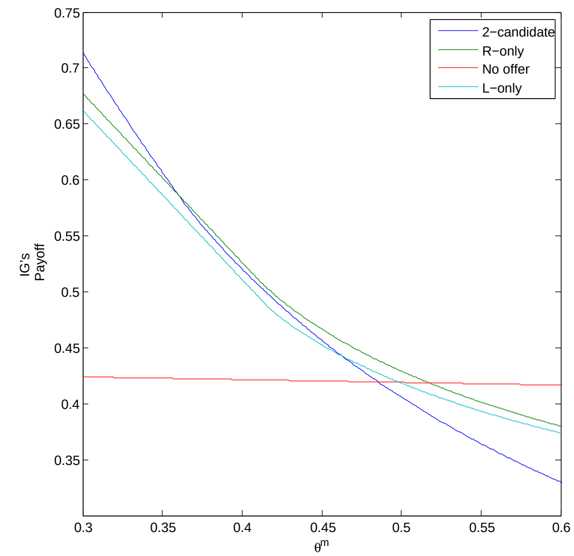


Figure 11: IG's optimal offer increasing $\theta^m$, $\beta_L = 1.3 > \beta_R = 1$.

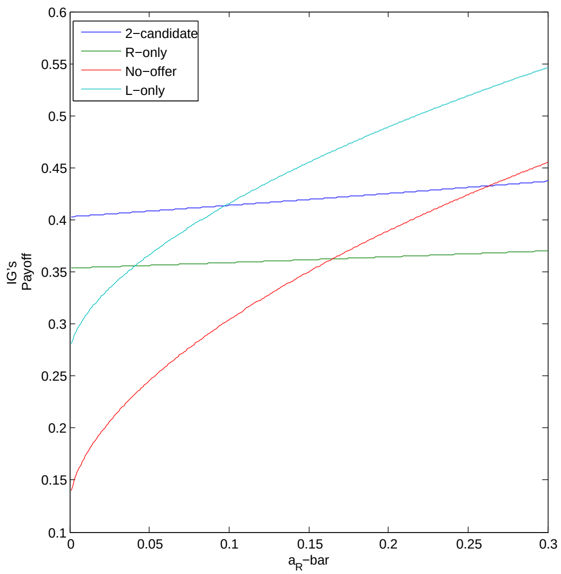


Figure 12: IG's optimal offer when IM makes offer to $L$ with asymmetric $\bar{a}_i$.

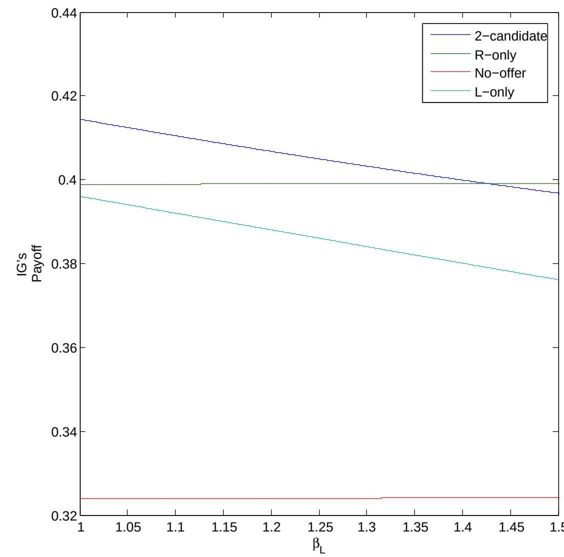


Figure 13: IG's optimal offer when IM makes offer to $L$ with asymmetric $\beta_i$.