Recruiting, Elections, and the Quality of Government

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Abstract

I propose a model of representative democracy in which the value of holding office and candidate identity are endogenous. The quality of government is jointly determined by equilibrium levels of candidate ability and allocation of resources to the public good. Comparative statics suggest that while increasing the power of a political post may attract higher ability can-

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didates, it may also have a negative effect on the quality of government. The model also provides insights into the motivation of weak challengers.

1. Introduction

> The object of every political constitution is, or ought to be, first to obtain for rulers men who possess most wisdom to discern, and most virtue to pursue, the common good of the society; and in the next place to take the most effectual precautions for keeping them virtuous whilst they continue to hold their public trust.
>
> Publius (James Madison), The Federalist Papers 57 (p. 343)

The presumption that a representative democracy will be able to attract the best of its citizens to public service was an important part of the Federalists' argument in favor of this form of government, and it continues to be relevant in today's assessment of our governmental institutions.

As Madison points out, it is not enough to grant positive incentives to politicians so that their position is attractive. We must also be sure that electoral competition is effective at keeping our politicians focused on the public good.

The tension between these two necessities is the central theme of this paper.

Limiting the diversion of resources has a positive effect on the quality of government, *given the ability of those in office*. However, it can have a negative effect on the ability of entrants into politics as rent-extraction is part of the attraction of holding office. The net effect of these forces depends on the relative size of fixed rewards from holding office, such as salaries, and the amount of resources over which a politician has control. It also depends on the strength of the incumbent, if there is one, and the opportunity costs of going into politics.

This paper presents a simple model which takes these factors into consideration, characterizes its equilibria, and attempts to describe how the quality of government depends on the parameters of the model. In doing this, I call into question the commonly held view that higher ability candidates provide better quality government. Section 4 provides a counterexample in which society is able to attract more able politicians by increasing the resources available to them, but these provide a lower quality of government than was previously received.

1.1. Related Literature

As discussed in a survey article by Timothy Besley (2005), formal political theory has generally abstracted from questions of politicians' ability and political selection. Research that has emphasized the role of ability have tended to assume that candidates are randomly drawn from a fixed pool of potential candidates (e.g. Rogoff and Sibert 1988).

Besley and Coate and Osbourne and Slivinsky's models of a representative democracy focused attention on the entry decisions of potential politicians but, rather than emphasize questions of competence, they stress ideological motivations for running for office. Later work by LeBorgne and Lockwood (2002) and Casselli and Morelli (2004) used the citizen-candidate framework to explore the determinants of the competence of politicians. The central difference between their approach and the one taken in this paper is that while LeBorgne and Lockwood and Casselli and Morelli assume that more skilled politicians will provide more of the public good, I allow for the possibility that politicians will divert resources for their private gain inasmuch as electoral competition allows. Therefore, while other models of competence present elections as screening mechanisms, this paper emphasizes the disciplinary role of elections.

In highlighting the role of electoral competition in limiting rent-seeking, I follow Polo (1998)[1] who uses a probabilistic voting framework to model the tradeoffs between vote share and rent-taking. Thus, while extending the theory of political selection to include rent-seeking behavior, this paper can also be seen as extending

[1] Also discussed in Persson and Tabellini (2000, ch.4).

the theory of rent-seeking in competitive elections to include the effects of political selection.

This paper is also related to recent work on political careers by Matozzi and Merlo (2007) who focus on the incentive effects of lucrative post-politics careers in the private sector. Besley, Pande and Rao (2006) provide empirical evidence for the importance of politician identity to the quality of government. The model below also contributes a fuller theoretical account of the motivation of weak challengers in congressional elections than had previously been given by, for example, Banks and Kiewiet (1989) and Canon (1993).

The rest of the paper is organized as follows: section 2 describes the model, section 3.1 describes the equilibria of the model when ability and private sector income are perfectly correlated, and section 3.2 does the same in the case where the correlation is imperfect. Section 4 discusses comparative statics. Section 5 concludes.

2. Model

There is a community (polity) consisting of a continuum of agents characterized by an income distribution F(y). An agent's income in the private sector y_i is a perfect indicator of that agent's private sector ability. Public sector ability (γ_i) is correlated with y_i:

$$\gamma_i = (\mu + \theta y_i)\varepsilon_i$$

where $E(\varepsilon_i)=1$. $\ln\varepsilon_i$'s are distributed i.i.d. with cdf H(). I use $\hat{\gamma}_i = E[\gamma_i] = \mu + \theta y_i$ to denote the expected competence of a given agent i. Agents without experience in the public sector do not know their own γ but, as in Londregan and Romer (1993), it is publicly revealed through the campaign process before elections take place.

There is one political post which needs to be filled via a simple majority election. This post commands exogenously fixed resources R. A politician's public sector skill level scales this resource pool so that effective resources available when i is in power are $\gamma_i R$. These resources can be used either to provide the public good P or for the politician's private benefit r_i (I will also refer to r_i as rents) so that

$$\gamma_i R = P + r_i.$$

I denote the proportion of effective resources used to provide the public good

$$q_i \equiv \frac{P}{\gamma_i R}.$$

Thus, the product γq is a measure of the effectiveness with which government resources are being used. I call γq the *quality of government.*

Political office provides a salary S consisting of monetary compensation and ego rents.

Each agent (politicians included) i has a utility function

$$u_i = C_i + \alpha P$$

where P is a public good and C_i is private consumption, be it from private sector earnings (y) or benefits extracted from public office (S+r). Throughout, I assume $\alpha < 1$ so that private consumption is more important to our citizens than the government-provided public good[2]. Note here that the question of politician motivation is moot since they are taken to be ordinary citizens. The specified preferences are over policy and private consumption, and the fixed rewards of office imply an interest in winning, making this model consistent with Wittman (1983).

S and r together are a politician's private consumption.Thus, a politician's utility when in office is

[2] The units of public good and private income are necessarily comparable since politicians can choose to use government resources for one or the other. If α were greater than one, politicians would never have an incentive to offer less than the highest amount of public good possible.

$$u_i(\text{i in office}) = (1 - q_i)\gamma_i R + S + \alpha q_i \gamma_i R = (1 - q_i(1-\alpha))\gamma_i R + S.$$

If an agent runs for office and loses, she enjoys the public good provided by her competitor but is deprived of private income so that u_i(i runs for office and loses) $= \alpha q_j \gamma_j R$ where j refers to the opposing candidate.

There are two political parties: A and B. The parties are permanent institutions of the polity and have duopoly power over candidate selection. Before the election, each political party recruits the candidate with highest expected ability from those in the population willing to run, or if there is an incumbent only the party out of office recruits a candidate. Throughout, I will use a superscript A (B) to identify the parameters of party A's (B's) equilibrium choice of candidate.

Parties are important in this model mainly because they keep the number of candidates to two, thus keeping the platform selection stage tractable. One may think of several party objective functions which would induce the selection of the highest expected ability candidates[3][4]. This would be the case if utility were derived directly from the quality of candidates selected, which can be taken as

[3] Carrillo and Mariotti (2001) develop a model of parties predicting similar behavior assuming that parties maximize the probability of winning. In this context, we cannot rule out high ability candidates sacrificing some probability of a win in favor of greater rents in the case of a win.

[4] Although I do not explicitly model primary elections, one may consider the assumption that the highest expected ability candidate is able to win a primary. Alternatively, in a polity where the primary is the main hurdle to gaining office, the model is applicable to primaries with two competing candidates.

shorthand for unmodelled party reputation concerns. Parties recieving a proportion of the rents extracted from office would also do. However, because I view this behavior as intuitive, but a full theory of political parties as beyond the scope of this paper, I opt for modelling the parties as mechanically selecting for quality.

Once recruited, candidates select a platform q^j, j$\in$ $\{A, B\}$. I make two assumptions about candidate platforms. The first is that these can be modelled as binding commitments, as they classically are in one-period models of electoral competition[5]. The second is that these commitments are made at an early stage of the campaigning process, before information about ability is revealed.

Given that politicians cannot affect private sector incomes, all citizens will prefer the candidate who offers a larger quantity of the public good.

To summarize, the timing of events is as follows:

1. Citizens simultaneously decide whether or not they will run if asked to.

2. Parties select their candidates simultaneously from among those willing to run.

3. Candidates simultaneously make resource allocation commitments q^A and q^B.

[5] See Persson and Tabellini (2000) ch. 3.

4. Candidates' ability is revealed through the campaign process.

5. Voters cast their ballots.

6. The winning candidate implements the policy promised at stage 3.

Throughout, I consider two versions of the model. In the first, which I call the *incumbent game*, there is an incumbent of known ability representing party A in the election. In the second, the *open-seat game*, both parties must recruit candidates.

3. Equilibrium

As is standard, I solve for subgame perfect equilibria of the game by analyzing its stages in reverse order. All formal proofs are relegated to the appendix.

I begin by considering a perfect information version of the model where private and public ability are perfectly correlated ($\varepsilon_i \equiv 1$). This will help to highlight the importance of uncertain ability in this model as well as lead to some interesting insights about candidate motivation. Furthermore, it will help the reader understand the structure of the model in a transparent way.

Following that analysis, I look the equilibria of the game with uncertainty over political ability.

3.1. Known Political Ability

Because only one candidate is selected by each party, there are many equilibria in which the entry decisions of citizens who are not selected vary. Primarily, I focus on equilibria where a citizen runs for office purely for the private benefits, that is, she expects that if she does not run for office, another candidate with of the equlibrium ability will run in her place. I call these equilibria *regular*. I also describe equilibria in which candidates believe that if they do not run, nobody else will. I call these equlibria *arm-twisting* since one can think of parties twisting reluctant candidates' arms by making it clear to them that they are the polity's only hope for a competitive election. Arm-twisting equilibria involve private provision of a public good, or dragon-slaying in the sense of Bliss and Nalebuff (1984)[6]. As will become clear below, these equilibria identify a possible motivation for weak challengers in congressional elections: they may be willing to run to force the strong candidate to make more campaign promises. In the rest of this section I call a candidate *weak* if she has no chance of winning the election. Bliss and Nalebuff show how, within a war of attrition framework, the highest ability "knight" will step forward and provide the public good. In this model, I

[6]Palfrey and Rosenthal (1984) also discuss this type of equilibria.

argue that because parties play a part in equilibrium selection, they will recruit the highest ability canididates possible in an arm-twisting equilibrium.

I call an equilibrium *symmetric* if $\gamma^A = \gamma^B$ and $q^A = q^B$. I assume that candidates win with probability 1/2 if voters are indifferent between them.

When there is no uncertainty about abilities, the highest ability candidate will always win the election. To do so, she must offer at least as much of the public good as her competitor is able to do since, otherwise, the other candidate would have incentives to up her offer and win the election. This logic is summarized in the following lemma which describes the Nash equilibrium of the platform setting subgame.

Lemma 1. ***(Electoral Equilibrium)*** *With perfect information, the unique Nash equilibrium of the platform selection subgame is as follows:*

- *If $\gamma^A > \gamma^B$, candidate A wins the election by setting $q^A = \frac{\gamma^B}{\gamma^A}$ and candidate B loses setting $q^B = 1$. The reverse is true for $\gamma^B > \gamma^A$.*
- *If $\gamma^A = \gamma^B$, candidates both set q=1 and each wins with probability 1/2.*

Having solved the platform selection subgame, the payoffs to entry are well-defined. Action sets are {enter with either A or B, enter only with B, enter only with A, do not enter with either A or B} for each citizen.

I make the following technical assumptions to ensure that if an agent is successful enough in the private sector, her best option is to stay in the private sector, and that there are always citizens who are too successful for politics. This rules out corner solutions in which society's very best become politicians. One can think of the converse of A1 as a sufficient condition for attracting society's best to politics, as is discussed in Proposition 5. In the game with uncertainty, a generalization of the following conditions serves the same purpose.

A1. $\theta R < 1$.

A2. F is strictly increasing over $[0, \frac{2(\mu R+S)}{1-\theta R}]$.

A1 guarantees that the net benefit of running for office is downward sloping in γ. A2 ensures that individuals talented enough to find politics unappealing are part of our polity. Together, they guarantee that the candidates selected will be indifferent between running for office and staying in the private sector. The main implications of A1 are summarized in the following lemma.

Lemma 2. ***(Entry Conditions)*** *Assume A1 and A2 hold in the game without uncertainty. Then, in a regular equilibrium, entering candidates will be characterized by the indifference condition* $y^B = max\{0, (\gamma^B - \gamma^A)R + S\}$ *. In any arm-twisting equilibrium* $y^B \leq max\{0, (\gamma^B - \gamma^A)R + S\} + \alpha R \min\{\gamma^B, \gamma^A\}$ *.*

As is discussed in the following propositions, multiple equilibria are possible. I focus on pure strategy equilibria involving the highest ability candidates.

When there is an incumbent, his ability along with the fixed rewards of holding office (S) determine the quality of the challenger. If the incumbent's ability is low enough and S is large enough, a challenger strong enough to defeat the incumbent will find running attractive. Conversely, if the incumbent is of high ability, or if the fixed rewards of holding office are low, the opposition party will be forced to recruit a weak challenger. This relation is made specific in the following proposition.

Proposition 3. ***(Equilibrium with an Incumbent)*** *Given A1 and A2, the equilibria of the incumbent game with perfect information is as follows:*

- *If* $\gamma^A < \theta S + \mu$ *there exists a regular equilibrium in which the challenger wins with probability one,* $\gamma^B = \frac{\theta(S - \gamma^A R) + \mu}{1 - \theta R}$, *and* $q^B = \frac{\gamma^A}{\gamma^B}$.

- *If* $\gamma^A > \theta S + \mu$ *there exists a regular equilibrium in which the incumbent defeats a challenger* $\gamma^B = \mu$ *and sets* $q^A = \frac{\mu}{\gamma^A}$.

- *If* $\gamma^A > \frac{\mu}{1 - \alpha\theta R}$, *there exists an arm-twisting equilibrium where the incumbent defeats a challenger* $\gamma^B = \frac{\mu}{1 - \alpha\theta R}$ *and sets* $q^A = \frac{\gamma^B}{\gamma^A}$.

- *If* $\gamma^A < \frac{\theta S + \mu}{1 - \alpha\theta R}$, *there exists an arm-twisting equilibrium where the challenger* $\gamma^B = \mu + \theta\frac{R(\mu + \gamma^A(\alpha - 1)) + S}{1 - \theta R}$ *wins and sets* $q^B = \frac{\gamma^A}{\gamma^B}$.

When there is no incumbent, expectations of a party's (or perhaps and individual's) success play a key role in the recruiting process. If one expects party A to win because they will be more successful recruiters, the expectations become self-fullfilling. On the other hand, it is generally not rational to expect a tie to occur in equilibrium. If candidates of a certain ability are willing to run for half the fixed rewards of holding office (in expected terms), then a slightly better qualified candidate would surely find it profitable to enter politics and take all the spoils. The following proposition describes and qualifies this asymmetry.

Proposition 4. ***(Equilibrium with an Open Seat)****Given A1 and A2:*

- *For any S>0, there exists a regular equilibrium where party A (B) recruits a candidate* $\gamma^A = \mu + \frac{\theta S}{1-\theta R}$ *who wins the election by setting* $q^A = \frac{\gamma^B}{\gamma^A}$*. Party B (A) recruits a weak candidate* $\gamma^B = \mu$ *and loses setting* $q^B = 1$.

- *For any S>0, there exists an arm-twisting equilibrium where party A (B) recruits a candidate* $\gamma^A = \frac{\mu}{1-\alpha\theta R} + \frac{\theta S}{1-\theta R}$ *who wins the election by setting* $q^A = \frac{\gamma^B}{\gamma^A}$*. Party B (A) recruits a weak candidate* $\gamma^B = \frac{\mu}{1-\alpha\theta R}$ *loses setting* $q^B = 1$.

- *If* $S < \frac{\alpha\mu R}{\frac{1}{2}-\alpha\theta R}$ *there are symmetric arm-twisting equlibria in which* $\gamma^A = \gamma^B = \gamma$ *and* $q^A = q^B = 1$*. In the best of these equilibria,* $\gamma = \frac{\frac{1}{2}\theta S+\mu}{1-\alpha\theta R}$.

The converse of A1 is:

CA1. $\theta R > 1$.

This makes the portion of the entrants' incentive constraint corresponding to potential winners upward sloping in γ. The following Proposition makes precise the sense in which this is a sufficient condition for government to attract society's highest ability citizens. One may think of this rule of the skilled as the rule of the Natural Aristocracy (Jefferson 1998, pgs. 579-80). Denote these citizen's private sector income by $\bar{y}=\max\{y|f(y)>0\}$. Their corresponding level of ability is $\bar{\gamma} = \mu + \theta\bar{y}$.

Proposition 5. ***(Natural Aristocracy)****If CA1 holds, then*

- *In any equilibrium of the incumbent game, if $\gamma^A \leq S + \mu R + \bar{y}(\theta R - 1)$ then a challenger $\bar{\gamma}$ enters and wins the election.*

- *In any regular equilibrium of the open-seat game, the winning candidate will be society's best $\bar{\gamma}$. If $\frac{\frac{1}{2}\theta S+\mu}{1-\alpha\theta R} \leq S + \mu R + \bar{y}(\theta R - 1)$, the same is true for all arm-twisting equilibria.*

Note that comparative statics of the equilibria (on S, R, incumbent ability, etc.) described above are uninteresting over wide ranges of values of the variables of interest. For example, in a regular equilibrium in which the challenger defeats the incumbent (Proposition 3, first bullet point), the amount of the public good provided and the quality of government is constant in S as long as S is large enough for the relevant inequalities to hold. Thus, I leave comparative statics excercises to the case of unknown political ability, discussed in the next section, where uncertainty generates smooth comparative statics.

3.2. Unknown Political Ability

I now turn to a (more realistic) world in which candidate ability is unknown until after the campaign is finished[7]. This uncertainty will affect the entry decisions of citizens as well as the policy choices of candidates.

When there is uncertainty regarding the public sector ability of candidates, the ex-ante probability of A winning the election is a function of the distributions of ε^A and ε^B. Candidate A wins if voters get more public good from A than from B, that is if $q^B R\hat{\gamma}^B\varepsilon^B < q^A R\hat{\gamma}^A\varepsilon^A$ or $\frac{\varepsilon^B}{\varepsilon^A} < \frac{q^A\hat{\gamma}^A}{q^B\hat{\gamma}^B}$ or $\ln\frac{\varepsilon^B}{\varepsilon^A} < \ln q^A\hat{\gamma}^A - \ln q^B\hat{\gamma}^B \equiv \Delta$. Thus, the probability of A winning is G(Δ) where G is the cdf of $\ln\frac{\varepsilon^B}{\varepsilon^A}$. In the incumbent case, ε^A is known so that G is the cumulative distribution function of $\ln\varepsilon^B$ (H). Let g(x)=$\frac{\partial G(x)}{\partial x}$ be the density function associated with G($\cdot$). Thus, as

[7] One may also think of uncertainty being reduced by the same amount for each candidate, without reaching full revelation.

in Londregan and Romer (1993), uncertainty over candidate's ability generates a platform selection decision analogous to that in probabilistic voting (Lindbeck and Weibull 1987). Most of the analysis in this section applies to both open seat and incumbent games.

The role of uncertainty being clear, one can write down the candidates' objective functions in the platform selection subgame and solve for the Cournot-like equlibria of the subgame. The following Lemma formalizes this.

Lemma 6. ***(Electoral Equilibrium)*** *Given $\hat{\gamma}^A$ and $\hat{\gamma}^B$, the platform selection subgame has a Nash equilibrium which is characterized by the first-order conditions:*

$$G(\Delta)(R\hat{\gamma}^A \mathrm{E}(\varepsilon^A|Awins)(\alpha-1)+\frac{\partial \mathrm{E}(\varepsilon^A|Awins)}{\partial q^A}(1-q^A(1-\alpha))R\hat{\gamma}^A)+\frac{1}{q^A}g(\Delta)((1-q^A(1-\alpha))R\hat{\gamma}^A \mathrm{E}(\varepsilon^A|Awins)+S-\alpha q^B R\hat{\gamma}^B \mathrm{E}(\varepsilon^B|Bwins))+\frac{\partial \mathrm{E}(\varepsilon^B|Bwins)}{\partial q^A}(1-G(\Delta))(\alpha q^B R\hat{\gamma}^B)+(\nu-\lambda)=0 \qquad (1)$$

$$(1-G(\Delta))[(\alpha-1)\hat{\gamma}^B R\mathrm{E}(\varepsilon^B|Bwins)+\frac{\partial \mathrm{E}(\varepsilon^B|Bwins)}{\partial q^B}(1-q^B(1-\alpha))R\hat{\gamma}^B]+\frac{1}{q^B}g(\Delta)((1-q^B(1-\alpha))R\hat{\gamma}^B \mathrm{E}(\varepsilon^B|Bwins)+S-\alpha q^A R\hat{\gamma}^A \mathrm{E}(\varepsilon^A|Awins))+\frac{\partial \mathrm{E}(\varepsilon^A|Awins)}{\partial q^B}G(\Delta)\alpha q^A R\hat{\gamma}^A+(\nu-\lambda)=0 \qquad (2)$$

1. *Where υ and λ are Lagrange multipliers which are zero in any interior solution.*

In general, this equilibrium will involve positive rents ($q^j < 1$) even if candidates are of identical expected ability, a point made by Polo (1998) but derived from the general principle that the uncertainty in elections permits candidates to propose non-optimal (from the voter's perspective) platforms without discretely hurting their chances of winning.

Note the presence of platform effects on the conditional expectation of ability: offering a lower q lowers the probability of winning, but also means that a win will only take place if the candidate is of relatively higher ability so that private and public benefits are at high levels. Conversely, it makes it easier for the opponent to win, so that our expectation of her ability conditional on victory is lower.

The first order conditions above can be solved for q^A and q^B and thus for the expected value to i of running for office as A (or B's) candidate. I analyse only regular equilibria here, so that the expected value of staying out of politics is:

$$\hat{u}_i = y_i + \alpha[G(\Delta)q^A\hat{\gamma}^A E(\varepsilon^A|Awins)R + (1 - G(\Delta))q^B\hat{\gamma}^B E(\varepsilon^B|Bwins)R]$$

Thus, agent i assumes that if she does not run for office under party A's banner, someone else of the equilibrium competency will. The choice of whether to work in the private sector or take a chance in the political arena boils down to a comparison of expected private benefits. That is, the net expected benefit of running for office for a citizen of expected ability $\hat{\gamma}$ is:

- $G(\Delta)((1-q^A)\hat{\gamma}E(\varepsilon|Awins)R+S)-\frac{1}{\theta}(\hat{\gamma}-\mu)$ when running as A's candidate.

- $(1-G(\Delta))((1-q^B)\hat{\gamma}E(\varepsilon|Bwins)R+S)-\frac{1}{\theta}(\hat{\gamma}-\mu)$ when running as B's candidate.

Let q^A and q^B represent their equilibrium values given $\hat{\gamma}^A$ and $\hat{\gamma}^B$. Given $\hat{\gamma}^B$, define $\tilde{\gamma}^A \equiv \inf\{\hat{\gamma}^A | G(\Delta)((1-q^A)\hat{\gamma}^A E(\varepsilon^A|Awins)R+S)-\frac{1}{\theta}(\hat{\gamma}^A-\mu)<0\}$ and $\tilde{\gamma}^B$ symmetrically.

We now generalize A1 and A2:

A1'. $\sup_{\hat{\gamma}^B} \tilde{\gamma}^A$ and $\sup_{\hat{\gamma}^A} \tilde{\gamma}^B$ are finite and, for each $\hat{\gamma}^B$ ($\hat{\gamma}^A$), the net value of running for office as A's (B's) candidate is negative for all $\hat{\gamma} > \tilde{\gamma}^A$ ($\tilde{\gamma}^B$).

A2'. F places strictly positive probability on the interval [0,2max{ $\tilde{\gamma}^A$, $\tilde{\gamma}^B$}].

A1' again relies on θR being sufficiently small. The presence of the conditional expectation in the expression makes it difficult to provide globally sufficient conditions for A1' to be true. However, in most examples θR<1 suffices. Figure 6.1 shows two possible net expected benefit curves in which A1' is violated, as well as a typical case in which A1' holds.

Lemma 7. ***(Entry Conditions)*** *Given that parties choose the most competent agents available, and given A1' and A2', candidate selection will be characterized* *by the indifference conditions*[8]*:*

$$G(\Delta)((1-q^A)\hat{\gamma}^A E(\varepsilon^A|Awins)R+S)-\frac{1}{\theta}(\hat{\gamma}^A-\mu)=0 \quad (3)$$

$$(1-G(\Delta))((1-q^B)\hat{\gamma}^B E(\varepsilon^B|Bwins)R+S)-\frac{1}{\theta}(\hat{\gamma}^B-\mu)=0 \quad (4)$$

Lemmas 5 and 6 characterize the regular equilibria of the game with uncertainty. The following proposition gathers the results.

Proposition 8. *Under the assumptions above, an equilibrium always exists and is characterized by equations 1-4.*

In general, many equilibria of the open seat game may exist as one party may be more successful than the other in recruiting candidates. However, in contrast with the forced asymmetry of the perfect information equilibria, one can find symmetric equilibria when there is uncertainty as long as a weak version of A1 holds.

Remark 9. ***(Symmetric Equilibria)*** *If* $\theta R < \frac{2}{E(\varepsilon^i|\varepsilon^i>\varepsilon^j)}$ *, the open seat game always has a symmetric equilibrium in which* $q^A = q^B$ *and* $\hat{\gamma}^A = \hat{\gamma}^B$*.*

To see this, one must simply observe that because the $\ln\varepsilon_i$'s are i.i.d., the distribution of their difference (G) must be symmetric around a zero mean. Therefore,

[8] *Recall that* $\hat{\gamma}_i = \mu + \theta y_i$ *so* $y_i = \frac{1}{\theta}(\hat{\gamma}_i - \mu)$.

equilibrium conditions (1) and (2) are identical with the party labels switched, as are (3) and (4), so that it is sufficient to solve one pair, be it (1) and (3) or (2) and (4) to find a symmetric equilibrium of the game. A detailed proof is given in the appendix.

4. Comparative Statics

Because in the tails of common distributions for G, changes in expected ability conditional on winning and second order effects regarding the distribution can become very important, it is very hard to find assumptions that ensure that derivatives are globally of a certain sign. Assuming an interior solution (so that $\lambda = \nu = 0$ in both A and B's first order conditions) equations (1), (2), (3) and (4) define a system of implicit functions so that it is possible to do comparative statics without explicitly solving for the equilibrium values of q^A, q^B, y^A, and y^B. However, these local results are of limited significance here. For similar reasons, global monotonicity of objective functions cannot easily be established so that monotone comparative statics are not applicable here. Instead, I simulate changes in important parameters using common families of distributions such (exponential, gamma, and lognormal) for ε. I illustrate only the case where ε is exponential as other cases are qualitatively similar.

The lack of general comparative statics results does not mean that nothing can be learned from these exercises. Figures 6.2 and 6.3 illustrate one of the main results of this paper: that equilibria with higher ability candidates need not be desireable because they may involve lower levels of the quality of government. Note that the quality of government and the ability of the challenger have opposite slopes here. The simulated comparative statics in the figure constitute a proof by counterexample.

Figures 6.2-6.3 show how as government resources are increased, better candidates are attracted to politics but equilibria are less honest as the temptation of diverting resources increases. Figures 6.4-6.7 illustrate the effect on the quality of government of varying the fixed rewards from office (S) or the ability of the incumbent (γ^A). Both of these relations are positive. It is not surprising that increasing the fixed rewards of holding office increases the equilibrium quality of government, as this relation has been observed in a related setting by Ferejohn (1986). All figures illustrate the incumbent game.

5. Concluding Remarks

Citizens find careers in politics appealing for different reasons: wages, ego rents and rent extraction among them. This paper has highlighted the importance of the relative and absolute size of these motivating factors for determining the quality of government. Politicians motivated primarily by the fixed rewards of office will commit to limit their pursuit of rents. Those motivated primarily by the rents themselves, however, cannot be expected to do the same. By the same logic, the analysis suggests that if a society is to endeavor to attract better qualified people to public office, it should be wary of doing so by increasing the power and resources of this post.

6. Figures

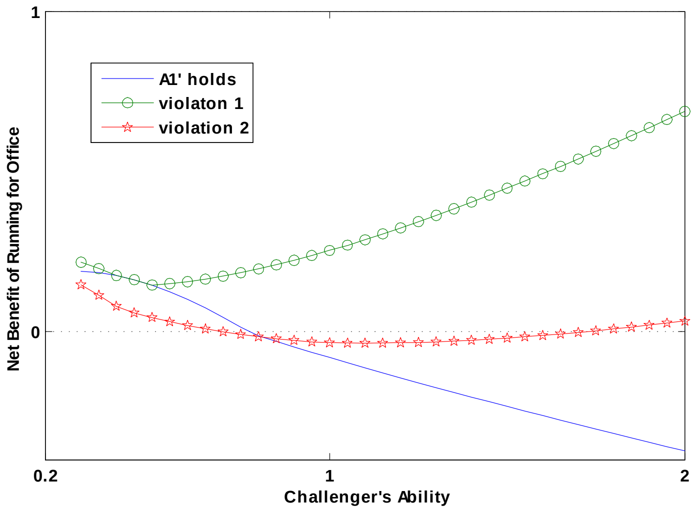

Figure 6.1: The role of A1'.

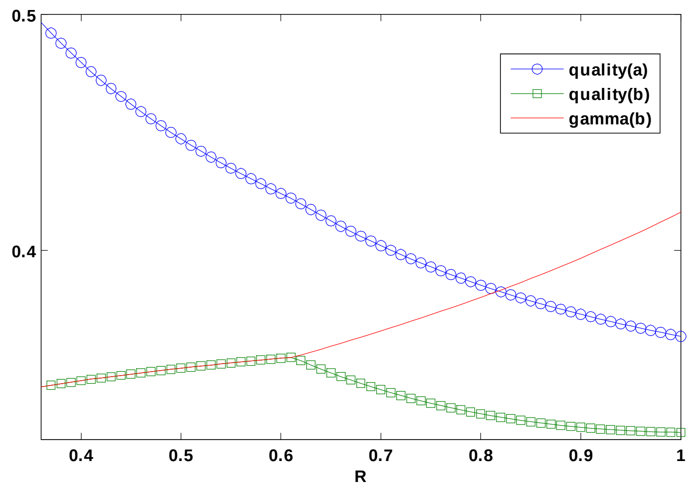

Figure 6.2: Quality of Government vs. Government Resources-R

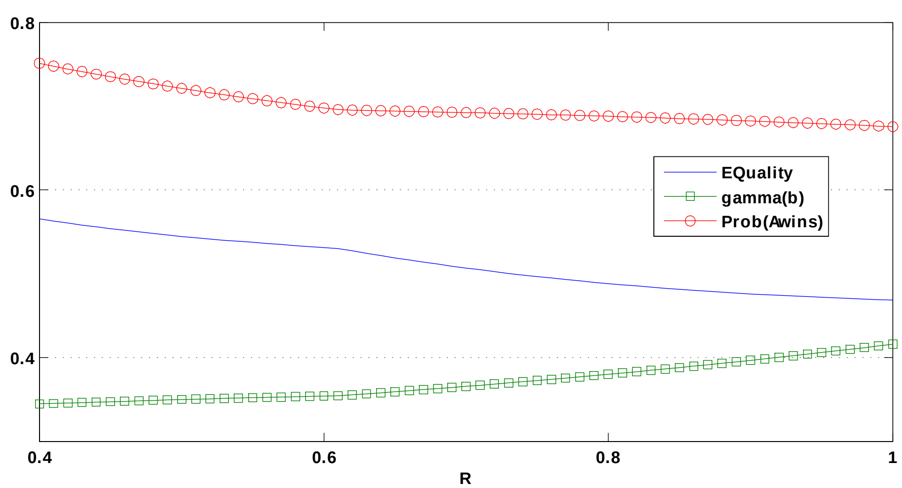

Figure 6.3: Expected Quality of Government vs. Government Resources-R

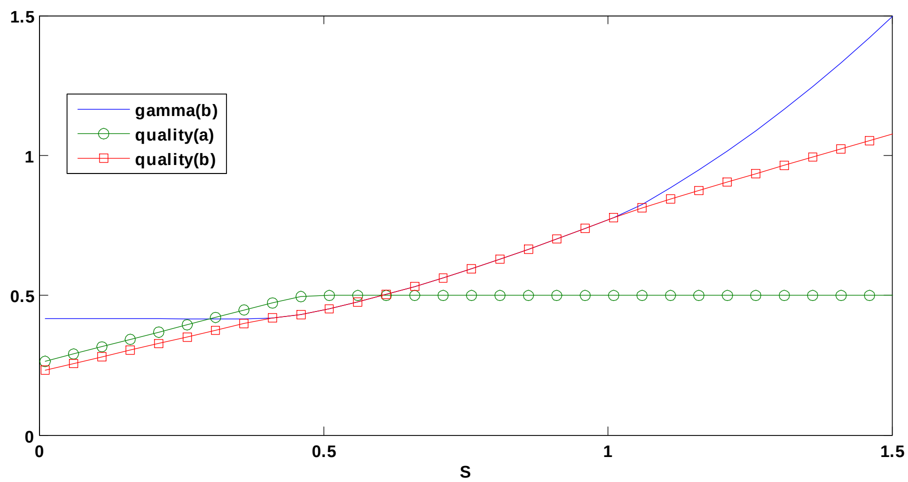

Figure 6.4: Quality of Goverment vs. Fixed Rewards from Office-S

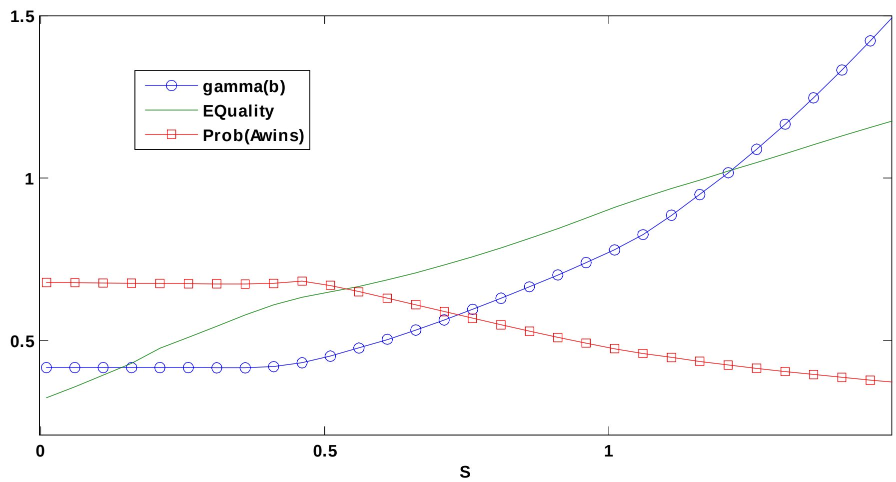

Figure 6.5: Expected Quality of Government and Ability vs. S

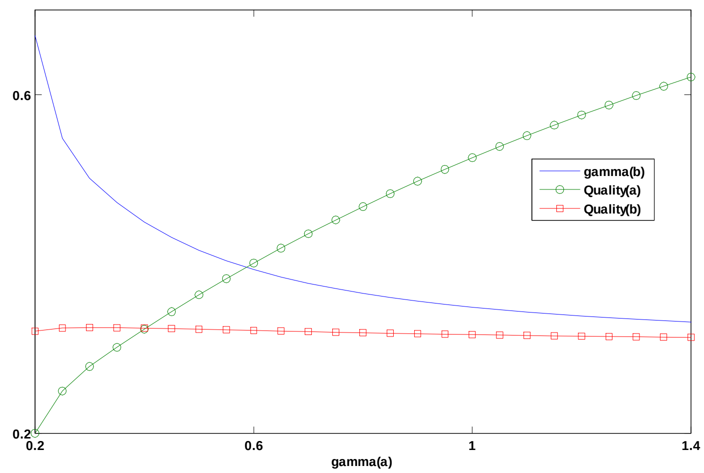

Figure 6.6: Quality of Government vs. Incumbent Ability

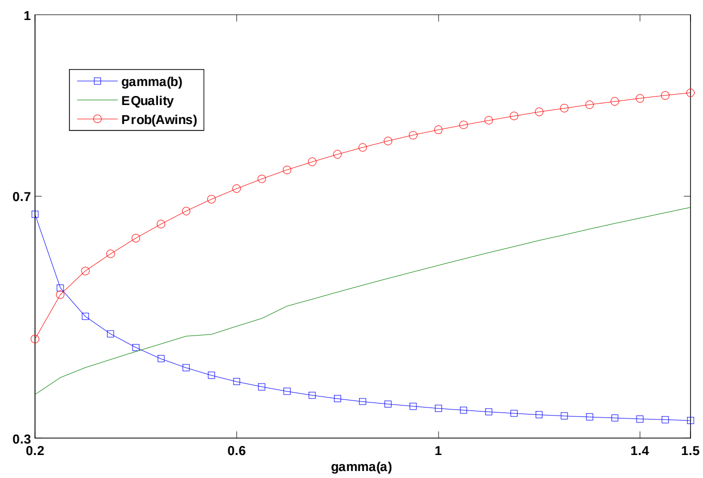

Figure 6.7: Expected Quality of Government vs. Incumbent Ability

7. Appendix

Proof of Lemma 1.

If $\gamma^A > \gamma^B$ candidate A's best response to any q^B is q$^A = \frac{q^B \gamma^B}{\gamma^A}$ which ensures electoral victory while maximizing private benefits. On the other hand, any q^B is a best response for B(A) to q$^A \geq \frac{\gamma^B}{\gamma^A}$ since she stands no chance of winning. B's best response to any q$^A < \frac{\gamma^B}{\gamma^A}$ is q$^B = \frac{q^A \gamma^A}{\gamma^B}$ ensuring victory for herself. Thus, q$^B < 1$ is not an equilibrium since it is not a best response to any q^A which is itself a best response to this q^B.

Candidates of equal ability will compete each others private rents away since a small increase in the public good offered leads to a discrete increase in payoffs. Thus, the voters will be indifferent between the candidates and each candidate will win with probability 1/2 by assumption.

Proof of Lemma 2.

In a regular equilibrium, potential candidates believe that the public good will be provided at the equlibrium level whether or not they decide to run for office. Thus, given γ^A,the incentive constraint for a party B candidate of equilibrium competence is $max\{0, (\gamma - \gamma^A)R + S\} - y = max\{0, (\gamma - \gamma^A)R + S\} - \frac{1}{\theta}(\gamma - \mu) \geq 0$. For a winning candidate, a unit increase in γ has an opportunity cost of $\frac{1}{\theta}$

and a benefit of R. A1 guarantees that $\frac{1}{\theta}$>R so that the incentive constraint is weakly decreasing in γ, and crosses zero at most once for $\gamma > \mu$. Equilibrium rewards from running for office are bounded above by the rewards of running unopposed: $(\theta y + \mu)R + S = \gamma R + S$ so that the indifferent citizen will have income $y = \frac{\mu R+S}{1-\theta R} < \frac{2(\mu R+S)}{1-\theta R}$. Thus, A2 ensures that the indifferent citizen is part of our polity.

In an arm-twisting equilibrium, the incentive constraint becomes $max\{0, (\gamma - \gamma^A)R + S\} + \alpha R \min\{\gamma, \gamma^A\} - y \geq 0$. A1 and A2 serve the same purpose as in the regular equilibrium.

Proof of Proposition 3.

A winning challenger (necessarily $\gamma^B > \gamma^A$) gets a private payoff of $(\gamma^B - \gamma^A)R + S$ since she must offer infinitesimally more of the public good than the incumbent is able to do. Given A1, γ^B is determined by the indifference condition $\gamma^B = \theta[(\gamma^B - \gamma^A)R + S] + \mu$ so that $\gamma^B = \frac{\theta(S-\gamma^A R)+\mu}{1-\theta R}$ which is greater than γ^A if and only if $\gamma^A < \theta S + \mu$.

An unopposed incumbent will set q^A=0. Thus, if the incumbent is above this ability threshold, party B will turn to lower skilled citizens for whom it makes sense to sacrifice their private income in the interest of forcing the incumbent to offer some public good, i.e. weak candidates. The best of these is determined by the indifference condition y=$\alpha(\mu + \theta y)R$ which implies y=$\frac{\alpha\mu R}{1-\alpha\theta R}$. Given this critical value of y, I observe that if $\gamma^A \geq \mu + \theta\frac{\alpha\mu R}{1-\alpha\theta R} = \frac{\mu}{1-\alpha\theta R}$ the hopeless candidate will indeed lose the election. Finally, there must be only one citizen willing to challenge since otherwise incentives to run for office disappear as each potential candidate is sure that someone else will run for office and force the incumbent to provide some public good.

Citizens that would be willing to challenge the incumbent only to force him to provide some public good may also be able to win the election. The income of the best citizen party B could recruit in an arm-twisting equilibrium in which party B wins is determined by the indifference condition y=$(\theta y + \mu - \gamma^A)R + S + \alpha\gamma^A R$ (q$^A = 1$ by lemma 1) since the candidate will win office and she (correctly) believes that no one will run if she does not. Thus, $\gamma^B = \mu + \theta\frac{R(\mu+\gamma^A(\alpha-1))+S}{1-\theta R}$ which is greater than γ^A if and only if $\gamma^A < \frac{\theta S+\mu}{1-\alpha\theta R}$.

Proof of Proposition 4.

To see that this is a Nash equilibrium consider the strategies above. If A is recruiting optimistically and citizens believe A will win the election, the best available candidate is determined by the indifference condition $\gamma^A = \theta[(\gamma^A - \gamma^B)R + S] + \mu = \theta[(\gamma^A - \mu)R + S] + \mu$ so that $\gamma^A = \mu + \frac{\theta S}{1-\theta R}$. Since potential candidates believe (correctly) that B has no chance of winning, the best candidate the party can recruit in a regular equilibrium is a weak challenger μ.

In an arm-twisting equilibrium where only one citizen agrees to run for A the indifference condition specifying the wealthiest citizen willing to run for A is $\gamma^A = \theta[(\gamma^A - \frac{\mu}{1-\alpha\theta R})R + S + \frac{\alpha R\mu}{1-\alpha\theta R}] + \mu$ which implies $\gamma^A = \frac{\mu}{1-\alpha\theta R} + \frac{\theta S}{1-\theta R}$.

In an arm-twisting equilibrium in which candidates tie, their participation constraint is $\frac{1}{2}S + \alpha\gamma R \geq \frac{1}{\theta}(\gamma - \mu)$. This is satisfied with equality at $\gamma = \frac{\frac{1}{2}\theta S+\mu}{1-\alpha\theta R}$. If a candidate slightly better than those running is to stay out of the race, we must have $S < \frac{1}{\theta}(\gamma - \mu)$ which simplifies to $S < \frac{\alpha\mu R}{\frac{1}{2}-\alpha\theta R}$. Once again, A1 and A2 guarantee that this is all we need to check.

Proof of Proposition 5.

In the incumbent game, because the incentive constraint is upward sloping for winners, we need only check it for society's best. Thus, we need $(\bar{\gamma}-\gamma^A)R+S \geq \bar{y}$ which can be rewritten as $\gamma^A \leq S + \mu R + \bar{y}(\theta R - 1)$.

In the open seat game, in any regular equilibrium in which one party loses for sure, the losing party can only attract candidates μ. Thus, running for office is profitable for a candidate with zero income if she expects to win, and because the net expected benefit of running is upward sloping in γ, it is profitable for any citizen to run with the winning party. In an arm-twisting equilibrium, the losing party can at best recruit a weak candidate $\gamma^B = \frac{\mu}{1-\alpha\theta R}$ so that, following the proof for the incumbent game, we get the necessary condition $\frac{\mu}{1-\alpha\theta R} \leq S+\mu R+\bar{y}(\theta R-1)$.

To rule out ties we need either S$>\frac{\alpha\mu R}{\frac{1}{2}-\alpha\theta R}$ so that ties are ruled out as in Proposition 4, or $\frac{\frac{1}{2}\theta S+\mu}{1-\alpha\theta R} \leq S+\mu R+\bar{y}(\theta R-1)$ so that the incentive constraint for $\bar{\gamma}$ is satisfied as above.

Proof of Lemma 6.

By continuity of the objective functions, a Nash Equilibrium exists (Glicksberg 1952). Candidate A chooses a policy platform q^A by maximizing her expected utility taking her opponent's platform as given:

$\max_{q^A} G(\Delta)((1-q^A(1-\alpha))RE(\gamma^A|Awins)+S)+(1-G(\Delta))(\alpha q^B RE(\gamma^B|Bwins)).$

$s.t.\ q^A \in [0,1]$

The corresponding Lagrangian is:

$\Gamma(q^A,\lambda,\upsilon) = G(\Delta)((1-q^A(1-\alpha))RE(\gamma^A|Awins)+S)+(1-G(\Delta))(\alpha q^B RE(\gamma^B|Bwins))+ \lambda(1-q^A)+\upsilon q^A$

which has the following first order (necessary) conditions:

$\partial q^A: \quad G(\Delta)(R\hat{\gamma}^A E(\varepsilon^A|Awins)(\alpha-1)+\frac{\partial E(\varepsilon^A|Awins)}{\partial q^A}(1-q^A(1-\alpha))R\hat{\gamma}^A) + \frac{1}{q^A}g(\Delta)((1-q^A(1-\alpha))R\hat{\gamma}^A E(\varepsilon^A|Awins)+S-\alpha q^B R\hat{\gamma}^B E(\varepsilon^B|Bwins))+\frac{\partial E(\varepsilon^B|Bwins)}{\partial q^A}(1-G(\Delta))(\alpha q^B R\hat{\gamma}^B)+(\nu-\lambda)=0$

$\partial\lambda: \quad 1-q^A=0$ and $\lambda>0$ or $\lambda=0$

$\partial\nu: \quad q^A=0$ and $\nu>0$ or $\nu=0$

Symmetrically, candidate B solves:

$\max_{q^B}(1-G(\Delta)((1-q^B(1-\alpha))RE(\gamma^B|Bwins)+S)+G(\Delta)(\alpha q^A RE(\gamma^A|Awins))$

$s.t.\ q^B \in [0,1]$

Which leads to first order conditions:

$\partial q^B:\ \ (1-G(\Delta))[(\alpha-1)\hat{\gamma}^B RE(\varepsilon^B|Bwins)+\frac{\partial E(\varepsilon^B|Bwins)}{\partial q^B}(1-q^B(1-\alpha))R\hat{\gamma}^B]+$
$\frac{1}{q^B}g(\Delta)((1-q^B(1-\alpha))R\hat{\gamma}^B E(\varepsilon^B|Bwins)+S-\alpha q^A R\hat{\gamma}^A E(\varepsilon^A|Awins))+\frac{\partial E(\varepsilon^A|Awins)}{\partial q^B}G(\Delta)\alpha q^A R\hat{\gamma}^A+$
$(\nu-\lambda)=0$

$\partial\lambda:\ \ 1-q^B=0$ and $\lambda>0$ or $\lambda=0$

$\partial\nu:\ \ q^B=0$ and $\nu>0$ or $\nu=0$.

Proof of Lemma 7.

A1' ensures the net value of running for office is negative for high y individuals. Note that an individual with zero private sector income always finds running for office desireable since they have a small chance of winning S>0. This fact, together with A2' and the continuity of the net expected value of running for office function, ensures that there is indeed a citizen in our polity which is made indifferent between running for office or not. It is easy to see that a player cannot benefit from deviating from this strategy profile; i.e. cannot gain from volunteering to run when her net value of running is negative, or choosing not to run when her net value of running is positive.

Proof of Proposition 8.

Lemmas 4 and 5 together provide a system of equations (1)-(4) in four unknowns ((1),(2) and (4), with three unknowns in the incumbent game). Existence in the incumbent game is easy to see given the previous lemma. In the open seat game, existence is guaranteed through A1' and A2' since A1' lets us concentrate only on citizens of ability in [0,max{ $\bar{\gamma}^A$, $\bar{\gamma}^B$}], and thus a solution to 3 and 4 constrained to 1 and 2 holding exists by the Glicksberg fixed point theorem.

Proof of Remark 9.

If $\theta R < \frac{2}{E(\varepsilon^i | jwins, q^i\gamma^i = q^j\gamma^j)} = \frac{2}{E(\varepsilon^i|\varepsilon^i > \varepsilon^j)}$, the open seat game always has a symmetric equilibrium in which $q^A = q^B$ (q's may be mixed) and $\hat{\gamma}^A = \hat{\gamma}^B$.

Proof:

Step 1: In the open seat game, G is symmetric around zero.

Recall that G is the cdf of (lnε^B-lnε^A) where lnε^B and lnε^A are i.i.d. random variables.

Clearly E(lnε^B-lnε^A)=E(lnε^B)-E(lnε^A)=0.

Also, G(Δ)=1-G(-Δ). To see this, recall h is the pdf of lnε.

Let $\hat{\text{G}}$ be the cdf of -(lnε^B-lnε^A). Note that G($\hat{\text{x}}$)=$\int_{-\infty}^{\hat{x}} \int_{-\infty}^{\infty} h(\ln\varepsilon^A)h(x + \ln\varepsilon^A)d\ln\varepsilon^A dx = \int_{-\infty}^{\hat{x}} \int_{-\infty}^{\infty} h(\ln\varepsilon^B)h(x+\ln\varepsilon^B)d\ln\varepsilon^B dx = \hat{G}(\hat{x})$

Then, note that 1-G(Δ)=$\hat{\text{G}}$(-Δ)=G(-Δ) which proves that G(Δ)=1-G(-Δ).

Step 2: If $\hat{\gamma}^A = \hat{\gamma}^B = \gamma$ then the utility functions of A and B (the objective functions in the platform selection subgame) are symmetric. Thus, A and B's best response functions are identical.

Utility functions are:

$G(\Delta)((1 - q^A(1 - \alpha))RE(\gamma^A|Awins) + S) + (1 - G(\Delta))(\alpha q^B RE(\gamma^B|Bwins))$

for A,

$(1 - G(\Delta)((1 - q^B(1 - \alpha))RE(\gamma^B|Bwins) + S) + G(\Delta)(\alpha q^A RE(\gamma^A|Awins))$

$= G(-\Delta)((1-q^B(1-\alpha))RE(\gamma^B|Bwins)+S)+(1-G(-\Delta))(\alpha q^A RE(\gamma^A|Awins))$

for B.

That is, B's utility function is the same as A's except with B variables playing the part of B variables.

Say q* maximizes utility for A in q^A given q^B=q̂, then q* maximizes B's utility in q^B when q^A=q̂. Thus, A and B's best response functions are identical.

Step 3: FACT: Any 2 player game with symmetric and continuous payoffs and compact and convex strategy sets has a symmetric equilibrium.

Follow the standard proof of the existence of Nash Equilibrium, generalized to work for infinite but compact and convex strategy sets.

To use Glicksberg's (1952) generalization of the Kakutani fixed point theorem, best response correspondences (B:$\Sigma \rightarrow \Sigma$) must satisfy:

i) B(x) is nonempty for all x.

True since utility functions are continuous and action spaces are compact so that the theorem of the maximum applies.

ii) B(x) is convex for all x.

Consider two points in B(x). Then the two points yield the same level of utility, and so does any mixture between them. Thus B(x) is convex-valued.

iii) B(x) has a closed graph (is upper hemi-continuous).

The standard argument relies only on continuity of the utility function.

suppose (x(n),y(n))$\rightarrow$ (x, y) with y(n)$\in$B(x(n)) but y$\notin$B(x). Then there is $\epsilon > 0$ and y' such that u(x,y')>u(x,y)+3ϵ. By continuity of u and convergence of (x(n),y(n)), for n sufficiently large we have u(x(n),y')>u(x,y')-ϵ>u(x,y)+2ϵ>u(x(n),y(n))+ϵ

Thus y' does strictly better than y(n) against x(n), which is a contradiction.

By applying the fixed point theorem to player A's best response function find an x such that x=B(x). But this means x is also a best respose for player B when player A plays x, so that x is a symmetric equilibrium.

Step 4: If $q^A = q^B$ then there is an entry equilibrium with $\hat{\gamma}^A = \hat{\gamma}^B$.

By similar arguments to those in step 1, entry conditions for A and B are symmetric:

$G(\Delta)((1-q)\hat{\gamma}^A E(\varepsilon^A|Awins)R + S) - \frac{1}{\theta}(\hat{\gamma}^A - \mu) = 0$ for A

$(1-G(\Delta)((1-q)\hat{\gamma}^B E(\varepsilon^B|Bwins)R+S)-\frac{1}{\theta}(\hat{\gamma}^B-\mu) = G(-\Delta)((1-q)\hat{\gamma}^B E(\varepsilon^B|Bwins)R+S) - \frac{1}{\theta}(\hat{\gamma}^B - \mu) = 0$ for B

Furthermore, if we look for a solution where $\hat{\gamma}^A = \hat{\gamma}^B$ the entry conditions become:

$\frac{1}{2}((1-q)\hat{\gamma}E(\varepsilon^i|jwins)R + S) - \frac{1}{\theta}(\hat{\gamma} - \mu) = 0$

so $\hat{\gamma} = \frac{\frac{\mu}{\theta}+\frac{S}{2}}{\frac{1}{\theta}-\frac{1}{2}(1-q)E(\varepsilon^i|jwins,q^i\gamma^i=q^j\gamma^j)R}$ which is positive by assumption.

To sum up, the symmetric equilibrium in the platform selection subgame supports the symmetric entry equilibrium. A1' guarantees that more able challengers for either A or B will not find it worthwhile to enter.

A fully symmetric always exists, although it may involve mixing in the platform selection subgame. Quasiconcavity of utility functions would be sufficient to guarantee symmetric pure strategy equilibrium. I have not been able to prove this in general.

References

[1] Banks, J. S. and D. R. Kiewiet, 1989, Explaining patterns of candidate competition in congressional elections. *American Journal of Political Science* 33, 997-1015.

[2] Besley, T., 2005, Political selection. *Journal of Economic Perspectives* 19, 43-60.

[3] Besley, T. and S. Coate, 1997, An economic model of representative democracy. *Quarterly Journal of Economics* 112, 85-114.

[4] Besley, T., R. Pande and V. Rao, 2006, Political selection and the quality of government: evidence from south India. mimeo, London School of Economics.

[5] Bliss, C. and B. Nalebuff, 1984, Dragon-slaying and ballroom dancing: the private supply of a public good. *Journal of Public Economics* 25, 1-12.

[6] Carrillo, J.D. and T. Mariotti, 2001, Electoral competition and political turnover. *European Economic Review* 45, 1-25.

[7] Casselli, F. and M. Morelli, 2004, Bad politicians. *Journal of Public Economics* 88, 759-782.

[8] Canon, D. T., 1993, Sacrificial lambs or strategic politicians? Political amateurs in U.S. house elections. *American Journal of Political Science* 37, 1119-1141.

[9] Ferejohn, J., 1986, Incumbent performance and electoral control. *Public Choice* 50, 5-26.

[10] Glicksberg, I.L., 1952, A further generalization of the Kakutani fixed point theorem, with application to Nash equilibrium points. *Proceedings of the American Mathematical Society* 3, 170-174.

[11] Hamilton, A., J. Jay and J. Madison, 1987, *The Federalist Papers.* (Penguin Books, New York).

[12] Jefferson, T., 1998, *The life and selected writings of Thomas Jefferson.* Koch, A. and W. Peden eds. (Random House,. New York).

[13] Le Borgne, E. and B. Lockwood, 2002, Candidate entry, screening, and the political budget cycle. IMF Working Paper No. 02/48.

[14] Lindbeck, A. and J. Weibull, 1987, Balanced-budget redistribution as the outcome of political competition. *Public Choice* 52, 273–297.

[15] Londregan, J. and T. Romer, 1993, Polarization, incumbency, and the personal vote. in W. Barnett, M.J. Hinich, and N.J. Schofield eds., *Political Economy: Institutions, Competition and Representation.* (Cambridge University Press, Cambridge).

[16] Matozzi, A. and A. Merlo, 2005, Political careers or career politicians. mimeo, University of Pennsylvania.

[17] Osbourne, M. J. and A. Slivinski, 1996, A model of political competition with citizen candidates. *Quarterly Journal of Economics* 111, 65-96.

[18] Palfrey, T. and H. Rosenthal, 1984, Participation and provision of discrete public goods: a strategic analysis. *Journal of Public Economics* 24, 171-193.

[19] Polo, M., 1998, Electoral competition and political rents. mimeo, Bocconi University.

[20] Persson, T. and G. Tabellini, 2000, *Political Economics: Explaining Economic Policy.* (MIT Press, Cambridge).

[21] Rogoff, K. and A. Sibert, 1988, Elections and macroeconomic policy cycles. *Review of Economic Studies* 55, 1-16.

[22] Wittman, D. A., 1983, Candidate motivation: a synthesis of alternative theories. *American Political Science Review* 77, 142-157.