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Campaign Promises and Political Factions

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Abstract:
This paper builds a dynamic model of electoral competition with nonbinding campaign promises. We find that campaign promises by a candidate for office signal her political preferences and public policy that she intends to implement. The reason is that electoral competition induces her to pander campaign promises to political interests by a minimal majority of citizens. If their votes bring her in office, she has to raise them once again in order to be re-elected. For that, she needs to fulfill her electoral promises. To minimize the cost of pandering to re-election if in office, a candidate gives campaign promises that she would like to fulfill the most. She fulfills them if in office, unless the cost of fulfillment lies above the benefit from re-election. We show, furthermore, that representatives by a minimal majority of citizens form a faction to coordinate their electoral strategies, and we investigate the consequences of such political collusion.

Keywords: Electoral promises, pork-barrel politics, political parties

JEL Classification: D72, D82

1 Introduction

In electoral campaigns, candidates competing for office describe public policy which they intend to implement, presumably in order to increase their electoral fortunes. Winners seem to keep their word most of the time. Royed and Borrelli (1997) find that between 1977 and 1992, most of 287 platform pledges on social welfare policy by two major US parties were fulfilled. Budge, Robertson, and Hearl (1987) and Petry (1995) find campaign promise fulfillment in other democracies. This paper builds a model of electoral competition with nonbinding, yet informative campaign promises.

Model outline The citizens are differentiated by *type* of preferences over pork-barrel policy: pork to citizens of one type imposes a cost on the citizens of the other types.[1] For simplicity, there are three types. A citizen's type is his private information. An arbitrary small mass of citizens becomes informed about the cost of a pork: these citizens are the politicians; the other citizens are the voters. All types are equally represented both among the politicians and among the voters: this information is public.

There are two majority vote elections. Two politicians compete for office in either election: the winner picks pork-barrel policy. The first election is an open-seat race. The second election is an incumbent-challenger race. In the first election, a candidate for office gives campaign promises regarding pork-barrel policy if she is in office: she is free to break her word. In the second election, citizen beliefs about the incumbent's type depend both on her electoral promises and on her policy.[2]

Informative campaign promises We solve the game using perfect Bayesian equilibrium concept. We restrict out attention to symmetric pure strategy equilibria. Proposition 1 describes equilibria with informative electoral promises, that is, equilibria in which a candidate's campaign promises signal her type.[3]

[1] We follow the political science tradition of using "pork" for favorable public policy.

[2] Nothing changes if the incumbent and the challenger give electoral promises: eitherway, the winner of the second election picks her most preferred policy in the last period.

[3] For the sake of completeness, Section A.1 describes "babbling" equilibria.

Because of electoral competition, a candidate for office in the first election panders campaign promises to a minimal majority of citizens.[4] If their votes bring her in office, she needs to raise them once again if she wants to be re-elected. For that, she has to fulfill her electoral promises.[5] To minimize the cost of pandering to re-election if in office, a candidate gives promises that she would like to fulfill the most. She fulfills them if in office, unless the cost of fulfillment lies above the benefit from keeping control over public policy for one more term.

Hence, a candidate's campaign promises signal her type and pork-barrel policy if she is in office. However, they decrease the efficiency of pork-barrel policy by limiting the incumbent's flexibility in pandering to re-election.

Political collusion Because campaign promises are fulfilled at a positive rate, representatives by a minimal majority of citizens would like to agree on campaign advertising strategy if running for office. We extend the model with a bargaining stage in which one type politicians and a minimal majority of some other type politicians form a political faction.

At the beginning of the game: the Nature sequentially draws a politician; she receives the other politicians' private messages about their types: these messages may be either true or false; she offers political faction membership to a subset of politicians; a receiver of the offer either accepts or rejects it. The faction is formed if and only if any receiver accepts the offer. Bargaining goes until a political faction is formed. Both composition of the faction and a politician's membership in the faction become public information. For simplicity, we assume that a member of the faction competes with an independent candidate in either election.[6] Furthermore, the incumbent can abstain from re-election.

We continue to focus on equilibria with informative campaign promises.

[4]Because the candidates pander campaign promises to citizen beliefs, a variety of promises can be sustained in equilibrium. However, in any equilibrium, campaign promises signal the same information to the voters, and they have the same effects on elections and policies. We are interested in these effects, and not in the contents of electoral pledges.

[5]By abuse of terminology, we say that the incumbent fulfills her campaign promises if and only if both her promises and her policy pander to the same citizens.

[6]Our insights remain qualitatively robust if this assumption is canceled.

Proposition 2 describes equilibria in which a politician who is drawn to make an offer learns the other politicians' types from their messages.[7] The politician who is drawn to make an offer first maximizes the probability of event that the incumbent is congruent with her subject to acceptance of her offer by any receiver. She offers faction membership to her type politicians and to a minimal majority of some other type politicians, this offer is accepted by all receivers, and the faction is formed.

A candidate from the faction in the first election panders campaign promises to citizens whose types are represented in the faction, and she wins office by their votes. In office, she either (i) fulfills her campaign promises, runs for re-election and wins it; or else she (ii) picks her most preferred policy and abstains from re-election, so as to increase the coherence of the vote by citizens whose types are represented in her faction, and to guarantee thereby that the winner of the second election is a member of the faction.

Consequences of political collusion Political faction formation biases pork-barrel policy towards political interests that are represented in the faction. More importantly, it decreases the efficiency of pork-barrel policy, because it dilutes the incumbent's re-election concerns.[8]

To emphasize this effect, we further extend the game so as to reinforce re-election pressures. Indeed, we increase voter information in the second election: after observing the incumbent's policy, a politician votes either "for" or "against" the incumbent's nomination for re-election; the incumbent is nominated if and only if she raises a majority of the votes; the outcome is public information.

We consider, one-by-one two institutional environments: (i) political faction formation is banned; (ii) it is feasible. In either environment, we describe the most efficient equilibrium with informative electoral promises. In such an equilibrium, nomination for re-election (or its failure) signals a politician's preference between the incumbent and the challenger: recall that nomination

[7] Democratic outcomes in equilibria with uninformative communication among the politicians are described by Proposition 1.

[8] If the incumbent deviates to her most preferred policy, the winner of the second election belongs to the incumbent's faction, hence, she is congruent with the incumbent with a high probability.

rule is a majority vote, and only a minimal majority of politicians are on the incumbent's board. As a result, in the second election a voter votes in the same way as a politician of his type. Hence, the incumbent is re-elected if and only if her policy does not reveal her type to the politicians. Therefore, she picks: either (i) her most preferred policy; or else (ii) the most efficient policy that any politician on her board would implement under threat of no re-election. Propositions 3 and 4 show that the incumbent's policy is more efficient when political faction formation is banned.

According to this insight, political parties play a controversial role in democratic process. On the one hand, they establish organizations to select high-quality candidates for office and increase their commitment abilities.[9] On the other hand, however, a party is a political faction that helps its members to coordinate their electoral strategies. Indeed, voters show loyalty to political parties in elections;[10] and political representatives affiliated to the same party demonstrate high legislative cohesiveness.[11]

The paper is organized as follows. Section 2 reviews related literature. Section 3 formalizes basic model. Section 4 describes democratic outcomes with informative electoral promises. Section 5 describes political faction formation. Section 6 investigates its consequences. Section 7 concludes.

2 Related literature

Informative campaign promises While a sizable literate assumes that electoral promises are binding, some papers predict that they are fulfilled without making this assumption. Austen-Smith and Banks (1989) build

[9] Section 2 reviews the literature that emphasizes commitment and signalling benefits from political parties.

[10] From 1953 to 2004, 88% of respondents of Biannual poll by American National Election Studies associated themselves with one of the major parties; moreover, 83% of Democratic identifiers voted Democratic, and 79% of Republican identifiers voted Republican in Congressional elections.

[11] On average, in roll-call votes from 1857 to 2000 more than 83% of House representatives with the same party affiliation voted in the same way; and in about 60% of votes a majority of Democrats opposed a majority of Republicans (Gershtenson, 2006). Note that in this period only 0.3% of House representatives were independent.

political agency model with moral hazard. The incumbent's performance depends on her effort. During electoral campaign, the candidates for office describe their performance goals. The voters put re-election pressures on the incumbent by using a scoring rule that compares her performance to her electoral promises. Thereby, they encourage the incumbent to exert an effort in fulfillment of electoral promises.

In an infinite-horizon model by Aragones, Palfrey, and Postlewaite (2006) politicians keep their campaign promises in order to build reputation with voters who play trigger strategies.

In Harrington (1993), the candidates for office pander electoral promises to voter beliefs. There are two majority vote elections with two candidates competing in either election. The winner chooses between two public policies. One of the policies is efficient, that is, it generates the highest expected payoff to the voters. Neither the voters nor the candidates know which policy is efficient. The players are divided in two types by their prior beliefs on this issue: players of the same type are biased towards the same policy. The voters are Bayesian. The candidates remain steadfast in their prior beliefs. A player's type is his private information. Electoral weight by either type is uncertain. In the first election, a candidate tells which policy she intends to choose. The incumbent chooses either policy. The voters see both her choice and their payoff, and they update beliefs about the effectiveness of different policies and the incumbent's type. In the second election, the incumbent competes with the challenger whose type is drawn at random.

Because the last period office-holder picks the policy that is efficient by her (prior) beliefs, in the second election a voter votes for the candidate whose beliefs are the most likely to be "correct". The incumbent panders to re-election by choosing a policy that she believes to be efficient. When expected electoral weight by either type voters is sufficiently high, a candidate for office in the first election truthfully tells which policy she intends to choose.

Our emphasis is different both from Austen-Smith and Banks (in our model, the voters compare the incumbent's policy to her electoral promises in order to update their beliefs about her political preferences), and from Aragones, Palfrey, and Postlewaite (in our model the voters do not use trigger strategies). It is reminiscent of Harrington in that the candidates for office pander campaign promises to voter beliefs. However, in our model the incumbent's policy choice is not pre-determined: she either picks her most preferred policy or else she panders to re-election, depending on the cost of pork-barrel pandering. This relates out paper to a sizable literature that studies strategic behavior by politicians with re-election concerns. Indeed, our framework is based on Maskin and Tirole (2001): see section "Tyranny of the minorities: pork-barrel pandering".[12]

Commitment and signaling benefits from political parties A growing body of papers views political parties as organizations that enhance their members' electoral fortunes by generating public signal on their political preferences, or else by increasing their commitment abilities.

In Snyder and Ting (2002), Ashworth and Bueno de Mesquita (2006), and Castanheira and Crutzen (2006) a candidate's party affiliation is a costly signal of her ideology in a unidimensional spectrum. In Snyder and Ting, the voters have preferences over an office holder's ideology. Parties are unitary players that locate their platforms so as to maximize the votes raised by their candidates for office. A candidate can join a party at a cost which is increasing in the distance between her ideology and the party's platform. Party membership is informative, because a party attracts the members whose ideologies lie sufficiently close to its platform. In Ashworth and Bueno de Mesquita, a party sets the cost of its membership. In Castanheira and Crutzen, it indicates a set of tolerated policies around some point in ideological spectrum.

In Levy (2004) and in Morelli (2004) intra-party ideological heterogeneity increases commitment abilities by the party's candidate for office. In Levy, a candidate for office can commit to implement a policy that lies in Pareto set by the party members. In Morelli, she can commit to a diverse set of policies that internalize ideologies represented in the party.

Our insights imply that commitment and signalling benefits from party membership shall be attributed to party organization. This idea is emphasized in the literature. In Alesina and Spear (1988) partisanship increases

[12] This section is not included in the final version of their paper.

commitment abilities by a candidate for office, because a party has an infinite horizon unlike its members.

In Caillaud and Tirole (2002); and in Castanheira, Crutzen and Sahuguet (2005), party nomination signals high quality of electoral platform by the nominee. Caillaud and Tirole consider party organization composed of (i) like-minded candidates for office who design electoral platforms; and (ii) rank-and-file who organize intra-party competition among the candidates, so as to maximize the probability of the event that the party's nominee wins the general election. This probability is increasing in quality of the nominee's electoral platform. Therefore, the party organization: (i) on the one hand, encourages the candidates to exert effort in platform design; (ii) on the other hand, discourages them from challenging high quality platforms by their party members. Castanheira, Crutzen and Sahuguet consider a duopoly party structure. They investigate how the incentives by partizan candidates are influenced by interaction of inter- and intra-party competition.

3 Basic model

Consider a two-period model of representative democracy.[13] The citizens are differentiated by *type* of preferences over public policy. A citizen's type θ is his private information. There are three types $\theta \in \{1, 2, 3\}$.[14] In a period, type θ citizens either receive *pork* or not, as indicated by variable[15]

$$p_\theta = \begin{cases} 1, \text{ if type } \theta \text{ citizens receive pork;} \\ 0, \text{ otherwise.} \end{cases}$$

Set $\mathcal{P} = \{(p_1, p_2, p_3) \mid p_\theta \in \{0, 1\}\}$ is pork-barrel policy space. Pork to type θ citizens delivers them benefit b, and it imposes cost $\frac{1+x_\theta \Delta}{2}$ on either type $\widetilde{\theta} \neq \theta$ citizens, where variable x_θ is drawn independently between the periods

[13] Timing of the game is summarized at the end of this section.

[14] It is straightforward to extend the model to an arbitrary number of types. Also, we believe that our insights remain robust if the model is extended to more periods.

[15] For notational convenience, here and everywhere below we omit a period indicator for period-specific variables, like p_θ.

and among the types from diffused Bernoulli distribution:

$$x_\theta = \begin{cases} 1, \text{ with probability } \frac{1}{2}; \\ 0, \text{ with probability } \frac{1}{2}. \end{cases}$$

We denote with

$$V_\theta(p) = p_\theta b - \frac{1}{2} \sum_{\widetilde{\theta} \neq \theta} p_{\widetilde{\theta}} \left(1 + x_{\widetilde{\theta}} \Delta\right) \tag{1}$$

type θ citizen payoff from pork-barrel policy $p = (p_1, p_2, p_3) \in \mathcal{P}$.[16] Inequalities

$$1 < b < 1 + \Delta \tag{2}$$

guarantee that pork to type θ citizens is efficient if and only if $x_\theta = 0$. Hence, parameter Δ measures the cost of inefficient pork-barrel policy.

Only an arbitrary small mass of the citizens, called the politicians, learns period-specific *state* $x = (x_1, x_2, x_3)$. The other citizens, called the voters, remain uninformed about the state. Any type is equally represented both among the politicians and among the voters: this information is public. At the beginning of either period there is an election, in which two politicians compete for office by a simple majority-vote without abstention.[17] The winner picks pork-barrel policy in the period.

The candidates for office in the first election are drawn at random. We index a candidate with k; variable θ^k denotes type by candidate k; index $-k$ refers to the rival by candidate k; index I refers to the first-period incumbent, called by abuse of terminology *the incumbent*. The candidates simultaneously give public campaign promises. That is, for each possible state x, candidate k describes policy $p^k(x, \theta^k) = (p_1^k(x, \theta^k), p_2^k(x, \theta^k), p_3^k(x, \theta^k))$ from set $\mathcal{P}$ which she intends to pick if in office: she is free to break her word. Depending on campaign promises, the citizens update their beliefs about a candidate's type and pork-barrel policy if she wins the first election. It is convenient to say that

[16] Note that two different type citizens would like to deliver no pork to each other. However, they both wish that no pork is given to yet different type citizens. As an illustration, imagine that one type citizens would like to increase worker compensation; the second type citizens would like to increase family assistance; and the third type citizens would like to decrease income tax rate.

[17] Note that vote by the politicians is not influential.

Definition 1 (electoral base) *type θ citizen is in electoral base by candidate k if and only if* $\Pr\left(\theta^k = \theta \mid p^k(x, \theta^k),\ p^{-k}(x, \theta^{-k})\right) > 0$. *Set*

$$\mathcal{B}^k(\theta^k) = \left\{\theta \mid \Pr\left(\theta^k = \theta \mid p^k(x, \theta^k),\ p^{-k}(x, \theta^{-k})\right) > 0\right\} \tag{3}$$

is the types in electoral base by candidate k.

The incumbent picks policy $p(x, \theta^I) = (p_1(x, \theta^I), p_2(x, \theta^I), p_3(x, \theta^I))$ from set $\mathcal{P}$.[18] A politician observes the entire vector $p(x, \theta^I)$. A voter sees only his type-specific component, that is, type θ voter sees $p_\theta(x, \theta^I)$. The citizens update their beliefs about the incumbent's type. In the second election, the incumbent competes with a politician drawn at random: "the challenger".

Timing of the game

<u>Date 0</u>.

The Nature draws the candidates for office. The candidates give campaign promises. The citizens update their beliefs about a candidate's type and pork-barrel policy if she is in office.

<u>Date 1</u>. The first election.

a. The Nature draws the first-period state. The politicians learn the state.

b. The incumbent picks pork-barrel policy. A politician sees the policy. A voter sees only whether or not he has received pork. The citizens update their beliefs about the incumbent's type.

c. The Nature draws the challenger.

<u>Date 2</u>. The second election.

a. The Nature draws the second-period state.

b. The politician in office learns the state and picks pork-barrel policy.

Tie-breaking assumptions

(T1) *When a candidate is indifferent between two campaign advertising strategies, she plays either strategy with probability $\frac{1}{2}$.*

(T2) *Being indifferent between the candidates, a citizen votes at random.*

[18] The first-period policy depends on three arguments: x, θ^I, and $p^I(x, \theta^I)$. For notational convenience, we write it as a function of arguments x and θ^I.

(T3) *When the vote results in a tie, the election's outcome is random.*

(T4) *An office-holder receives arbitrary small perks from office.*[19]

4 Informative electoral promises

We solve the game using perfect Bayesian equilibrium concept. We focus on symmetric equilibria in which the players use pure-strategies, unless specified otherwise by a tie-breaking assumption. "Babbling" equilibria in which a candidate's campaign promises do not depend on her type are described in Section A.1. This section describes the complementary set of equilibria. For concreteness,[20] let us focus on equilibria in which candidate k promises at least as high expected payoff to type θ^k citizens as to anybody else, so that

$$\Pr\left(\theta^k = \theta \mid EV_\theta\left(p^k(x,\theta^k)\right) < \max_{\widetilde{\theta}\neq\theta}\left\{EV_{\widetilde{\theta}}\left(p^k(x,\theta^k)\right)\right\}\right) = 0, \tag{4}$$

where the expectations are taken at date 1. By abuse of terminology,

Definition 2 (informative electoral promises) *campaign promises are informative if and only if citizen beliefs are described by equation (4).*

Because the incumbent is congruent with type θ^I citizens, type θ citizen maximizes the probability of event $\theta^I = \theta$ (Lemma A.6). To this goal: (i) at date 1, a citizen votes for the candidate who is the most likely to be congruent with him (Lemma A.7); and (ii) at date 0, a candidate panders her campaign promises to citizen beliefs, so as to maximize her electoral fortunes. Competition for office encourages her to promise the same expected payoff to citizens of two types, and a lower expected payoff to the remaining type citizens, so as to frame a minimal majority of citizens in her electoral base (Lemma A.8). The outcome of the first election is random.

In the second election, once again, a voter would like to elect a politician who is congruent with him, because the last period office-holder delivers pork only to her type citizens. A voter outside the incumbent's electoral base votes for the challenger, because he remembers the incumbent's electoral promises.

[19]Hence, when the cost of pandering to re-election is equal to the benefit from staying in office, the incumbent panders to re-election.

[20]Recall footnote 4.

A voter in the incumbent's electoral base votes for re-election if and only if he receives pork, because the incumbent's policy signals her type (Lemma A.9). Hence, the incumbent stays in office if and only if she gives pork to anybody in her electoral base.

On the one hand, the incumbent would like to stay in office, so as to keep control over pork-barrel policy. On the other hand, however, she would like to give pork only to type θ^I citizens. When they are in her electoral base, the cost of re-election is the lowest. Because the incumbent has played an optimal campaign advertising strategy, her electoral base is type θ^I citizens and some other type citizens. Naturally, the incumbent gives pork to her type citizens regardless of its cost, that is,

$$p_{\theta^I}(x, \theta^I) = 1 \text{ for any } x. \tag{5}$$

She gives pork to type $\mathcal{B}^I(\theta^I) \backslash \left\{\theta^I\right\}$ citizens if and only if the cost that is paid by type θ^I citizens for this pork lies not higher than the expected benefit from pandering to re-election[21]

$$R = \frac{2b}{3} + \frac{1}{3} + \frac{\Delta}{6}. \tag{6}$$

When the cost of inefficient pork-barrel pandering Δ lies not higher than threshold $2b - \frac{1}{2}$, type $\mathcal{B}^I(\theta^I) \backslash \left\{\theta^I\right\}$ citizens receive pork regardless of its cost, that is,

$$p_{\mathcal{B}^I(\theta^I) \backslash \left\{\theta^I\right\}}(x, \theta^I) = 1 \text{ for any } x. \tag{7}$$

Otherwise, they receive pork if and only if it is efficient, that is,[22]

$$p_{\mathcal{B}^I(\theta^I) \backslash \left\{\theta^I\right\}}(x, \theta^I) = 1 - x_{\mathcal{B}^I(\theta^I) \backslash \left\{\theta^I\right\}}. \tag{8}$$

The citizens outside the incumbent's electoral base never gives pork:

$$p_{\{1,2,3\} \backslash \mathcal{B}^I(\theta^I)}(x, \theta^I) = 0 \text{ for any } x, \tag{9}$$

because is costly for the incumbent and it does not bring them on her board in the second election.

[21] The incumbent's expected second-period payoff is equal to b if she stays in office; and to $\frac{b}{3} - \frac{2}{3}\left(\frac{1}{2} + \frac{\Delta}{4}\right)$ if the challenger wins the second election.

[22] Hence, the incumbent internalizes the cost of pork to some citizens. This is a benefit from political agency.

Proposition 1 (informative campaign promises) *In an equilibrium with informative electoral promises set* $\mathcal{B}^k(\theta^k)$ *has two elements:* θ^k *and a random draw from set* $\{1,2,3\} \setminus \{\theta^k\}$. *Either candidate wins the first election with probability* $\frac{1}{2}$. *The first-period policy is described by set of equations (5), (9) and: either (7), when* $\Delta \leqslant 2b - \frac{1}{2}$; *or (8) otherwise. The incumbent is re-elected unless both* $\Delta > 2b - \frac{1}{2}$ *and* $x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 1$. *The second-period office-holder gives pork only to her type citizens.*[23]

Proposition 1 implies that a candidate's campaign promises increase voter information about her type and pork-barrel policy that she intends to implement. For instance, when a candidate promises pork in any state to anybody in her electoral base, and no pork ever to anybody outside her electoral base, she keeps her word in most states if in office.

The flip side of the coin, is that campaign promises decrease the efficiency of the first-period policy, because they limit the incumbent's opportunities to pander to re-election: compare the first-period policy described by Proposition 1 and that described by Lemmas A.3 and A.4. Because in our model electoral sorting is irrelevant from social welfare perspective, campaign promises decrease the welfare. This insight may change of the model is extended in such a way that campaign promises signal a candidate's quality.

5 Political collusion

This section extends the model to investigate the issue of political collusion. Before the candidates for office are drawn, the politicians bargain about membership in political faction. The sequence of events is the following.

0.*a*. The Nature randomly draws a politician called political *leader*.

0.*b*. The leader receives the other politicians' private messages about their types: a message may be either true or false.

0.*c*. The leader offers political faction membership to a subset of politicians. Share s_θ of type θ politicians in the subset becomes public information.

[23] By assumption (T1), and Lemmas A.8 and A.10, set $\mathcal{B}^k(\theta^k)$ has two possible realizations. For any given sets $\mathcal{B}^k(\theta^k)$ and $\mathcal{B}^{-k}(\theta^{-k})$ democratic outcomes are described unambiguously. This remark applies to all Propositions below.

0.d. A receiver of the offer either accepts or rejects it. The faction is formed if and only if the offer is accepted by any receiver. If it is formed, the game continues as of date 0.a. Otherwise, it goes back to date 0.a.

For simplicity, we assume that in either election a member of political faction competes with an independent candidate.[24] Furthermore, we assume that the incumbent can abstain from re-election.

Additional tie-breaking assumptions

(T5) *When political leader is indifferent between two offers, she makes either offer with probability* $\frac{1}{2}$.

(T6) *A politician has arbitrary weak preference to remain independent.*

We continue to consider equilibria with informative electoral promises. This section considers equilibria *with political collusion* in which a politician's message to a leader signals her type.[25] We look at a stationary faction membership offer that is not rejected by anybody. The political leader who is drawn first offers faction membership so as to maximizes the probability of event that the incumbent is of her type subject to her offer being accepted by any receiver. She offers membership to: (i) all politicians of her type; and (ii) a minimal majority of some other type politicians; any receiver of the offer accepts it; and the faction is formed. Note that when a politician sends a message about her type to the leader she does not want to cheat: in this stage, her beliefs about types by politicians who will be invited in the faction are diffused.

The candidate from the faction in the first election frames her electoral base out of the citizens whose types are represented in the faction, and she wins office by their votes. In office, she either (i) gives pork to all of them, runs for re-election and wins it; or else (ii) she picks her most preferred policy and abstains from re-election.[26] Her expected benefit from pandering

[24] Recall footnote 6.

[25] Propositions 1 and 2 give a complete description of democratic outcomes in an equilibrium with informative electoral promises.

[26] If the second election is an open-seat, the winner is in the incumbent's faction. She is congruent with the incumbent with probability higher than $\frac{1}{2}$.

to re-election is equal to

$$r = \frac{b}{2} + \frac{1}{4} + \frac{\Delta}{8}. \tag{10}$$

Therefore, she panders to re-election in any state if and only if $\Delta \leqslant \frac{4b-2}{3}$; otherwise, her policy is described by equations (5) and (8).

Proposition 2 (political collusion) *In an equilibrium with informative electoral promises and political collusion the political leader who is drawn first assembles political faction out of all politicians of her type and a minimal majority of some other type politicians. The candidate from the faction frames electoral base out of the citizens whose types are represented in the faction, and she wins the first election. The first-period policy is described by set of equations (5), (9) and: (7) when $\Delta \leqslant \frac{4b-2}{3}$, (8) when $\Delta > \frac{4b-2}{3}$. The incumbent is re-elected unless both $\Delta > \frac{4b-2}{3}$ and $x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 1$. The second-period office-holder is a member the faction. She gives pork only to her type citizens.*

Hence, when the candidates communicate, they from political faction to coordinate their electoral strategies.

6 Consequences of political collusion

Proposition 2 shows that political faction formation biases pork-barrel policy towards the citizens whose types are represented in the faction. More importantly, it erodes the efficiency of the first-period policy, because it decreases the incumbent's re-election concerns: compare the right-hand-sides of equations (10) and (6).

To emphasize this effect, we extend the game so as to reinforce re-election pressures. Indeed, we increase voter information in the second election. Suppose that between date 1.c and date 2, a politician votes either "for" or "against" the incumbent's *nomination* for re-election. The incumbent receives nomination if and only if a majority of politicians votes for it. Variable

$$e = \begin{cases} 1, \text{ if the incumbent is nominated for re-election;} \\ 0, \text{ otherwise} \end{cases}$$

indicates the outcome. It is public information.

We consider, one-by-one two institutional environments: (i) political faction formation is banned; (ii) it is feasible. We compare the most efficient equilibria with informative electoral promises. Because democratic outcomes in equilibria in which a politician's vote regarding nomination for re-election does not depend on her preference between the incumbent and the challenger are already described by Propositions 1 and 2, we now focus on the complementary set of equilibria with informative electoral promises (we will see that the most efficient equilibria lie in this set). For concreteness,[27] let a politician vote for the incumbent's nomination if and only if she is for re-election, that is, if and only if

$$\Pr\left(\theta^I = \theta \mid p(x, \theta^I),\ p^I(x, \theta^I), x\right) > \frac{1}{3}. \tag{11}$$

The upper limits of efficiency In our model, efficiency of an equilibrium is measured by efficiency of the first-period policy in this equilibrium. Because the citizens outside the incumbent's electoral base never receive pork, the first-period policy cannot be more efficient than pork-barrel policy that lies on Pareto frontier by the incumbent's electoral base. This benchmark is described by set of equations (9) and:

$$p_\theta(x, \theta^I) = 1 \text{ for any } x, \tag{12}$$

when $\Delta < 2b - 1$;

$$p_\theta(x, \theta^k) = 1 \text{ if and only if } x_\theta = 0 \tag{13}$$

when $\Delta \geqslant 2b - 1$, where θ takes either value in set $B^I(\theta^I)$ (Lemma A.12).

Re-election pressures Recall that nomination rule is a majority vote, and only a minimal majority of politicians are in the incumbent's electoral base. Therefore, nomination for re-election signals that all of them stayed on the incumbent's board. Instead, nomination failure signals that the incumbent's policy reveals her type. Hence, a voter in the incumbent's electoral

[27] In mirror image equilibria a politician votes for the incumbent's nomination if and only if she is against re-election.

base votes for re-election, unless both he receives no pork and the incumbent is not nominated for re-election (Lemma A.14). Eventually, a voter votes in the same way as a politician of his type. Hence, the incumbent is re-elected if only if her pork-barrel policy does not reveal her type to the politicians in her electoral base.[28] Therefore, the incumbent picks: either (i) her most preferred policy; or else (ii) the most efficient policy out of those that any politician in her electoral base would implement under threat of no re-election (Lemma A.15). The higher the cost of inefficient pork-barrel policy, the higher the expected benefit from pandering to re-election, hence, the more efficient the first-period policy.

The most efficient equilibrium without political collusion Suppose that political faction formation is banned. Then, the expected benefit from pandering to re-election is described by equation (6). When $\Delta \geqslant 2b+1$, this benefit is sufficiently high to encourage the incumbent to implement policy

$$p_{\theta^I}(x,\theta^I)=0,\ p_{\mathcal{B}^I(\theta^I)\setminus\left\{\theta^I\right\}}(x,\theta^I)=1,\ p_{\{1,2,3\}\setminus\left\{\mathcal{B}^I(\theta^I)\right\}}(x,\theta^I)=1 \tag{14}$$

when $x_{\theta^I}=1$, $x_{\mathcal{B}^I(\theta^I)\setminus\left\{\theta^I\right\}}=0$ at a threat of no re-election. Therefore, the first-period policy in the most efficient equilibrium with informative electoral promises is described by equations (9) and (13). When $\Delta < 2b+1$, re-election pressures are too weak to induce the incumbent pick pork-barrel policy that is descried by set of equations (14) when $x_{\theta^I}=1$, $x_{\mathcal{B}^I(\theta^I)\setminus\left\{\theta^I\right\}}=0$. Therefore, the first-period policy in the most efficient equilibrium with informative electoral promises is egalitarian with respect to the citizens in the incumbent's electoral base: in region $2b-\frac{1}{2}<\Delta<2b+1$, they all receive pork if and only if it is efficient, that is,

$$p_\theta(x,\theta^I)=1 \text{ if and only if } x_\theta=0 \text{ for either } \theta\in\mathcal{B}^I(\theta^I); \tag{15}$$

in region $2b-1<\Delta\leqslant 2b-\frac{1}{2}$, they all receive pork, unless it is efficient to give no pork to any of them, that is,

$$p_\theta(x,\theta^I)=0 \text{ if and only if } x_\theta=1 \text{ for any } \theta\in\mathcal{B}^I(\theta^I); \tag{16}$$

[28] Because nomination is influential, a politician is indeed eager to vote for the incumbent's nomination if and only if she is for re-election.

in region $\Delta \leqslant 2b-1$ they all receive pork in any state (recall Lemma A.12 and Proposition 1).

Proposition 3 *When political faction formation is banned, the first-period policy in the most efficient equilibrium with informative electoral promises is described by set of equations (9) and: (13) when* $\Delta \geqslant 2b+1$; *(15) when* $2b-\frac{1}{2} < \Delta < 2b+1$; *(16) when* $2b-1 < \Delta \leqslant 2b-\frac{1}{2}$; *(12) when* $\Delta \leqslant 2b-1$. *The incumbent is re-elected. In the second period, only type* θ^I *citizens receive pork in any state.*

Note that nomination for re-election increases the efficiency of pork-barrel policy the more the higher the cost of inefficient pork-barrel pandering: compare the first-period policy described by Proposition 1 to that described by Proposition 3.

The most efficient equilibrium with political collusion Let us now describe the most efficient equilibrium with informative electoral promises and political collusion. Political faction formation is the same as described in Section 5. Hence, the incumbent's benefit from pandering to re-election is described by equation (10). Re-election pressures are weaker than in the environment in which any politician is independent: compare equations (6) and (10). Therefore, the first-period policy in the most efficient equilibrium with informative electoral promises is less efficient.

Proposition 4 *In the most efficient equilibrium with informative electoral promises and political collusion the first-period policy is described by set of equations (9) and: (13) when* $\Delta \geqslant 4b+2$; *(15) when* $4b-2 \leqslant \Delta < 4b+2$, *(5) and (7) when* $\frac{4b-2}{3} < \Delta < 4b-2$; *and (12) when* $\Delta \leqslant \frac{4b-2}{3}$. *The incumbent is re-elected unless both* $\frac{4b-2}{3} \leqslant \Delta < 4b-2$ *and* $x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 1$. *The second-period office-holder is a member of the faction. She gives pork only to her type citizens in any state.*

7 Conclusion

This paper builds a political agency model with nonbinding campaign promises. Two main insights are: (i) a candidate's campaign promises signal her political preferences and public policy that she intends to implement; and (ii) the politicians form factions to coordinate their electoral strategies. Furthermore, we emphasize two welfare effects: (i) campaign promises limit the incumbent's opportunities to pander to re-election, and therefor decrease the efficiency of her policy; (ii) political faction formation dilutes re-election pressures, and, consequently, decreases the efficiency of pork-barrel policy. Other effects, such as electoral sorting and commitment benefits from party organization, and re-election pressures from inter-party competition lie outside the scope of this paper. We hope that future research will analyze the complementarity of these effects and our insights in providing a better picture of electoral competition with campaign promises and political parties.

References

[1] Alesina A. and S. Spear (1988), "An Overlapping Generations Model of Electoral Competition," *Journal of Public Economics*, 37:359-379.

[2] Ansolabehere S. D., Hansen J. M., Hirano S. and J. M. Snyder, (2005a), "The Decline of Competition in U.S. Primary Elections, 1908-2004," in *The Marketplace of Democracy*, Michael McDonald and John Samples (eds.).

[3] Ansolabehere S. D., Hansen J. M. and J. M. Snyder (2005b), "What did the Direct Primary do to Party Loyalty in Congress," in *Process, Party and Policy Making: Further New Perspectives on the History of Congress*, David Brady and Mathew D. McCubbins (eds.), Stanford University Press.

[4] Aragonès E., Palfrey T. R., and A. Postlewaite (2006), "Political Reputations and electoral promises," forthcoming: *Journal of European Economic Association*.

[5] Ashworth S. and E. Bueno de Mesquita (2006), "Informative Party Labels with Institutional and Electoral Variation," forthcoming: *Journal of Theoretical Politics*.

[6] Austen-Smith D. and J. Banks (1989) "Electoral Accountability and

Incumbency," in *Models of Strategic Choice in Politics*, Peter Ordeshook (eds.), Ann Arbor: University of Michigan Press.

[7] Budge I., Robertson D. and D. Hearl (1987), *Ideology, Strategy and Party Change: Spatial Analysis of Post-war Election Programs in 19 Democracies*, Cambridge University Press.

[8] Caillaud B. and J. Tirole (2002), "Parties As Political Intermediaries," *The Quarterly Journal of Economics*, 117(4):1453-1489.

[9] Castanheira M. and B. Crutzen (2006), "Districts, Party Discipline, and Polarization" *mimeo*, ECARES.

[10] Castanheira M., Crutzen B. and N. Sahuguet (2005), "Party Governance and Political Competition with an Application to the American Direct Primacy," *CEPR Discussion Paper* No. 4890.

[11] Harrington, J. E. (1993) "The Impact of Reelection Pressures on the Fulfillment of Campaign Promises," *Games and Economic Behavior*, 5:71-97.

[12] Levy, G. (2004) "A model of political parties," *Journal of Economic Theory*, 115(2):250-277.

[13] Maskin E. and J. Tirole (2001), "The Politician and The Judge: Accountability in Government," *mimeo, IDEI.*

[14] Maskin E. and J. Tirole (2004), "The Politician and The Judge: Accountability in Government," *The American Economic Review*, 94(4):1034-1054.

[15] Morelli M. (2004), "Party Formation and Policy Outcomes under Different Electoral Systems," *Review of Economic Studies*, 71:829-853.

[16] Petry F. (1995), "The Party Agenda Model: Election Programmes and Government Spending in Canada", *Canadian Journal of Political Science*, 28(1):51-84.

[17] Royed T. J. and S. A. Borrelli (1997), "Political Parties and Public Policies: Social Welfare Policy from Carter to Bush," *Polity,* 29(4):539-563.

[18] Snyder, J. M. and M. Ting (2002), "An Informational Rationale for Political Parties," *American Journal of Political Science* 46(1):90-110.

A Appendix

A.1 "Babbling" equilibria

Equation (1) implies

$$\Pr\left(\theta^I = \theta \mid p^I(x,\theta^I),\ p_\theta(x,\theta^I) = 1\right) \geqslant \Pr\left(\theta^I = \theta \mid p^I(x,\theta^I),\ p_\theta(x,\theta^I) = 0\right). \tag{17}$$

There are two possibilities: either inequality

$$\Pr\left(\theta^I = \theta \mid p^I(x,\theta^I),\ p_\theta(x,\theta^I) = 1\right) \geqslant \frac{1}{3} \tag{18}$$

is met for any $p^I(x,\theta^I)$, or it is violated for some $p^I(x,\theta^I)$. This section describes equilibria in which inequality (18) is met for any $p^I(x,\theta^I)$.

Lemma A.1 (pork-barrel policy without re-election concerns) *The last period office-holder delivers pork only to her type citizens.*
Proof. Recall equation (1). ■

Lemma A.2 (grateful vote) *Type θ citizens vote for re-election if and only if $p_\theta(x,\theta^I) = 1$.*

Proof. Lemma A.1 implies that at date 2, type θ citizens vote for the candidate whose type is the most likely to be θ: by symmetry, the citizens of the same type vote in the same way. Inequalities (18) and (17) imply that: either (i) the vote is described by Lemma A.2, or (ii) it does not depend on $p(x,\theta^I)$. However, the second alternative is out of equilibrium: indeed, if the vote does not depend on $p(x,\theta^I)$, the incumbent delivers pork only to type θ^I citizens; in this case, however, the vote is such as described by Lemma A.2. ■

By Lemma A.2, and equation (1),
Lemma A.3 (pork to congruent citizens) $p_{\theta^I}(x,\theta^I) = 1$ *for any x.*

Lemma A.4 (pandering to re-election) *When* $\Delta \leqslant 2b - \frac{1}{2}$ *or else when* $\min_{\theta \neq \theta^I} x_\theta = 0$*,* $p_{\widehat{\theta}}(x, \theta^I) = 1$ *and* $p_{\{1,2,3\} \setminus \{\theta, \theta^I\}}(x, \theta^I) = 0$*, where* $\widehat{\theta}$ *is a random draw from* $\arg\min_{\theta \neq \theta^I} x_\theta$*. Otherwise,* $p_\theta(x, \theta^I) = 0$ *for either* $\theta \neq \theta^I$*.*

Proof. By Lemma A.2, the incumbent stays in office if and only if

$$\left| \left\{ \theta \mid p_\theta(x, \theta^I) = 1 \right\} \right| = 2.$$

By Lemma A.3, the cost of re-election is equal to $\frac{1}{2}\left(1 + \Delta \min_{\theta \neq \theta^I} x_\theta\right)$. The incumbent panders to re-election if and only if[29]

$$\frac{1}{2}\left(1 + \Delta \min_{\theta \neq \theta^I} x_\theta\right) \leqslant R, \tag{19}$$

where R is given by equation (6). In region $\Delta \leqslant 2b - \frac{1}{2}$, inequality (19) is fulfilled in any state x:

$$\frac{1}{2}\left(1 + \Delta \min_{\theta \neq \theta^I} x_\theta\right) \leqslant \frac{1 + \Delta}{2} \leqslant \frac{2b}{3} + \frac{1}{3} + \frac{\Delta}{6}.$$

Instead, in region $\Delta > 2b - \frac{1}{2}$, it is met if and only if $\min_{\theta \neq \theta^I} x_\theta = 0$:

$$\frac{1}{2} \leqslant \frac{2b}{3} + \frac{1}{3} + \frac{\Delta}{6} < \frac{1 + \Delta}{2}.$$

■

Lemma A.5 (diffuse promises and uninformed vote) *vector* $p^k(x, \theta^k)$ *does not depend on* θ^k*. At date 1 a citizen votes at random.*

Proof. By Lemmas A.1 - A.4, a citizen is indifferent between the candidates for office at date 1. By assumption (T2), he votes at random. Hence, $k = I$ with probability $\frac{1}{2}$ regardless of $p^k(x, \theta^k)$. Inequality (18) is met for any $p^I(x, \theta^I)$ if and only if $p^k(x, \theta^k)$ does not depend on θ^k. ■

[29] Inequality (19) is not strict due to tie-breaking assumption (T4).

A.2 Proof of proposition 1

Lemma A.6 (citizen preferences regarding the incumbent's type) $\arg\max_{\theta^I} \left\{ EV_\theta\left(p(x,\theta^I)\right) \mid \theta^I \right\} = \theta$: *the expectations are taken at date* 1.

Proof. Denote with

$$\overline{c} = \frac{1}{2} + \frac{\Delta}{4} \tag{20}$$

an average cost that is paid by one type citizens for pork to some other type citizens. In any state, the incumbent can deliver pork only to type θ^I citizens. Even if afterwards she is not re-elected, the expected second-period payoff by type θ^I citizens lies at least as high as threshold $\frac{1}{3}b - \frac{2}{3}\overline{c}$, because the probability of event that the challenger's type is θ^I is equal to $\frac{1}{3}$. By a revealed preference argument, when $\theta^I = \theta$,

$$EV_\theta\left(p(x,\theta^I)\right) \geqslant b + \frac{1}{3}b - \frac{2}{3}\overline{c} = \frac{4}{3}b - \frac{2}{3}\overline{c}; \tag{21}$$

whereas when $\theta^I \neq \theta$,

$$EV_\theta\left(p(x,\theta^I)\right) \leqslant -\frac{1}{2} + \frac{1}{3}b - \frac{2}{3}\overline{c}. \tag{22}$$

The right-hand-side of equation (22) lies below that of equation (21). ■

Lemma A.7 (date 1 vote) *At date* 1 *type* θ *citizens vote for:*
(i) candidate k*, either when* $\theta \in \mathcal{B}^k(\theta^k) \backslash \mathcal{B}^{-k}(\theta^{-k})$*, or else when both* $\theta \in \mathcal{B}^k(\theta^k) \cap \mathcal{B}^{-k}(\theta^{-k})$ *and* $\left|\mathcal{B}^k(\theta^k)\right| < \left|\mathcal{B}^{-k}(\theta^{-k})\right|$*; (ii) either candidate with probability* $\frac{1}{2}$*, when both* $\theta \in \mathcal{B}^k(\theta^k) \cap \mathcal{B}^{-k}(\theta^{-k})$ *and* $\left|\mathcal{B}^k(\theta^k)\right| = \left|\mathcal{B}^{-k}(\theta^{-k})\right|$*; (iii) candidate* $-k$ *otherwise.*[30]

Proof. Follows from Lemma A.6, equations (4), (3), and assumption (T2). ■

Lemma A.8 (cardinality of a candidate's electoral base) $\left|\mathcal{B}^k(\theta^k)\right| = 2$.

Proof. Candidate k pursues lexicographic objectives. It is the most important for her to maximize the probability of event $k = I$ (Lemma A.6). Her secondary objective is to maximize $\left|\mathcal{B}^k(\theta^k)\right|$ so as to minimize the cost of

[30] We use standard notation $\left|\mathcal{B}^k(\theta^k)\right|$ for cardinality of set $\mathcal{B}^k(\theta^k)$.

re-election if $k = I$.

Step 1 proves that regardless of $p^{-k}(x, \theta^k)$ there exist $p^k(x, \theta^k)$ such that $\left|\mathcal{B}^k(\theta^k)\right| = 2$. By equations (3) and (4),

$$\Pr\left(\theta^k = \theta \mid EV_\theta\left(p^k(x,\theta^k)\right) = EV_{\widetilde{\theta}}\left(p^k(x,\theta^k)\right) > EV_{\{1,2,3\}\setminus\{\theta,\widetilde{\theta}\}}\left(p^k(x,\theta^k)\right)\right) =$$

$$= \Pr\left(\theta^k = \widetilde{\theta} \mid EV_\theta\left(p^k(x,\theta^k)\right) = EV_{\widetilde{\theta}}\left(p^k(x,\theta^k)\right) > EV_{\{1,2,3\}\setminus\{\theta,\widetilde{\theta}\}}\left(p^k(x,\theta^k)\right)\right) =$$

$$= \frac{1}{2} \text{ for any pair of types } \theta \text{ and } \widehat{\theta}.$$

Step 2 proves that in equilibrium, $\left|\mathcal{B}^k(\theta^k)\right| \neq 1$. Suppose that $\left|\mathcal{B}^k(\theta^k)\right| = 1$. The best response by candidate $-k$ is to promise the same expected payoff to anybody, so that $\mathcal{B}^{-k}(\theta^{-k}) = \{1, 2, 3\}$ and $-k = I$. Then, however, it is the best for candidate k to change her campaigning strategy in such a way that $\left|\mathcal{B}^k(\theta^k)\right| = 2$ so that $k = I$: step 1 has shown that this deviation is feasible.

Step 3 proves that in equilibrium, $\left|\mathcal{B}^k(\theta^k)\right| \neq 3$. Suppose that $\mathcal{B}^k(\theta^k) = \{1, 2, 3\}$. The best response by candidate $-k$ is to give such promises $p^{-k}(x, \theta^{-k})$ that $\left|\mathcal{B}^{-k}(\theta^{-k})\right| = 2$, so that $-k = I$. Then, however, it is the best for candidate k to change her campaigning strategy to such that $\left|\mathcal{B}^k(\theta^k)\right| = 2$, so that $k = I$ with probability $\frac{1}{2}$.

Step 4 proves that in equilibrium, $\left|\mathcal{B}^k(\theta^k)\right| = 2$. Suppose that $\left|\mathcal{B}^k(\theta^k)\right| = 2$. Then, it is the best for candidate $-k$ to give such promises $p^{-k}(x, \theta^{-k})$ that $\left|\mathcal{B}^{-k}(\theta^{-k})\right| = 2$ so that the probability of event $-k = I$ is equal to $\frac{1}{2}$: otherwise this probability is equal to 0 (see steps 2 and 3). Trivially, it is the best for candidate k to keep giving such promises $p^k(x, \theta^k)$ that $\left|\mathcal{B}^k(\theta^k)\right| = 2$. ■

Lemma A.9 (date 2 vote) *At date* 2*, type* θ *voters vote for the incumbent if and only if both* $\theta \in \mathcal{B}^I(\theta^I)$ *and* $p_\theta(x, \theta^I) = 1$.

Proof. Trivially, Lemma A.1 continues to hold. Therefore, at date 2, type θ voters would like to elect the candidate whose type is the most likely to be θ. The challenger is any type with probability $\frac{1}{3}$. When $\theta \notin \mathcal{B}^I(\theta^I)$, type θ voters vote for the challenger: by equation (4),

$$\Pr\left(\theta^I = \theta \mid p^I(x, \theta^I),\ p_\theta(x, \theta^I)\right) = 0 \text{ for either } p_\theta(x, \theta^I).$$

When $\theta \in \mathcal{B}^I(\theta^I)$, type θ voters vote for the incumbent if and only if $p_\theta(x, \theta^I) = 1$ (see the proof of Lemma A.2). ■

Lemma A.10 $\theta^k \in \mathcal{B}^k(\theta^k)$.
Proof. By Lemma A.9, the incumbent is re-elected if and only if

$$\left|\left\{\theta \in \mathcal{B}^I(\theta^I) \mid p_\theta(x, \theta^I) = 1\right\}\right| = 2. \tag{23}$$

By Lemma A.8, the cost of pork-barrel pandering to re-election is equal to $\sum\limits_{\theta \in \mathcal{B}^I(\theta^I) \setminus \{\theta^I\}} \frac{1+\Delta x_\theta}{2}$. Because candidate k would like to minimize the cost of pandering to re-election if in office, vector $p^k(x, \theta^k)$ is such that $\theta^k \in \mathcal{B}^k(\theta^k)$. ■

Lemma A.11 (the incumbent's policy) *The first-period policy is such as described by Proposition* 1.
Proof. By Lemmas A.8, A.10, and assumption (T1), set $\mathcal{B}^I(\theta^I)$ has two elements: θ^I and a random draw from set $\{1, 2, 3\} \setminus \{\theta^I\}$. Equation (5) is trivial. Equation (9) is met because the vote by type $\{1, 2, 3\} \setminus \mathcal{B}^I(\theta^I)$ voters does not depend on $p_{\{1,2,3\} \setminus \mathcal{B}^I(\theta^I)}(x, \theta^I)$, and $\frac{\partial V_{\theta^I}\left(p(x,\theta^I)\right)}{\partial p_{\{1,2,3\} \setminus \mathcal{B}^I(\theta^I)}(x)} < 0$.

It remains to prove equations (7) and (8). The incumbent stays in office if and only if equation (23) is met. By Lemmas A.8 and A.10, $p_{\mathcal{B}^I(\theta^I) \setminus \{\theta^I\}}(x, \theta^I) = 1$ if and only if

$$\frac{1 + \Delta x_{\mathcal{B}^I(\theta^I) \setminus \{\theta^I\}}}{2} \leqslant R, \tag{24}$$

where R is given by equation (6). In region $\Delta \leqslant 2b - \frac{1}{2}$, inequality (24) is met in any state x. In region $\Delta > 2b - \frac{1}{2}$, it is met if and only if $x_{\mathcal{B}^I(\theta^I) \setminus \{\theta^I\}} = 0$. ■

It is straightforward to see that there is a consistency among the strategies described by Lemma A.1 and Lemmas A.7 - A.11.

A.3 Proof of proposition 2

Step 1 (collusion with informative communication). Suppose that political leader who is drawn the first learns any politician's type.

Let: θ^L be her type; triplet $s = (s_{\theta^L}, s_{\widehat{\theta}}, s_{\{1,2,3\}\backslash\{\theta^L,\ \widehat{\theta}\}})$ be stationary faction membership offer that is accepted by any receiver; $\widehat{\theta} = \arg\max_{\theta \neq \theta^L} s_\theta$; P_θ be the probability of event $\theta^I = \theta$ when strategy s is played and campaign advertising is optimal. Trivially,

$$\sum_\theta P_\theta = 1. \tag{25}$$

By Lemma A.6, type θ politician maximizes P_θ. Because the leader can make no offer at all,[31]

$$P_{\theta^L} > \frac{1}{3} P_{\theta^L} + \sum_{\theta \neq \theta^L} \frac{1}{3} P_\theta. \tag{26}$$

By definition of strategy s,[32]

$$P_\theta > \frac{1}{3} P_{\theta^L} + \sum_{\theta \neq \theta^L} \frac{1}{3} P_\theta \text{ for either } \theta \neq \theta^L \text{ such that } s_\theta > 0. \tag{27}$$

Step 1.a Let us prove that

$$s_{\theta^L} > 0. \tag{28}$$

Suppose not, that is, $s_{\theta^L} = 0$. In equilibrium with political party formation $s_\theta > 0$ for some θ. Hence, $s_{\widehat{\theta}} > 0$. It cannot be that $s_{\{1,2,3\}\backslash\{\theta^L,\ \widehat{\theta}\}} = 0$: otherwise, a politician's membership in the faction reveals that her type is $\widehat{\theta}$, hence, $P_{\widehat{\theta}} = 0$ which contradicts to inequality (27) for $\theta = \widehat{\theta}$. However, $s_{\{1,2,3\}\backslash\{\theta^L,\ \widehat{\theta}\}} > 0$ is also impossible: by inequality (26),

$$2P_{\theta^L} > \sum_{\theta \neq \theta^L} P_\theta, \tag{29}$$

however, summing up inequalities (27) for $\theta \neq \theta^L$ we find

$$2P_{\theta^L} < \sum_{\theta \neq \theta^L} P_\theta. \tag{30}$$

[31] The right-hand-side of inequality (26) is the leader's expected payoff if the game goes back to date $0.a$.

[32] The right-hand-side of inequalities (27) is a politician's expected payoff if she rejects the first offer, no faction is formed, and the game goes back to date $0.a$. Inequalities (27) are strict by tie-breaking assumption (T6).

Step 1.b Let us prove that

$$\min_{\theta \neq \theta^L} s_\theta = 0. \tag{31}$$

Suppose the contrary, that is, $s_\theta > 0$ for either $\theta \neq \theta^L$. Adding P_{θ^L} to each side of inequality (30) we find

$$\sum_\theta P_\theta > 3P_{\theta^L}. \tag{32}$$

By equation (25), the left-hand-side of inequality (32) is equal to 1. Hence, $P_{\theta^L} < \frac{1}{3}$. By equation (25), $\sum_{\theta \neq \theta^L} P_\theta > \frac{2}{3}$. By inequality (29), $\sum_{\theta \neq \theta^L} P_\theta < \frac{2}{3}$. This, is a contradiction.

Step 1.c Let us prove that

$$\max_{\theta \neq \theta^L} s_\theta > 0. \tag{33}$$

Suppose the contrary, that is, $s_\theta = 0$ for either $\theta \neq \theta^L$. Then, a politician's membership in the faction reveals that her type is θ^L: recall inequality (28). Hence, $P_{\theta^L} = 0$. This, contradicts to inequality (32).

Step 1.d (composition of political faction) By equation (31) and inequality (33),

$$s_{\widehat{\theta}} > 0,\ s_{\{1,2,3\} \setminus \{\theta^L,\ \widehat{\theta}\}} = 0. \tag{34}$$

By equation (25) and inequality (27) for $\theta = \widehat{\theta}$

$$P_{\widehat{\theta}} > \frac{1}{3}. \tag{35}$$

By Lemma A.6, any faction member has the same electoral fortunes if she is drawn to run for office. Because the draw is random, P_θ is increasing in s_θ for either θ from set $\left\{\theta^L, \widehat{\theta}\right\}$. Hence, the leader maximizes s_{θ^L}. Due to inequality (35), she is constrained by inequality[33]

$$s_{\widehat{\theta}} > \frac{1}{2} s_{\theta^L}. \tag{36}$$

[33] The probability of event that the candidate from the faction wins the first election is at most 1.

Hence, $s_{\theta^L} = 1$ and $s_{\widehat{\theta}} = \frac{1}{2} + \varepsilon$, where ε is an arbitrary small value. By assumption (T5), $\widehat{\theta}$ is a random draw from set $\{1, 2, 3\} \setminus \{\theta^0\}$.

Step 2 (informative communication). Let $m(\theta)$ be date $0.b$ message by type θ politician. When the leader's beliefs are $\Pr(\theta \mid m(\theta) = m) = 1$, type θ politician does not want to deviate from strategy $m(\theta) = m$, because at date $0.b$ she assigns probability $\frac{2}{3}$ to the event that θ is in set $\left\{\theta^L, \widehat{\theta}\right\}$, regardless of $m(\theta)$.

Step 3 (electoral promises and pork-barrel policy). By steps 1 and 2, all type θ^L politicians and a minimal majority of type $\widehat{\theta}$ politicians form the faction. The candidate for office from the faction forms electoral base out of types θ^L and $\widehat{\theta}$ citizens, and she wins the election by their votes. Hence, $\mathcal{B}^I(\theta^I) = \left\{\theta^L, \widehat{\theta}\right\}$.

Suppose that the incumbent picks her most preferred policy that reveals her type. If she runs for office, she looses the second election to the challenger whose type is θ^I with probability less than $\frac{1}{2}$. If instead she abstains from re-election, the second election is an open-seat, and the winner is a member of her faction whose type is θ^I with probability higher than $\frac{1}{2}$. Hence, the incumbent either picks her most preferred policy and abstains from re-election, or she gives pork to anybody in her electoral base, runs for re-election, and wins it. Her expected benefit from pandering to re-election r is given by equation (10). Her policy is such as described by the proposition, because

$$\frac{1+\Delta}{2} \leqslant r \text{ if and only if } \Delta \leqslant \frac{4b-2}{3}.$$

A.4 Proof of proposition 3

Lemmas A.1, A.6, A.7(i), A.8 and A.10 continue to hold.

Lemma A.12 (the most efficient policy benchmark) *In region $\Delta < 2b - 1$, the first-period policy is at most as efficient as pork-barrel policy that is described by equations (9) and (12). In region $\Delta \geqslant 2b - 1$, the first-period policy is at most as efficient as pork-barrel policy that is described by equations (9) and (13).*

Proof. In our model the efficiency of an equilibrium is measured by the efficiency of the first period policy in this equilibrium (recall Lemma A.1).

Equation (9) is met in any equilibrium with informative electoral promises. Hence,

$$\sum_{\theta\in\{1,2,3\}} V_\theta(p(x,\theta^I)) = \sum_{\theta\in\mathcal{B}^I(\theta^I)} V_\theta(p(x,\theta^I)). \tag{37}$$

The right-hand-side of equation (37) is maximized by vector $p(x,\theta^I)$ that is described by the Lemma. ■

By Lemma A.12 and Proposition 1,

Lemma A.13 *In region $\Delta < 2b-1$, pork-barrel policy in the most efficient equilibrium with informative electoral promises is described by equations (9) and (12).*

Let us consider region $\Delta \geqslant 2b-1$.

Lemma A.14 (convincing nomination) *Type θ voters vote for the incumbent if and only if both $\theta \in \mathcal{B}^I(\theta^I)$ and $\max\{p_\theta(x,\theta^I), e\} = 1$.*

Proof. By Lemmas A.8, A.10, and assumption (T1), set $\mathcal{B}^I(\theta^I)$ has two elements: θ^I and a random draw from set $\{1,2,3\}\setminus\{\theta^I\}$.

Step 1. Type $\{1,2,3\}\setminus\mathcal{B}^I(\theta^I)$ voters vote for the challenger, because by equation (3), $\Pr\left(\theta^I = \{1,2,3\}\setminus\mathcal{B}^I(\theta^I) \mid p^I(x,\theta^I),\ p(x,\theta^I), x\right) = 0$.

Step 2. When $e = 1$, the voters of either type in set $\mathcal{B}^I(\theta^I)$ vote for the incumbent: recall Lemma A.8 and the fact that a politician in the incumbent's electoral base votes for re-election if and only if inequality (11) is met.

Step 3. When $e = 0$, $\Pr\left(\theta^I = \theta \mid p(x,\theta^I)\right) = 0$ for some θ in $\mathcal{B}^I(\theta^I)$. Hence,[34]

$$\Pr\left(\theta^I = \theta \mid e = 0,\ \theta \in \mathcal{B}^I(\theta^I),\ p_\theta(x,\theta^I) = 0\right) = 0,$$

$$\Pr\left(\theta^I = \theta \mid e = 0,\ \theta \in \mathcal{B}^I(\theta^I),\ p_\theta(x,\theta^I) = 1\right) = 1.$$

■

By Lemma A.14, the incumbent stays in office if and only if inequality (11) is met for either $\theta \in B^I(\theta^I)$. Note that a politician is eager to play nomination strategy that is described by inequality (11).

Lemma A.15 *Let*

$$\widetilde{\mathcal{P}} = \left\{\widetilde{p}(x,\theta^I) \mid V_\theta(\widetilde{p}(x,\theta^I)) + R \geqslant b \textit{ for either } \theta \in \mathcal{B}^I(\theta^I)\right\} \tag{38}$$

[34] Recall the proof of Lemma A.2.

In the most efficient equilibrium with informative electoral promises

$$p(x,\theta^I) = \underset{\widetilde{p}(x,\theta^I)\in\widetilde{\mathcal{P}}}{\arg\max} V_{\theta^I}(\widetilde{p}(x,\theta^I)) \tag{39}$$

if set $\widetilde{\mathcal{P}}$ *is not empty; otherwise,*

$$\text{in any state } x,\ p_{\theta^I}(x,\theta^I) = 1 \text{ and } p_\theta(x,\theta^I) = 0 \text{ for either } \theta \neq \theta^I. \tag{40}$$

Proof. If $V_\theta(p(x,\theta^I)) + R < b$ for some $\theta \in \mathcal{B}^I(\theta^I)$,

$$\Pr\left(\theta^I = \theta \mid p^I(x,\theta^I), p(x,\theta^I), x\right) = 0.$$

Step 1. If $\widetilde{\mathcal{P}} = \{\varnothing\}$, the incumbent cannot be re-elected, by inequality (11) and Lemma A.14. Hence, vector $p(x,\theta^I)$ is descried by set of equations (40).
Step 2. Let $\widetilde{\mathcal{P}} \neq \{\varnothing\}$. Politician posteriors

$$\Pr\left(\theta^I = \theta \mid p(x,\theta^I) \in \widetilde{\mathcal{P}},\ \theta \in \mathcal{B}^I(\theta^I)\ \right) = \Pr\left(\theta^I = \theta \mid \theta \in \mathcal{B}^I(\theta^I)\right) = \frac{1}{2},$$

and strategy described by equation (39) are consistent with each other.

A pooling equilibrium described in step 2 is more efficient than a separating equilibrium described in step 1:

$$\frac{b}{2} - \frac{1}{2} - \frac{\Delta}{4} < 0 \text{ for any } \Delta \geqslant 2b - 1. \tag{41}$$

■

Lemma A.16 *When* $x_{\theta^I} = x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}}$*, the first-period policy in the most efficient equilibrium with informative electoral promises is described by set of equations (9) and (13).*
Proof. Consider vector $p(x,\theta^I)$ described by equations (9) and (13). When $x_{\theta^I} = x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 0$,

$$R + V_\theta(p(x,\theta^I)) = R + b - \frac{1}{2} > b \text{ for either } \theta \in \mathcal{B}^I(\theta^I). \tag{42}$$

When $x_{\theta^I} = x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 1$,[35]

$$R + V_\theta(p(x,\theta^I)) = R > b \text{ for either } \theta \in \mathcal{B}^I(\theta^I). \tag{43}$$

[35]Recall that we consider region $\Delta \geqslant 2b-1$. Set of inequalities (43) is met for any $\Delta \geqslant 2b-2$.

By set of inequalities (42) and (43), $p(x, \theta^I) \in \widetilde{\mathcal{P}}$. By Lemmas A.12 and A.15, $p(x, \theta^I)$ is the first-period policy in the most efficient equilibrium with informative electoral promises. ■

Lemma A.17 *When $x_{\theta^I} \neq x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}}$, the first-period policy in the most efficient equilibrium with informative electoral promises is described by set of equations (9) and: (13) in region $\Delta \geqslant 2b + 1$; (15) in region $2b - \frac{1}{2} < \Delta < 2b + 1$; and (16) in region $2b - 1 < \Delta \leqslant 2b - \frac{1}{2}$.*

Proof. Recall, that we look at pure strategies. By Lemma A.6, either (i) the first-period policy in the most efficient equilibrium is described by set of equations (40), or (ii) it lies in the set of policies described by Lemma A.17: it will become clear that the mirror image of pork-barrel policy described by equations (9) and (13) lies out of the most efficient equilibrium with informative electoral promises. For each policy described by Lemma A.17, we find the region of parameter Δ in which this policy lies in set $\widetilde{\mathcal{P}}$.

Step 1 shows that pork-barrel policy $p(x, \theta^I)$ descried by equations (9) and (13) lies in set $\widetilde{\mathcal{P}}$ if and only if $\Delta \geqslant 2b + 1$. Indeed, the incumbent is the most eager to deviate from this policy to that described by set of equations (40) when $x_{\theta^I} = 1$ and $x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 0$. Hence,

$$\min_{\theta \in \mathcal{B}^I(\theta^I), x} R + V_\theta(p(x, \theta^I)) = R - \frac{1}{2}. \tag{44}$$

The right-hand-side of equation (44) lies at least as high as threshold b if and only if $\Delta \geqslant 2b + 1$.

Step 2 shows that pork-barrel policy $p(x, \theta^I)$ descried by equations (9) and (15) lies in set $\widetilde{\mathcal{P}}$ if and only if $\Delta \geqslant 2b - 2$. Indeed, the incumbent is the most eager to deviate from this policy to that described by set of equations (40) when $x_{\theta^I} = 1$. Hence,

$$\min_{\theta \in \mathcal{B}^I(\theta^I), x} \left\{R + V_\theta(p(x, \theta^I))\right\} = R. \tag{45}$$

The right-hand-side of equation (45) lies at least as high as threshold b if and only if $\Delta \geqslant 2b - 2$.

Step 3 shows that pork-barrel policy $p(x, \theta^I)$ descried by equations (9) and

(16) lies in set $\widetilde{\mathcal{P}}$ if and only if $\Delta \leqslant 2b - \frac{1}{2}$. Indeed, the incumbent is the most eager to deviate from this policy to that described by set of equations (40) when $x_{\mathcal{B}^I(\theta^I)\setminus\{\theta^I\}} = 1$. Hence,

$$\min_{\theta \in \mathcal{B}^I(\theta^I), x} \left\{R + V_\theta(p(x, \theta^I))\right\} = R + b - \frac{1+\Delta}{2}. \tag{46}$$

The right-hand-side of equation (46) lies at least as high as threshold b if and only if $\Delta \leqslant 2b - \frac{1}{2}$.

Step 4 By steps 1-3 and Lemma A.15, the first-period policy that is the mirror image of that described by equations (9) and (13) lies out of the most efficient equilibrium with informative electoral promises. Indeed, it is less efficient than any policy described in steps 1-3, and for any Δ at least one policy described in steps 1-3 lies in set $\widetilde{\mathcal{P}}$.

Step 5 By step 1, and Lemmas A.12 and A.15: when $\Delta \geqslant 2b + 1$, the first-period policy in the most efficient equilibrium with informative electoral promises is described by equations (9) and (13).

Step 6 By steps 1-3 when $2b - \frac{1}{2} < \Delta < 2b + 1$, set $\widetilde{\mathcal{P}}$ has one element: it is described by equations (9) and (15). By Lemma A.15, this element is the first-period policy in the most efficient equilibrium with informative electoral promises.

Step 7 By steps 1-3 when $2b - 1 < \Delta \leqslant 2b - \frac{1}{2}$, there are two elements in set $\widetilde{\mathcal{P}}$. The one that is described by equations (9) and (16) is the most efficient. Indeed,

$$\frac{1}{4}\left(b - \frac{1}{2}\right) + \left(b - \frac{1+\Delta}{2}\right) > 0 \text{ if and only if } \Delta \geqslant 4b - 2;$$

by assumption (2), $4b - 2 > 2b - \frac{1}{2}$. ■

A.5 Proof of proposition 4

The proof is similar to that of proposition 3. Political faction formation is described by Proposition 2. Therefore, the expected benefit from pandering to re-election is described by equation (10).

$$\text{Let } \widetilde{\mathcal{P}}^c = \left\{\widetilde{p}(x, \theta^I) \mid V_\theta(\widetilde{p}(x, \theta^I)) + r \geqslant b \text{ for either } \theta \in \mathcal{B}^I(\theta^I)\right\}. \tag{47}$$

In the most efficient equilibrium with informative electoral promises $p(x, \theta^I) = \underset{\widetilde{p}(x,\theta^I) \in \widetilde{\mathcal{P}}^c}{\arg\max} V_{\theta^I}(\widetilde{p}(x, \theta^I))$, where if set $\widetilde{\mathcal{P}}^c$ is not empty; otherwise,

$$\text{in any state } x,\ p_{\theta^I}(x, \theta^I) = 1 \text{ and } p_\theta(x, \theta^I) = 0 \text{ for either } \theta \neq \theta^I: \tag{48}$$

see the proof of Lemma A.15 and recall that the expected benefit from pandering to re-election is given by equation (10).

In region $\Delta \geqslant 4b+2$, the first-period policy in the most efficient equilibrium with informative electoral promises is described by equations (9) and (13):

$$\min_{\theta \in \mathcal{B}^I(\theta^I), x} \left\{ r + V_\theta(p(x, \theta^I)) \right\} = r - \frac{1}{2} \geqslant b \text{ if and only if } \Delta \geqslant 4b + 2.$$

In region $4b - 2 \leqslant \Delta < 4b + 2$, the first-period policy in the most efficient equilibrium with informative electoral promises is described by equations (9) and (15):

$$\min_{\theta \in \mathcal{B}^I(\theta^I), x} \left\{ r + V_\theta(p(x, \theta^I)) \right\} = r \geqslant b \text{ if and only if } \Delta \geqslant 4b - 2.$$

Policy described by equations (9) and (16) lies out of the most efficient equilibrium with informative electoral promises. Indeed,

$$\min_{\theta \in \mathcal{B}^I(\theta^I), x} \left\{ r + V_\theta(p(x, \theta^I)) \right\} = r + b - \frac{1+\Delta}{2} \geqslant b \text{ if and only if } \Delta \leqslant \frac{4b-2}{3}.$$

However, when $\Delta \leqslant \frac{4b-2}{3}$, the first period policy in the most efficient equilibrium is described by equations (9) and (12), by Lemma A.12 and Proposition 2: $\frac{4b-2}{3} < 2b - 1$.