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Abstract

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I take great pleasure in expressing my thanks to many colleagues who have helped critically assess these ideas on introducing political contracts in democracies. Johannes Becker, Clive Bell, Klaas Beniers, Peter Bernholz, Robert Dur, Jürgen Eichberger, Lars Feld, Amihai Glazer, Volker Hahn, Hans Haller, Verena Liessem, Susanne Lohmann, Martin Hellwig, Markus Müller, Joel Sobel, Robert Solow, and Otto Swank have all provided valuable feedback. I am also grateful to seminar audiences at the Universities of California, Los Angeles, Davis, Irvine, and San Diego, the Universities of Basel, Cologne, Leuven, Heidelberg, Rotterdam, and Tilburg for many helpful comments and suggestions.
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On Higher Hurdles for Incumbents*

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The election mechanism may have difficulties in selecting the most able candidates and deselecting less able ones. In a simple model we explore how the power of elections as a selection device can be improved by requiring higher vote thresholds than 50% for incumbents.

Keywords: elections, political contracts, vote-share thresholds, incumbents, selection, effort

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1. Introduction

Once in office, politicians in parliament enjoy an incumbency advantage. If an office-holder is of higher quality than his challengers, the incumbency advantage is welfare-improving.[1] However, less able office-holders might also be reelected because voters may be unable to recognize their lack of ability.

To improve the selection of candidates in a democracy, we introduce the idea to require higher vote thresholds for incumbents. Incumbents competing for reelection would then need to reach a vote-share threshold above one-half in order to be reelected. If the incumbent does not obtain enough votes to reach the vote-share threshold, either his challenger is elected, or a run-off ballot between two new candidates takes place. In this paper, we explore the consequences of higher vote thresholds for incumbents.

2. The Model

We consider a simple two-period model. At the beginning of each of two periods, $t = 1$ and $t = 2$, voters elect a politician. The same two candidates compete for office on both election dates. Candidates are denoted by k or $k' \in \{R, L\}$. Candidate R (L) is the right-wing (left-wing) candidate. The ability of a candidate is a random variable a_k distributed uniformly on $[-A, A]$, $A > 0$. Nature draws a_k at the beginning of period 1, which is private information. There is a continuum of voters. A voter is indexed by $i \in [0, 1]$. There are two types of policy problems.

- Public Project: P
  In each period the office-holder can undertake a public project. The amount of this public project in period t is given as
  $$g_t = \gamma(e_{kt} + a_k), \gamma > 0, \tag{1}$$
  where e_{kt} represents the effort exerted by the policy-maker in period t and a_k represents his ability. Voters observe g_t and derive utility from the public project in accordance with the instantaneous utility function $U^P(g_t) = g_t$.

- Ideological (or Redistribution) Policy: I
  In each period the policy-maker decides on an ideological policy I that affects voters differently. The choice set for I is represented by a one-dimensional policy space $[0, 1]$. We assume that voters are ordered according to their ideal points regarding I. Voter i has preferences about I according to the instantaneous utility function
  $$U_i^I(i_{kt}) = -(i_{kt} - i)^2, \tag{2}$$
  where i_{kt} is the platform chosen by the policy-maker and i is the ideal point of voter i.

[1] See Samuelson (1984), Londregan & Romer (1993), Banks & Sundaram (1998), Zaller (1998), Ashworth (2005), and Diermeier, Keane & Merlo (2005). Challengers may even be deterred from running against incumbents as discussed in Jacobson & Kernell (1983), Cox & Katz (1996), Stone, Maisel & Maestas (2004), and Gordon, Huber & Landa (2007).

Some remarks are in order here. In our model, the advantage the incumbent may have when he stands for reelection is that he can try to signal his ability to voters by choosing a particular output g. We next describe the utilities of voters and candidates. The discount factor of voters and politicians is denoted by β with $0 < \beta \leq 1$.

The expected utility of voter i evaluated at the beginning of $t = 1$ is given by the discounted sum of the benefits from the public project and from the ideological policy. The lifetime utility of voter i if candidate k (k‘) is in office in period 1 (2) is given by

$$V_i = g_1 + U_i^I(i_{k1}) + \beta[g_2 + U_i^I(i_{k‘2})]. \tag{3}$$

The candidates derive utility from two sources.

- *Office-holding:* A policy-maker derives private benefits b from holding office, including monetary and non-monetary benefits such as power and enhanced career prospects. He incurs costs amounting to $C(e_{kt}) = ce_{kt}^2$ ($c > 0$) from the exertion of effort.

- *Benefits from policies:* We assume that candidate L is a left-wing candidate, i.e. his most preferred point, denoted by μ_L with regard to policy I, satisfies $\mu_L < \frac{1}{2}$. Similarly, candidate R is a right-wing candidate with an ideal point $\mu_R > \frac{1}{2}$. To simplify the exposition we assume that $\frac{1}{2} - \mu_L = \mu_R - \frac{1}{2}$. Hence the candidates' ideal points are symmetrically distributed around the median's ideal point $\frac{1}{2}$. Moreover, the candidates derive the same benefits from public projects as voters.

To describe the overall utility of politicians we have to distinguish four cases. For example, politician R's lifetime utility, denoted by V_R, can be computed as follows:

(i) If R is in office over both periods:

$$V_R = b - (i_{R1} - \mu_R)^2 - ce_{R1}^2 + g_1 + \beta[b - (i_{R2} - \mu_R)^2 - ce_{R2}^2 + g_2].$$

(ii) If R is in office in $t = 1$ only:

$$V_R = b - (i_{R1} - \mu_R)^2 - ce_{R1}^2 + g_1 + \beta[-(i_{L2} - \mu_R)^2 + g_2].$$

(iii) If R is in office in $t = 2$ only:

$$V_R = -(i_{L1} - \mu_R)^2 + g_1 + \beta[b - (i_{R2} - \mu_R)^2 - ce_{R2}^2 + g_2].$$

(iv) If R never is in office:

$$V_R = -(i_{L1} - \mu_R)^2 + g_1 + \beta[-(i_{L2} - \mu_R)^2 + g_2].$$

We assume that b is not too small such that candidates of low ability are willing to exert greater effort to increase their reelection chances. To simplify the exposition we assume $\beta = 1$.

We assume that politicians cannot commit themselves to a policy platform. Voters observe the policy-maker's choice with regard to policy I and output g_1 but not the composition of g between effort and ability. They choose the candidate from whom they expect higher utility. To break ties we assume that voters reelect the incumbent if they are indifferent between him and the competitor. We are looking for perfect Bayesian Nash equilibria for the game under these assumptions.

3. Elections Alone

We first examine the standard case where elections are held. As a tie-breaking rule we assume that the probability of either candidate winning in the first period is 0.5 if they both have the same share of votes. In the second period, the incumbent will be elected if he has 50% of the votes. As candidates cannot commit to policy platforms, a policy-maker will choose his most preferred platform in the second period. In the Appendix we prove:

Proposition 1. *Suppose candidate k is elected at date $t = 2$. Then*

(i) he will choose $i_{k2} = \mu_k$ for policy I;

(ii) irrespective of whether k is in his first or second term, he will choose $e^*_{k2} = \frac{\gamma}{2c}$;

(iii) the utility the policy maker realizes in period 2 is given by

$$V_{k2} = b + \frac{\gamma^2}{4c} + \gamma a_k$$

We now look at the equilibria in the first period. As the candidates' ideal points are distributed symmetrically around the median voter's ideal point, the probability of either candidate winning is one half. Once in office, the candidate has to choose e_{k1} and i_{k1}. Without loss of generality we assume that candidate R has been elected. We first make a simple observation that will hold in every equilibrium with pure strategies. Namely, suppose candidate R is elected at date $t = 1$. Then he will choose $i_{R1} = \mu_R$.

This fact follows from the observation that policy-makers will choose their bliss points in the last period. So politician R will not gain more votes in the second election by choosing a different platform than μ_R in period 1. We next derive the equilibrium effort choices made by the office-holder in the first period.

We first look at equilibria that divide the types of right-wing candidates into two groups. The same occurs for left-wing candidates. Such equilibria are called semi-separating. For this purpose a few preliminary steps are necessary. We first construct a separation of the types of right-wing candidates into two groups as follows: The first group with ability equal to or higher than some critical threshold a^{cut}, $a^{cut} \in (-A, A)$, expect to be reelected with probability 1. A second group with ability smaller than a^{cut} expects to be deselected with probability 1. An office-holder with $a = a^{cut}$ is indifferent between being part of the first or the second group.

As a preparation for the formulation of semi-separating equilibria, we examine the conditions for the indifference of an office-holder with $a = a^{cut}$ between rejection and reelection. Without loss of generality we assume that k is a right-wing politician. If he does not expect to be reelected, his expected utility is given by

$$V_R^{rejection} = b + \gamma(e_{R1} + a^{cut}) - ce_{R1}^2 + \frac{\gamma^2}{2c} - (\mu_R - \mu_L)^2. \tag{4}$$

Given this expectation, the optimal choice of e_{R1} is given as $e_{R1} = \frac{\gamma}{2c}$, which yields

$$V_R^{rejection} = b + \frac{3\gamma^2}{4c} + \gamma a^{cut} - (\mu_R - \mu_L)^2. \tag{5}$$

If he expects to be reelected, his utility is

$$V_R^{reelection} = b + \gamma(e_{R1} + a^{cut}) - ce_{R1}^2 + b + \frac{\gamma^2}{4c} + \gamma a^{cut}. \tag{6}$$

The office-holder is indifferent between rejection and reelection if $V_R^{rejection} = V_R^{reelection}$, which yields

$$ce_{R1}^2 - \gamma e_{R1} + \frac{\gamma^2}{2c} - b - \gamma a^{cut} - (\mu_R - \mu_L)^2 = 0. \tag{7}$$

The solutions of this quadratic equation are given by

$$e_{R1} = \frac{\gamma \pm \sqrt{4c[b + \gamma a^{cut} + (\mu_R - \mu_L)^2] - \gamma^2}}{2c}. \tag{8}$$

The effort choice of an office-holder who will be rejected equals $\frac{\gamma}{2c}$. An incumbent who will be reelected will not choose a lower effort level than an incumbent who will be rejected. Hence the only viable solution is

$$e_{a^{cut}} = \frac{1}{2c}\left\{\gamma + \sqrt{4c[b + \gamma a^{cut} + (\mu_R - \mu_L)^2] - \gamma^2}\right\}. \tag{9}$$

After these preparations we can now characterize the set of semi-separating equilibria. For that purpose we use $E_a[g]$ to denote the beliefs of voters regarding the expected ability of an office-holder if he produces output g.

Proposition 2. *There exists a continuum of semi-separating equilibria parameterized by $a^{cut} \in (-A, +A)$. An equilibrium associated with a^{cut} is characterized as follows:*

(i) Policy-makers with $a < a^{cut}$ choose $e_{R1} = \frac{\gamma}{2c}$.

Voters perfectly infer their ability and deselect those policy-makers.

(ii) Policy-makers with $a \geq a^{cut}$ choose

$$e_{R1} = e_{a^{cut}} + a^{cut} - a = \frac{1}{2c}\left\{\gamma + \sqrt{4c[b + \gamma a^{cut} + (\mu_R - \mu_L)^2] - \gamma^2}\right\} + a^{cut} - a. \tag{10}$$

They generate the same output given by $\gamma(e_{a^{cut}} + a^{cut})$ and are reelected.

(iii) The beliefs of the voters are characterized by

α.) $E_a(g) = \frac{A+a^{cut}}{2}$ *if* $g = \gamma(e_{a^{cut}} + a^{cut})$
$E_a(g) = a$ *if* $g = \gamma(\frac{\gamma}{2c} + a)$ *and* $a \in [-A, a^{cut})$

β.) $E_a(g)$ *arbitrary if* $g > (\gamma(e_{a^{cut}} + a^{cut}))$
$E_a(g) < 0$ *if* $g < (\gamma(e_{a^{cut}} + a^{cut}))$ *and* $g \notin [\gamma(\frac{\gamma}{2c} - A), \gamma(\frac{\gamma}{2c} + a^{cut}))$.

The proof of Proposition 2 is given in the Appendix. The beliefs in (iii)α.) are on the equilibrium path, while (iii)β.) are conditions for out-of-equilibrium beliefs. Proposition 2 reveals that the selection power of the reelection mechanism may be severely limited. There are equilibria for which almost all incumbents are reelected. This occurs when a^{cut} is low. We next consider pooling equilibria.

In a pooling equilibrium all office-holders choose the same output levels. Such equilibria are characterized in the following Proposition.

Proposition 3. *There exists a continuum of pooling equilibria characterized by output levels* $g^p \in [g^p_{low}, g^p_{high}]$ *with* $g^p_{low} = \frac{\gamma^2}{2c} + \gamma A$ *and*

$$g^p_{high} = \frac{\gamma^2}{2c} - \gamma A + \frac{\gamma}{2c}\sqrt{4c[b - \gamma A + (\mu_R - \mu_L)^2] - \gamma^2}.$$

An equilibrium associated with g^p *is characterized by*

(i) Office-holders choose $e_{R1} = \frac{g^p}{\gamma} - a$ *and produce the same output* g^p.

(ii) All office-holders are reelected.

(iii) Voters' beliefs are given by

α.) $E_a(g^p) = 0$

β.) $E_a(g)$ *arbitrary for* $g > g^p$
$E_a(g) < 0$ *for* $g < g^p$

The proof of Proposition 3 is given in the Appendix. Again, conditions in (iii)β.) restrict out-of-equilibrium beliefs.

We note that voters remain uninformed about the ability of candidates in pooling equilibria. As a consequence, all incumbents are reelected. This represents an extreme case where the election mechanism has no power to select able candidates for public office. As discussed in Gersbach (2009), the set of equilibria can be reduced by applying plausible refinements.

4. Vote-Share Thresholds

In this section we assume that the public sets a reelection threshold for incumbents m with $\frac{1}{2} \leq m \leq 1$. The interpretation is as follows: If politician k takes office in $t = 1$, he must win a share of votes at least equal to m at the next election if he wants to retain office. Otherwise the challenger will take office.

For the following analysis we assume that a candidate k, say R, has been elected and that the vote-share threshold has been set at m with $m \geq \frac{1}{2}$. In the second period the choice regarding P and I by R (if he remains in office) or by L (if he enters office) will remain the same as in Proposition 1. Hence we can concentrate on the first period.

For the first period we assume without loss of generality that candidate R has been elected. We obtain

Proposition 4. *Suppose $m > \frac{1}{2}$. Then,*

(i) pooling equilibria do not exist.

(ii) semi-separating equilibria parameterized by a^{cut} exist if and only if $a^{cut} \geq a^{crit}(m)$, where the critical quality level $a^{crit}(m)$ is given by

$$a^{crit}(m) := -A + \frac{2}{\gamma}(2\mu_R - 1)(2m - 1). \tag{11}$$

The proof of Proposition 4 is given in the Appendix. We note that $a^{crit}(m)$ is larger than $-A$ and monotonically increasing in m. For $m = \frac{1}{2}$ we obtain $a^{crit} = -A$, and all semi-separating equilibria exist.

Proposition 4 shows that higher thresholds for incumbents destroy pooling equilibria and eliminate semi-separating equilibria where the average ability of reelected incumbents is low. The reason is that an incumbent can only gain a vote share that exceeds 50% marginally if his perceived average ability exceeds zero.

5. Conclusion

The main insight of this paper is thus that higher vote thresholds can increase the selection power of elections. A welfare assessment of higher vote thresholds needs to account for their effects on effort and is conducted in Gersbach (2009).

Appendix

Proof of Proposition 1. The first point is obvious. The optimization problem of the office-holder regarding his effort choice is given by

$$\max_{e_{k2}}\{\gamma(e_{k2}+a_k)-ce_{k2}^2\},$$

which yields $e_{k2}^*=\frac{\gamma}{2c}$. The expected utility of a policy-maker at the beginning of period 2 is given by

$$b+\gamma\left(\frac{\gamma}{2c}+a_k\right)-c\left(\frac{\gamma}{2c}\right)^2=b+\frac{\gamma^2}{4c}+\gamma a_k.$$

□

Proof of Proposition 2. *Step 1.* Office-holders with $a<a^{cut}$ could mimic the output generated by incumbents with $a\geq a^{cut}$ in order to get reelected. Mimicking requires an effort level

$$e_{R1}=e_{a^{cut}}+a^{cut}-a, \tag{12}$$

which would yield a utility

$$V_{R1}^{dev}=b+\gamma(e_{a^{cut}}+a^{cut}-a+a)-ce_{R1}^2+b+\frac{\gamma^2}{4c}+\gamma a. \tag{13}$$

This will be smaller than its equilibrium utility

$$V_{R1}=b+\frac{3\gamma^2}{4c}+\gamma a-(\mu_R-\mu_L)^2 \tag{14}$$

if and only if the following condition holds:

$$b+\frac{3\gamma^2}{4c}+\gamma a-(\mu_R-\mu_L)^2>b+\gamma(e_{a^{cut}}+a^{cut}-a+a)-ce_{R1}^2+b+\frac{\gamma^2}{4c}+\gamma a. \tag{15}$$

Rearranging terms yields

$$ce_{R1}^2-\gamma e_{a^{cut}}+\frac{\gamma^2}{2c}-b-\gamma a^{cut}-(\mu_R-\mu_L)^2>0. \tag{16}$$

As $a<a^{cut}$, we have $e_{a^{cut}}<e_{R1}$. Since the left-hand side of (16) is zero for $e_{R1}=e_{a^{cut}}$ by construction of $e_{a^{cut}}$, the deviation is not profitable.

Step 2. Candidates with $a\geq a^{cut}$ could choose to lower their effort, thereby risking a deselection. Suppose that an office holder with $a=a^{cut}$ considers to lower effort. Equilibrium utility is given by

$$V_{R1}=b+\gamma(e_{a^{cut}}+a^{cut}-a+a)-ce_{R1}^2+b+\frac{\gamma^2}{4c}+\gamma a. \tag{17}$$

Deviating with $e_{R1} = \frac{\gamma}{2c}$ yields

$$V_{R1}^{dev} = b + \frac{3\gamma^2}{4c} + \gamma a - (\mu_R - \mu_L)^2. \tag{18}$$

Deviation is not profitable if

$$ce_{R1}^2 - \gamma e_{a^{cut}} + \frac{\gamma^2}{2c} - b - \gamma a^{cut} - (\mu_R - \mu_L)^2 \leq 0. \tag{19}$$

As $a \geq a^{cut}$, we have $e_{a^{cut}} \geq e_{R1}$. Again, the left-hand side of (19) is zero for $e_{R1} = e_{a^{cut}}$. Hence the deviation is not profitable.

Step 3. Voters' equilibrium beliefs about utility and voting decisions are given as follows:

- If output is $\gamma(e_{a^{cut}}+a^{cut})$, expected ability is given by $E_a(\gamma(e_{a^{cut}}+a^{cut})) = \frac{A+a^{cut}}{2} > 0$ and office-holders producing this output are reelected.
- If output is $\gamma(\frac{\gamma}{2c}+a)$ with $-A \leq a < a^{cut} \leq 0$, voters will believe that the candidate has ability a and he will be deselected because his ability is below-average.
- If output is below $\gamma(e_{a^{cut}}+a^{cut})$ and out of the equilibrium, voters will believe that candidates' ability is below zero.
- If output is above $\gamma(e_{a^{cut}}+a^{cut})$, then the belief of voters is arbitrary.

□

Proof of Proposition 3. If he plays the equilibrium strategy, the utility of a politician with ability a is given by

$$V_{R1}^{pool} = b + \gamma\left(\frac{g^p}{\gamma} - a + a\right) - c\left(\frac{g^p}{\gamma} - a\right)^2 + b + \frac{\gamma^2}{4c} + \gamma a. \tag{20}$$

If he deviates to a slightly higher effort $e_{R1} = \frac{g^P}{\gamma} - a + \epsilon$, his utility would amount to

$$V_{R1}^{hdev} := b + \gamma\left(\frac{g^p}{\gamma} - a + \epsilon + a\right) - c\left(\frac{g^p}{\gamma} - a + \epsilon\right)^2 + b + \frac{\gamma^2}{4c} + \gamma a \tag{21}$$

with ϵ being a small positive number. Such a deviation is not attractive if $V_{R1}^{pool} \geq V_{R1}^{hdev}$, which yields

$$g^p \geq \frac{\gamma^2}{2c} + a\gamma - \frac{\gamma}{2}\epsilon. \tag{22}$$

Condition (22) has to hold for all $\epsilon > 0$ and for all $a \in [-A, +A]$. For type $a = A$ not to deviate,

$$g_{low}^p = \frac{\gamma^2}{2c} + A\gamma. \tag{23}$$

Deviation to a lower effort than in the pooling equilibrium will result in deselection and would yield

$$V_{R1}^{ldev} = b + \frac{\gamma^2}{4c} + \gamma a + \frac{\gamma^2}{2c} - (\mu_R - \mu_L)^2. \tag{24}$$

There will be no downward deviation if $V_{R1}^{pool} \geq V_{R1}^{ldev}$, which yields

$$g^p \in \Big[\frac{\gamma^2}{2c} + a\gamma - \frac{\gamma}{2c}\sqrt{4c[b + \gamma a + (\mu_R - \mu_L)^2] - \gamma^2}, \\ \frac{\gamma^2}{2c} + a\gamma + \frac{\gamma}{2c}\sqrt{4c[b + \gamma a + (\mu_R - \mu_L)^2] - \gamma^2} \Big]. \tag{25}$$

The condition has to hold for all $a \in [-A, +A]$. The worst type $a = -A$ will not want to lower his effort if

$$g^p \leq \frac{\gamma^2}{2c} - A\gamma + \frac{\gamma}{2c}\sqrt{4c[b - \gamma A + (\mu_R - \mu_L)^2] - \gamma^2}, \tag{26}$$

which gives g^p_{high}.

Moreover, the comparison of V_{R1}^{pool} and V_{R1}^{ldev} provides another condition that has to be fulfilled for no upward deviation to occur:

$$g^p \geq \frac{\gamma^2}{2c} + A\gamma - \frac{\gamma}{2c}\sqrt{4c[b + \gamma A + (\mu_R - \mu_L)^2] - \gamma^2}. \tag{27}$$

As this condition is less strict than condition (22), g^p_{low} is given by equation (23). □

Proof of Proposition 4. (i) We show that pooling equilibria in which all policy-makers are reelected with certainty do not exist for $m > \frac{1}{2}$. The expected ability of an office-holder in a pooling equilibrium is zero. The median voter is indifferent between reelecting the office-holder and electing a new candidate. This would imply that no office-holder can obtain a share of votes equal to m, as they get 50%.

We note that no pooling equilibrium exists in which policy-makers expect that they will not be reelected. Office-holders would choose the same effort level, but the outputs would be different, and voters could perfectly infer their ability. This is a contradiction.

(ii) We now look at semi-separating equilibria. With $m > \frac{1}{2}$, candidate R is reelected only if voter $i = 1-m$ prefers to vote for him, which implies that all voters with $i > 1-m$ will also prefer R to L. This leads to the following condition:

$$\gamma(\frac{\gamma}{2c} + \frac{A + a^{cut}}{2}) - (\mu_R - (1-m))^2 \geq \gamma(\frac{\gamma}{2c}) - (\mu_L - (1-m))^2. \tag{28}$$

Using $\mu_L = 1 - \mu_R$, we obtain

$$a^{cut} \geq \frac{2}{\gamma}(2\mu_R - 1)(2m - 1) - A := a^{crit}. \tag{29}$$

□

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