# Elections and the Quality of Politicians

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**Abstract**

This paper concerns the nature of the candidate selection process in politics. The issue at hand is to understand how the competence of candidates and elected politicians is affected by ideological and partisan concerns. I analyze a two-party system with exogenous policies and endogenous candidacy. Citizens are heterogeneous with respect to ideology and competence and vote according to both of these dimensions. When a population is ideologically equilibrated between 'left' and 'right', there is a weak positive effect of politicians' pay and victory rent on the competence of the elected politician, regardless of the ideological concerns involved, and the limited amount of information on candidate quality available to voters. Unsurprisingly, a population that is ideologically very partisan would elect a consonant, but incompetent politician. Nevertheless, in the more general case, with a mildly partisan population, the discernment of candidate ability becomes less perfect and the election's result uncertain: the pay of politicians and the victory rent cease to have a linear effect on the quality of politicians.

Keywords: politicians' competence, citizen-candidate models, rewards for elected officers, ideology.
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## 1 Introduction

Before any election, competence and honesty of candidates on one side and a number of ideological and ethical issues on the other side are the

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two lines on which the political debate is usually centred. The research agenda is to examine whether these features are peculiar to political markets or whether we can view the political selection process as just another occupational choice. In this paper, we focus more narrowly on the trade off between ideology and competence in the political selection process.

It is evident to everyone how the quality of politicians varies a lot among countries. The issue of the quality of political class becomes extremely important as soon as we think how a higher level of corruption and inefficiency is directly related to the quality of the elected officers. This paper tries to explore why democracy can produce outcomes in which people freely elect very low quality officers. This analysis leads us to consider the peculiarity of the political 'market' with respect to the private market. The influence of ideological and local issues on the choice of the candidate lets the choice of the 'best' politician by electors follow very different dynamics from the private market, and could prevent the political market to adjust towards the lack of supply of high quality officers as efficiently as the private market. Moreover electoral campaign, during which a limited number of agents signals strategically on the ability and ideology of candidates to the large audience of electors, constitutes an instrument of collecting information with characteristics which are evidently different from the private market job-placement devices.

We can think of competence as the common value of the game, as a dimension on which preferences among voters are homogeneous, on which there is no disagreement on the preference ranking as long as information is symmetric. Ideology is the name this paper gives to any issue on which preferences are different across the electorate, like the amount of redistribution (among regions or among classes), foreign policy or some ethical issues.

Most of the literature has focused on uni-dimensional models, trying to find either the ideological positioning of politicians or the quality outcome according to some variables in absence of a proper ideological concern. The aim of this paper is to analyze how these two dimensions of political debate interact: how they affect the set of potential candidates and the quality of the politicians in office.

We use a citizen-candidate framework with political parties and heterogeneous citizens. In the model there are two parties ($\mathcal{L}$eft and $\mathcal{R}$ight) and a continuum of citizens. Citizens are heterogeneous with respect to their ideology, represented by a point on an ideology interval, and competence, which is binary and is assumed to coincide with productivity in the (alternative) private market. The distribution of citizens on both these (uncorrelated) dimensions is common knowledge, but the ability of each citizen is private information. Citizens vote taking into consideration both the known ideology and their beliefs on the ability of the two candidates. During primary elections, the ability of prospective candidates ('applicants') is signalled strategically and publicly. During primaries parties can try to discriminate between applicants according to their ability with a signal-contingent transfer scheme, through which each party can try to convince better candidates to run. Applicants reveal their ability strategically. A low-type candidate, though, has to bear some cost $\phi$ if he or she wants to announce a false (High) signal of his or her ability. Citizens see the primary elections selection process and observe the signal of applicants and of the two chosen candidates of each party. Citizens choose between the private sector and a political career and (in the latter case) whether to reveal truthfully or not their ability, in order to maximize their expected utility.

There already exist a stream of literature that studies how the set of candidates and elected officials varies according to the possible spoils of the office, the costs of running for elections or quantity and accuracy of the information on candidates. In particular the citizen candidate framework (Besley and Coate, 1997, Osborne and Slivinski, 1996) has proved to be particularly suitable for answering this question: the primary property of this family of models is that candidates are chosen endogenously from the population of voters and are therefore conditioned by the private market situation and the financial consequences of working as a politician.

Osborne and Slivinski (1996) analyzed a framework in which citizens are heterogeneous only with respect to a single dimension (e.g. ideology) and analyze the possible outcomes in case of plurality and runoff elections with unlimited numbers of candidates and without the mediation of parties. In their model the policy outcome as well as the number of candidates are endogenous and the driving forces of the equilibrium are the rent from victory and the cost of running for elections.

Besley and Coate (1997) focus on the question of whether the electoral outcome is Pareto efficient. They find that as long as policy-making abilities are homogeneous among citizens the outcome is efficient, and, in the two candidate equilibrium, the candidates end up being 'symmetric' with respect to the centre. They hint however, that the efficient outcome may not be an equilibrium anymore in case there is heterogeneity among candidates' ability.

Political parties are introduced in this context by Carillo and Mariotti (2001), though the aim of their paper is to see if the turnover of politicians decided by parties is coherent with the socially optimal level. Their model shares with the present one the the fact that parties are opportunistic agents which want to maximize the probability to win. Nevertheless they set up a model in which citizens have homogeneous preferences over the set of candidates (i.e. citizens care only about what we would call 'competence') and observe a noisy signal of candidates ability. Also in Carillo and Mariotti (2001) removing asymmetric information between parties, candidates and citizens is not sufficient to avoid a negative externality on the quality of the elected official: it is enough the discrepancy of objective between parties, each of which wants to maximize the probability to win through the maximization of its candidate's competence, and voters who are interested in having a competent politician and therefore want to maximize the expected competence of the best among all candidates.

Caselli and Morelli (2004) build a theory of quality of politicians where potential politicians know in advance their ability to convince the electorate (i.e., the signal each one would send during campaigning). In their model bad politicians emerge not only because of comparative advantage (lower opportunity cost of entry), but also because a low average quality of the elected body generates negative externalities to the ego rents tied with the political office. This, in case monetary rewards for politics are decided by politicians themselves, might also generate path dependence in the quality of the elected body. The 'inefficient' outcome is therefore due not to coordination failure, but to self-selection of low quality people for political jobs.

Besley (2003) analyzes in an agency model the effect of wages on politicians' performance. In his model higher wages overcome the problems of adverse selection of candidates deriving from unobserved heterogeneity and the problems of moral hazard deriving from unobservable actions. The wages of politicians have a positive effect on politicians' performance both through a self-selection of better candidates, discipline on performance once in office and ex-post selection through re-election.

The concern for competence is also analyzed by Messner and Polborn (2004), who describe an electoral model more suited to describe small size elections and a small homogenous electorate who agrees on the single issue at stake, which again is what in this paper is called 'competence'. As in Caselli and Morelli (2004), the unique equilibrium is a situation in which 'bad politicians' are more likely to run than good ones because of the usual opportunity cost argument. Moreover in a situation where candidate quality is common knowledge and the office at stake is not particularly valuable, the choice of standing for elections is more committing for a high quality person: he or she has a much higher probability to be the 'best' candidate who is running with respect to a low competence individual. The expected cost of standing for elections is therefore higher for high quality candidates also for this higher 'risk' to actually win the elections.

Poutvaara and Takalo (2003) analyze the effect of variation in pay and campaigning cost on the average ability of politicians when citizens care only about competence: in particular very low and very high campaigning cost have negative effect on candidate quality, as well as increasing rewards may lower average ability. This is due to the mixed effect on low ability types' incentive to stand for elections: a higher reward increases the incentives to stand, but at the same time induces more (high ability) people to stand decreasing the probability to win of the low type. The prevailing effect depends crucially on campaigning cost and the efficiency with which information flows during primaries and campaign.

In their model Mattozzi and Merlo (2005) link the lower average quality of politicians with respect to the whole population with the fact that more able citizens would use politics only as a 'showcase' to have their ability revealed to private market and then earn higher wages in the private sector, therefore are not going to be chosen by the (unique) party who is interested in having the candidate re-elected. Parties therefore have a positive screening role choosing candidates 'good' enough that citizens want to reelect them, but they will never choose 'best' candidates because they know the polity is not attractive enough to let them remain for more than one term.

Dal Bó et al. (2006) analyze a theoretical model where the emergence of bad politicians is due to the existence of lobbies able to punish the politician and influence his or her decisions at sufficiently low cost. The cheaper is to punish for the lobby and the higher the amount of resources subject to the politician's discretion, the higher will be corruption and the lower the incentives for high ability citizens to run for elections.

The fact that financial considerations do matter for a political career has been extensively analyzed by Diermeier, Keane and Merlo (2002), who tried to calculate the actual value of a seat in Congress. They calculate how this depends both on observable (age, education) characteristics, and unobservable characteristics, like competence, valence or charisma. These latter variables affect not only the net present value of being elected in Congress, but also the probability of being elected or re-elected, characteristic which is coherent with the present model.

Lowry, Alt and Ferree (1998) studied American state legislatures and gubernatorial elections and found that voters are able to hold accountable the ruling party, but have very different expectations according to the party (ideology, if you want) which is ruling: citizens want Democrats to raise taxes and Republicans to cut them, and punish the governor and legislature who do not fit this expectation. It is observed a kind of accountability adjusted by ideological expectations, confirming in some way the dual criterion of voting (competence and ideology) it is adopted in this present paper.

Section 2 presents a citizen candidate model with parties, Section 3 discusses a special case in which voters are evenly split between left-wing and right-wing, Section 4 generalizes the results to a case of asymmetric ideological distribution of citizens, while section 5 contains the concluding remarks and the possible extensions.

# 2 The Model

There exists a continuum of agents distributed on the ideological support [-1/2,1/2] according to a generic distribution function $f(x)$, cdf $F(x)$ which is common knowledge. The ideology of each citizen $x_i \in [-1/2, 1/2]$ is private information. This line represents the ideological distribution of citizens. Citizens whose ideology lies in the negative part of the support will be conventionally called 'left-wing', while citizens in the positive part 'right-wing'. Citizens are also heterogeneous with respect to their political ability and private market productivity, which for now are assumed to coincide. Specifically a measure $s$ $(1-s)$ of citizens, uncorrelated with the distribution of ideology, has ability $H$igh ($L$ow). In particular productivity in private sector is normalized to 1 for $H$-types and 0 for $L$-types. Ability is private information to each citizen.

There are two parties $\mathcal{L}$ and $\mathcal{R}$. Agents are income maximizers and decide whether to go and work in the private sector or apply to a party to become politicians. It is assumed that each 'left-wing' ('right-wing') citizen can only apply to party $\mathcal{L}$ ($\mathcal{R}$), and each party will choose a single applicant as a candidate for general elections. The applicants who are not chosen and the candidates who lose elections go to the private market.

Private market is assumed to be perfectly competitive, and productivity is perfectly revealed in the market. Therefore the expected wage in private market: $w^e( \begin{array}{c} H \\ L \end{array} ) = [ \begin{array}{c} 1 \\ 0 \end{array} ]$.

Citizens care both about ideology and competence of the elected politician. Each of the two parties in case of victory implements a (ideologically) symmetric exogenous policy and citizens vote according to the following voting behaviour function:

A citizen $x_i$ votes party $\mathcal{R}$ if:

$$\alpha x_i + (1-\alpha)d_{\mathcal{R}} - (1-\alpha)d_{\mathcal{L}} > 0 \tag{1}$$

where $\alpha$ is the relative weight of ideology with respect to competence, while $d_j$ is the belief that the candidate of party $j \in \{\mathcal{L}, \mathcal{R}\}$ is a high ability one. If this equation holds with equality the citizen is indifferent and the tie breaking rule is a random draw. According to this function, if the belief on the ability of the two candidates is the same ($d_{\mathcal{L}} = d_{\mathcal{R}}$) the electorate splits exactly in two with a $F(0)$ measure of citizens voting $\mathcal{L}$ and a $1 - F(0)$ measure voting $\mathcal{R}$. The winner is the candidate who gets more votes and the tie breaking rule is a random draw.

The winning candidate gets a pay $\pi \in [0, 1]$. Other than this pay $\pi$ the party can agree with the prospective candidate to transfer to him or her a part $\tau$ of the rent $r$ in case of victory. $\tau$ can vary across parties, and each party can also decide to discriminate the $\tau$ according to the signal received during primaries. More precisely both parties at the beginning of the game declare their transfer vector $[\tau_j^L, \tau_j^H]$ This is as to say that the rents from victory are shared between party and politician; for simplicity we assume that the bargaining power is totally in the hands of parties. $\tau$ captures the intensity of party endorsement of the candidate campaign and the interest of a party of 'bribing' a high quality person to have him as a candidate. Salary for being a politician $\pi$ and victory rent $r$ are common knowledge.

I do not assume the existence of any campaigning cost, neither for citizens, nor for parties. The existence of a cost $e > 0$ that each candidate has to pay would not change (at least qualitatively) the results.

Parties utility function is:

$$Pr[win](r - \tau) \tag{2}$$

Where $Pr[win]$ is the ex-ante probability to win, $r$ is the rent for victory and $\tau$ is the transfer given to the chosen candidate in case of victory.

When a citizen decides to stand for primaries, he or she decides as well which signal to send to the party and to the electorate. The primary election process is publicly observable. This means that citizens will be able to observe the signals of the pool of applicants in each field (just $L$-signallers, just $H$-signallers or both signals present at the primary elections of, say, party $\mathcal{L}$). As a starting point it is assumed that the only signal a candidate can send is his or her own curriculum, and that he or she has to stick to this signal during the whole electoral process: it cannot be changed from primaries to general elections. It is as well assumed that low-type citizen can try to embellish their CV and pretend to be $H$-type at some cost $\phi > 0$. This cost catches the risk of being discovered lying by search journalism and the transparency of politics in the country. It hints to how easy it is to fool parties and electors.

Parties therefore will have the choice of trying to tailor a transfer scheme such that truthtelling is an optimal strategy for applicants (therefore separating between $L$-types and $H$-types), or instead build a transfer scheme such that every applicant declares the same ($H$igh) uninformative ability and a random candidate is chosen.

The timing of the game is the following:

1. Each party simultaneously commits to a 'transfer scheme' $[\tau_j^L, \tau_j^H]'$ contingent to applicants declaration.
2. Citizens decide whether to stand for primary elections. Who decides to apply, chooses also which ability to declare to the party between $H$ and $L$.

3. Each party publicly chooses a candidate among applicants according to the 'primary election' signals received. Everyone else goes to the private market.
4. Voting occurs.
5. Everyone's ability is revealed and payoffs are collected.

The equilibrium concept we use is the Perfect Bayesian Equilibrium.

# 3 Symmetric Ideological Distribution

We start solving a benchmark case in which citizens are distributed along the ideological line in a way we could call 'symmetric'. It is therefore imposed the following assumption:

**Assumption 1. Ideological Symmetry.** $F(0) = 1/2$, i.e. exactly half of the population is left-wing (right-wing).

## Primaries and General Elections

Citizens decide who to vote for according to their voting behavior function (1) and to what the two candidate announce to be their respective ability.

**Lemma 1.** *Voting behaviour and Winner of General Elections.*

- When a measure $F(0) = 1/2$ of citizens votes $\mathcal{L}$ and a measure $\{1 - F(0)\} = 1/2$ votes $\mathcal{R}$, elections' result is a tie, the winner is chosen by a random draw and each party wins with probability $1/2$.

  This happens when the beliefs on the ability of the two candidates are the same.
- When the left-wing candidate's expected ability is believed to be higher, a measure $F(\nu) > 1/2$ of citizens ($\nu > 0$) votes for party $\mathcal{L}$ and a measure $\{1 - F(\nu)\} < 1/2$ votes for $\mathcal{R}$, and therefore $\mathcal{L}$ wins the elections with probability 1, .
- When the right-wing candidate's expected ability is believed to be higher, a measure $F(\mu) < 1/2$ of citizens ($\mu < 0$) votes for party $\mathcal{L}$ and a measure $\{1 - F(\mu)\} > 1/2$ votes for $\mathcal{R}$, and therefore $\mathcal{R}$ wins the elections with probability 1, .

This Lemma simply states that as long as voters believe candidate are equally competent, they split exactly into two, and therefore the elections end up in a tie result. Otherwise elections are won by the party that fields the candidates who is (believed to be) more competent.

Given Lemma 1 of course the attention shifts to the calculation of voters' beliefs on candidate ability. By now we can just state the possibilities open to each of the two parties. Each party could in principle choose an applicant who is signalling $L$ or an applicant signalling $H$. The participation and incentive constraints will tell if and when these signals are truthful and what are consequently the beliefs of voters according to the signalled ability and the choice of parties.

The following charts, which resembles very much a normal form game, must be intended just as a summary of the parties' payoffs according to the guessed ability of the candidates. As we will see the expected ability could be 0 (truthful $L$ signal), 1 (truthful $H$ signal) or $s$. This latter case is a situation of 'pooling', in which signals are uninformative, and therefore the expected ability mirrors the average population ability (prior belief); it will be shown happens in this case every applicant, regardless of his or her actual ability, is signalling $H$, pretending to be 'competent'. For the sake of clarity I will call these three situation *Incompetent*, *Competent*, *Random*, referring to the guessed ability of the chosen candidate.

| $\mathcal{L}/\mathcal{R}$ | Incompetent | Random | Competent |
|---|---|---|---|
| Incompetent | $\frac{1}{2}(r-\tau^L_{\mathcal{L}}), \frac{1}{2}(r-\tau^L_{\mathcal{R}})$ | $0,\ r-\tau^H_{\mathcal{R}}$ | $0, r-\tau^H_{\mathcal{R}}$ |
| Random | $r-\tau^{Pool}_{\mathcal{L}},\ 0$ | $\frac{1}{2}(r-\tau^{Pool}_{\mathcal{L}}), \frac{1}{2}(r-\tau^{Pool}_{\mathcal{R}})$ | $0, r-\tau^H_{\mathcal{R}}$ |
| Competent | $r-\tau^H_{\mathcal{L}}, 0$ | $r-\tau^H_{\mathcal{L}}, 0$ | $\frac{1}{2}(r-\tau^H_{\mathcal{L}}), \frac{1}{2}(r-\tau^H_{\mathcal{R}})$ |

This chart just show how citizens will award victory according to the beliefs on candidates' quality. When parties field two candidates who have the same expected ability, the election result in a tie and each party wins with probability 1/2. Otherwise victory is awarded to the party able to field the 'best' candidate.

It is crucial for the understanding of this game to underline that at the moment in which the two candidates wait to be voted in elections, both parties and electors have updated their beliefs on their ability thanks to the primary election mechanism. Of course these beliefs will be true in equilibrium. We are going to see therefore which are the candidates equilibria, and check whether any party (picking a different-signalling applicant) or applicant (sending a different signal or giving up the application) has incentive to deviate.

During primary election, parties choose between low- and high-signalling applicants. For the sake of explanation it can be written this normal form game in which parties have to choose between a low ability applicant who is signalling truthfully and a high signalling candidate whose ability is either high or *random* ('pooling' case explained before). In this case the normal form game played by parties is:

| $\mathcal{L}/\mathcal{R}$ | Low (0) | High (1 or s) |
|---|---|---|
| Low (0) | $\frac{1}{2}(r-\tau_{\mathcal{L}}^{L}), \frac{1}{2}(r-\tau_{\mathcal{R}}^{L})$ | $0, r-\tau_{\mathcal{R}}^{H}$ |
| High (1 or s) | $r-\tau_{\mathcal{L}}^{H}, 0$ | $\frac{1}{2}(r-\tau_{\mathcal{L}}^{H}), \frac{1}{2}(r-\tau_{\mathcal{R}}^{H})$ |

Where in brackets is indicated the probability that the applicant is high ability.

This proposition can therefore be written:

**Proposition 1**. *Symmetric PSNE.*
During primary elections the equilibrium strategies of parties' are:

- $\{L, L\}$ and $\{H, H\}$ when $r \leq 2(\tau_j^H - \tau_j^L)$
- $\{H, H\}$ unique when $r \geq 2(\tau_j^H - \tau_j^L)$

Where $L$ ($H$) means choosing a $L$-signalling ($H$-signalling) applicant as a candidate. Proof in Appendix. ■

We can notice that (unsurprisingly) in this symmetric case all the equilibria are symmetric. Moreover we can notice that when the rent at stake ($r$) is high enough, both parties have incentive in investing in a good quality politician, and therefore the unique PSNE is $\{H, H\}$. When the rent at stake is not high enough, then we have a multiple equilibria in which both parties field candidates of equal (expected) ability. Anyway the results of elections is a tie and the winner is decided through a random draw.

## Citizens' Career Decision

Going a step backward, after parties have declared their transfer scheme and before general elections happen, citizens have to choose whether or not to apply to a party and which signal to send to party (and citizens) during primaries campaign.

In the following section I analyze citizens' strategies in each of the three equilibria in the party game: $\{L, L\}$, $\{H, H\}$ with perfect separation (both candidates are 'competent') and $\{H, H\}$ with pooling (both candidate are $H$-types with probability $s$).

## $\{L, L\}$ and $\{H, H\}$ Equilibria with perfect ability discrimination.

In these first two equilibria both parties are able to screen perfectly the ability of applicants, who therefore are signalling truthfully their ability. Each of the two party will choose between a $L$ow signalling incompetent and a $H$igh signalling competent candidate. The normal form game parties play (given Lemma 2) is the following:

| $\mathcal{L}/\mathcal{R}$ | Low (Incomp.) | High (Comp.) |
|---|---|---|
| Low (Incomp.) | $\frac{1}{2}(r - \tau^L_{\mathcal{L}}), \frac{1}{2}(r - \tau^L_{\mathcal{R}})$ | $0, r - \tau^H_{\mathcal{R}}$ |
| High (Comp.) | $r - \tau^H_{\mathcal{L}}, 0$ | $\frac{1}{2}(r - \tau^H_{\mathcal{L}}), \frac{1}{2}(r - \tau^H_{\mathcal{R}})$ |

To analyze the career choice of citizen we must use the typical participation and incentive compatibility constraints in every possible equilibrium.

It is reported here a general version of these constraints:

$$IR^L_j : \pi + \tau^L_j \geq 0 \quad (3)$$

$$IR^H_j : \pi + \tau^H_j \geq 1 \quad (4)$$

$$IC^L_j : Pr[win]^L_j[\pi + \tau^L_j] \geq Pr[win]^H_j(\pi + \tau^H_j) - \phi \quad (5)$$

$$IC^H_j : Pr[win]^H_j(\pi + \tau^H_j) + (1 - Pr[win]^H_j) \geq$$
$$\geq Pr[win]^L_j[\pi + \tau^L_j] + (1 - Pr[win]^L_j) \quad (6)$$

Where $Pr[win]^s_j$ is the probability to win of candidate of party $j$ whose declared ability is $s$ . The outside option for citizens with respect to politics is to work in private market and earn a 0 salary if ability is $L$ and a 1 salary if ability is $H$ (no matter what is the ability they might be declaring).

Asymmetric equilibria (e.g. $\{L, H\}$ and $\{H, L\}$) are not analyzed. As we can see in the normal form game just above, even if participation and incentive compatibility constraints held, the strategic choice of parties could not end up in an asymmetric situation.

### Low quality equilibrium {L,L}

As we have seen in Proposition 1, playing $L$ is an equilibrium strategy for both the parties as long as $r \leq 2\tau_j^H$.

**Proposition 2**. *Low Quality Equilibrium with Symmetric Distribution.* Playing $\{L, L\}$ for both parties is an equilibrium of the game between parties as long as:

1. $r \leq 2(\tau_j^H - \tau_j^L)$
2. $\tau_j^L \in [0, 1 - \pi]$

Proof in Appendix.■

Practically, for this equilibrium to exist, parties must decide a transfer contingent on applicants declaring $L$ which is low enough not to convince high ability citizens to declare themselves low ability. In fact for a $H$-type citizen would be optimal to pretend to be a $L$-type if two conditions held: first of all the transfer for $L$-signallers must be high enough to let him or her earn more in politics than in the private market (4) and secondly it must be that the $H$-type signalling $L$ earns more (in expectations) declaring to be a $L$-type and being chosen as a candidate rather that signalling $H$ truthfully, excluding him or herself from being chosen as a candidate, and work in the private market (6).

When the victory rent is not high enough with respect to the transfer needed to get high ability people into the competition, both party end up hiring low quality politicians, and elections end up in a tie.

### High quality equilibrium $\{H, H\}$

According to Proposition 1, this equilibrium exists for any value of $r$ as long as parties are able to perfectly discriminate ability of applicants. To check this we must analyze citizens' career choice through the participation and incentive constraints:

**Proposition 3**. *High Quality Equilibrium with Symmetric Distribution.* Both parties field a high quality candidate and each party wins with 50% probability when:

- $\pi + \tau_j^H \in [1, 2\phi]$ (from (4), (5), and (6)), i.e. $\tau_j^H \geq 1-\pi$, and $\phi \geq 1/2$ (and $\tau_j^H \leq 2\phi - \pi$)

Proof in Appendix. ■

The condition in the proposition ensures that for both parties it is feasible to choose a transfer contingent on seeing a $H$ signal $\tau_j^H$ which generates a truthful revelation and therefore discrimination between applicants' types. This (exogenous) condition is met as long as lying is sufficiently costly and parties are willing to give a transfer high enough to let high ability citizens to earn in politics at least the same as in private market.

### When separation is not possible: Pooling Equilibrium $\{H, H\}$.

As we have seen in Proposition 3, in this symmetric case if $[1, 2\phi] = \{\emptyset\}$ parties are not able to perfectly discriminate the ability of applicants through the transfers, because it is too easy (too little costly) for applicants trying to fool electorate and parties.

We should analyze therefore what happens when parties know that $L$ow ability people are signalling $H$igh as well. Both parties will know that a $L$-signaller will still be a low type for sure , but a $H$-signaller instead will be a $H$-type only with (prior) probability $s$.[2]:

| $\mathcal{L}/\mathcal{R}$ | L (Incomp.) | H (Random) |
|---|---|---|
| L (Incomp.) | $\frac{1}{2}r, \frac{1}{2}r$ | $0, r - \tau_{\mathcal{R}}^H$ |
| H (Random) | $r - \tau_{\mathcal{L}}^H, 0$ | $\frac{1}{2}(r - \tau_{\mathcal{L}}^H), \frac{1}{2}(r - \tau_{\mathcal{R}}^H)$ |

**Proposition 4**. *Pooling Equilibrium with Symmetric Distribution.* Both parties field a candidate whose ability is unknown and high with probability $s$ when this conditions hold:

- $\pi + \tau_j^H \geq max\{1, 2\phi\}$

[2]It's trivial to see why a High signaller can be actually a low quality applicant: his or her IC just doesn't hold for that level of transfer that allows high quality people to participate. It is still open to each of the two parties the possibility of choosing a low quality individual for sure just setting at 0 the transfer vector and let the high quality individuals not even participate to the primaries (with $\tau_j^H = 0$, the participation constraints $IR_j^H$ (3) and (4) don't hold).

Proof in Appendix. ■

For this equilibrium to exist, parties must be incapable of discriminating among types, and this happens when the transfer to $H$-signallers is high enough and the cost of lying is low enough that low ability citizens prefer to signal themselves as competent.

## 3.1 Transfer Scheme

Now having in mind parties' objective function (2) we should analyze which is each party's optimal choice of transfer. First of all parties' utility function is negative in the value of the transfer $\tau$, therefore intuitively we can think that within the same equilibrium each party will choose to transfer to the candidate the amount possible.

**Proposition 5**. *Transfer Scheme with Symmetric Distribution.*
When **A1** holds (i.e. $F(0) = 1/2$), both party decide a transfer scheme such that:

- $\tau_j^L = 0$
- $\tau_j^H = 1 - \pi$

Proof in Appendix. ■

It must be noticed in particular in this proposition the fact that the higher is the wage a politician gets when in power, the smaller is the amount of money each party will have to transfer to convince a competent citizen to run for elections. The more politics is financially attractive by itself for candidates, the easier it is to hire a good candidate.

## 3.2 Equilibria in the Symmetric Case: General Proposition

We can merge the first five propositions in a unique one and accompany it with a graph (Fig. 1).

**Propositions 1-5**. *Equilibrium in the Symmetric Case.*
If F(0)=1/2, then:

- When $r \leq 2(1 - \pi)$, we have multiple equilibria.

- When $r \geq 2(1-\pi)$ we have a unique equilibrium.
- When $r \leq 2(1-\pi)$ and $\phi > 1/2$, both parties either field a low quality politician $\{L, L\}$ or a high quality one $\{H, H\}$.
- When $r \leq 2(1-\pi)$ and $\phi < 1/2$, both parties either field a low quality politician $\{L, L\}$ or a politician whose ability is unknown and high with probability $s$, $\{Random, Random\}$.
- When $r \geq 2(1-\pi)$ and $\phi > 1/2$, both parties field a high quality one politician $\{H, H\}$.
- When $r \geq 2(1-\pi)$ and $\phi < 1/2$, both parties field a politician whose ability is unknown and high with probability $s$, $\{Random, Random\}$.
- In every equilibrium each party wins with probability $1/2$ and declare a transfer scheme $\tau = [\begin{smallmatrix} 0 \\ 1-\pi \end{smallmatrix}]$.

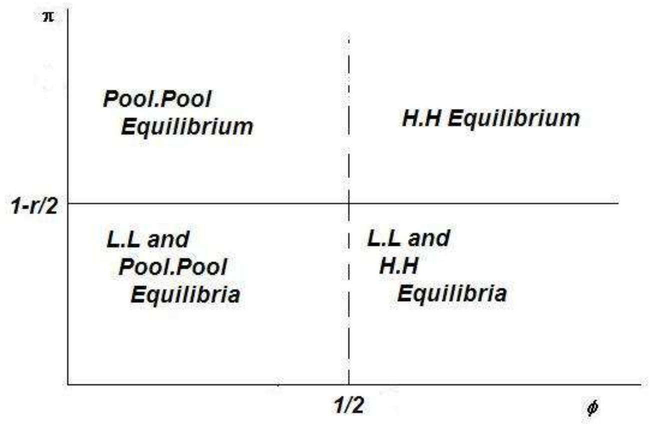


Figure 1: Equilibria in the Symmetric Case

In this symmetric case the concern for ideology $\alpha$ does not have any effect other than making the (potential) difference in the number of votes between 'best' candidate and the other less wide the higher is the parameter. The result is always a tie in which the two candidates have the same (expected, at least) quality. The quality of candidates and elected politician anyway depends positively on both the pay $\pi$ and the parameter $\phi$. In particular when it is difficult to fool the electorate (the 'cost of lying' is high, $\phi > 1/2$) parties are able to perfectly discriminate applicants' ability. A higher $\pi$ or $r$ gives instead more incentive to get a high ability candidate. Investing in candidate's ability is convenient as long as the victory rent at stake is attractive ($r$), and hiring a high quality individual is cheap (remember that the 'bribe' $\tau_j^H$ to get competent people participate is inversely related to $\pi$).

In figure 1 a higher value of the victory rent for the party $r$ would bring the horizontal line downward. The higher therefore is the rent at stake, the more parties will be likely to be willing to 'invest' in a high quality candidate, playing $H(Comp.)$, if feasible, or $H(Random)$ if $\phi < 1/2$ with probability 1. Moreover if politics is attractive from the pecuniary point of view ($\pi$ very near to 1), for parties will be relatively easy (again, in monetary terms) to convince high ability people to run for elections, therefore the incentive to try to hire one of them will be higher.

# 4 General case

In this section we are going to explore the behaviour of parties and citizens in a more general situation. First of all we start to focus on cases in which the distribution of voters on the ideology line is not anymore symmetric A1 doesn't hold), i.e. we impose a distribution of the population which is not anymore symmetric. This will allow us to understand a much richer amount of dynamics. Secondarily we do some minor but useful assumptions in order to get rid of a large number of cases which, at least by now, will not add many insights to the analysis.

These are the three assumptions:

- **A1'**. $F(0) > 1/2$, i.e. more than half of the population is left-wing, therefore when the beliefs on the two candidates are equal, the left-wing politician is elected. The opposite case $F(0) < 1/2$ (in which more than half of the population is right-wing) is perfectly symmetric, and therefore analyzing it would be redundant.
- **A2**. $s < 1/2$, i.e. that competence is a scarce good: less than half of the population has high ability.
- **A3**. By now we reduce this analysis to the simpler case where $r > 1$.

### General Elections

The normal form game in case the distribution of voters is skewed on one side depends crucially on how much this skewness is and how large is the concern for ideology $\alpha$ (i.e. who wins the elections in each case). More analytically the voting behaviour of citizens can be analyzed looking for the indifferent voter's position (threshold) on the ideological line in each of the nine boxes of the matrix. This voter is the one for whom (1) holds with equality.

The following table sums up the nine possible cases: the difference between the beliefs on ability of the two candidates and the position of the indifferent voter on the ideology line.

| $\mathcal{L}$ | $\mathcal{R}$ | $d_{\mathcal{L}}$ | $d_{\mathcal{R}}$ | $d_{\mathcal{L}} - d_{\mathcal{R}}$ | Threshold |
|---|---|---|---|---|---|
| Incompetent | Competent | 0 | 1 | $-1$ | $-\frac{1-\alpha}{\alpha}$ |
| Random | Comp. | s | 1 | $s-1$ | $(s-1)\frac{1-\alpha}{\alpha}$ |
| Incomp. | Rand. | 0 | s | $-s$ | $-s\frac{1-\alpha}{\alpha}$ |
| Incomp. | Incomp. | 0 | 0 | 0 | 0 |
| Rand. | Rand. | s | s | 0 | 0 |
| Comp. | Comp. | 1 | 1 | 0 | 0 |
| Rand. | Incomp. | s | 0 | $s$ | $\frac{1-\alpha}{\alpha}$ |
| Incomp. | Rand. | 1 | s | $1-s$ | $(1-s)\frac{1-\alpha}{\alpha}$ |
| Comp. | Incomp. | 1 | 0 | 1 | $\frac{1-\alpha}{\alpha}$ |

These thresholds can be more clearly represented on the ideological line as in Fig.2. Each of the two parties will announce a signal-contingent transfer vector. Based on this transfer vector and trying to anticipate parties' strategies during primary elections, citizens decide if to apply or not and, in the former case, which signal to send. Then parties choose between applicants signalling $L$ow or $H$igh, basing their choice on their beliefs on actual ability of applicants according to their signal. Voters will form beliefs as well on the actual ability of the two chosen candidates. The payoffs of the game between the two parties will change substantially according to the ideological skewness of the population (i.e. where the ideologically median voter position happens to be between the areas marked with A, B and C[3]).

[3]For example in case we have a candidate from party $\mathcal{L}$ whose competence is random, and a high competence right-wing candidate, the indifferent voter will be in correspondence of the point $-(1-s)$. In this case a radical population would let party $\mathcal{L}$ win (more than half of the population is on the left hand side of this point), while a moderate or quasi-

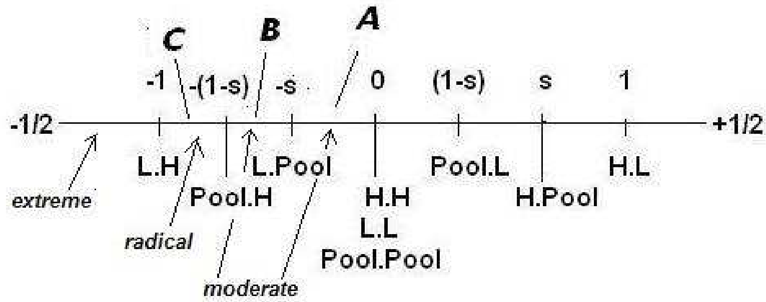


Figure 2: **Threshold on the Ideology Line**. According to where the ideologically median voter $x_i = F^{-1}(1/2)$ falls, we define the ideological distribution of the population as extreme, radical, moderate, or quasi-balanced.

It must be noted also that the order of these thresholds always remains the same, but they will all get nearer and nearer to 0 the higher the value of $\alpha$, so that (roughly speaking) the likelihood for $F^{-1}(1/2)$ to fall in area C (B) rather than in area B (A) increases with $\alpha$. The second factor that determines parties' payoffs is the beliefs on candidates' ability. Voters update their beliefs seeing the signals of the applicants and the choice of candidate done by each of the two parties during the primary elections. Parties practically are playing the game shown below, in which they have to choose between a low and a high signalling candidate, and their choice will influence the updating of voters' beliefs. This is of course anticipated by parties, who are therefore able to guess the payoff in this game.

| $\mathcal{L}/\mathcal{R}$ | Low-Signaller | High-Signaller |
|---|---|---|
| Low-Signaller | -,- | -,- |
| High-Signaller | -,- | -,- |

balanced population would let the $\mathcal{R}$-party high competence candidate win (less than half of the population is on the left hand side of the point $-(1-s)$).

### Citizens' Strategies

We are interested in analyzing through participation and incentive compatibility constraints of both parties' applicants which of the two parties is able to discriminate applicants' ability and under which conditions. This will also tell us which are the beliefs on candidates' ability.

These are the IRs and ICs in this asymmetric case:

$$IR_j^L : \pi + \tau_j^L \geq 0 \tag{7}$$

$$IR_j^H : \pi + \tau_j^H \geq 1 \tag{8}$$

$$IC_{\mathcal{L}}^L : Pr[win]_{\mathcal{L}}^L[\pi + \tau_{\mathcal{L}}^L] \geq Pr[win]_{\mathcal{L}}^H(\pi + \tau_{\mathcal{L}}^H) - \phi \tag{9}$$

$$IC_{\mathcal{L}}^H : Pr[win]_{\mathcal{L}}^H(\pi + \tau_{\mathcal{L}}^H) + (1 - Pr[win]_{\mathcal{L}}^H) \geq$$
$$\geq Pr[win]_{\mathcal{L}}^L[\pi + \tau_{\mathcal{L}}^L] + (1 - Pr[win]_{\mathcal{L}}^L) \tag{10}$$

$$IC_{\mathcal{R}}^L : Pr[win]_{\mathcal{R}}^L[\pi + \tau_{\mathcal{R}}^L] \geq Pr[win]_{\mathcal{R}}^H(\pi + \tau_{\mathcal{R}}^H) - \phi \tag{11}$$

$$IC_{\mathcal{R}}^H : Pr[win]_{\mathcal{R}}^H(\pi + \tau_{\mathcal{R}}^H) + (1 - Pr[win]_{\mathcal{R}}^H) \geq$$
$$\geq Pr[win]_{\mathcal{R}}^L[\pi + \tau_{\mathcal{R}}^L] + (1 - Pr[win]_{\mathcal{R}}^L) \tag{12}$$

For the sake of completeness is first analyzed an extreme (very unrealistic) case

**Proposition 6. Extreme case: Maximum Skewness.** When $F^{-1}(1/2) \in [-1/2, -\frac{1-\alpha}{\alpha}]$, i.e. the population is extremely left-wing, the equilibrium strategies are:

- $\tau_{\mathcal{L}}^L = 0$. All the other $\tau$s are irrelevant.
- Party $\mathcal{L}$ fields a low ability candidate.
- Party $\mathcal{R}$ is indifferent among all its strategies.
- Elections are won by a low ability left wing candidate.

Proof in appendix. ■.

This simple case is analyzed mostly for the sake of completeness. Here the distribution of voters is so skewed that for party $\mathcal{R}$ is absolutely impossible to win. Admitting parties can discriminate for applicants' ability, the normal form of the game between parties is:

| $\mathcal{L}/\mathcal{R}$ | Incompetent | Competent |
|---|---|---|
| Incompetent | $r, 0$ | $r$,0 |
| Competent | $r - \tau_{\mathcal{L}}^H$,0 | $r - \tau_{\mathcal{L}}^H, 0$ |

It is evident how party $\mathcal{R}$ is totally indifferent among all strategies, while picking a low quality candidate is dominant for party $\mathcal{L}$. The proposition just states that a population extremely skewed towards the political left will elect a left wing politician. Given this extreme political leaning, ideology will prevail, the majority party wins for sure anyway and has no interest in bearing the cost of hiring a good politician.

### Other cases.

First thing to notice is that if a party wants high ability citizens to become politicians, it has to promise him or her a share of the rent $\tau_j^H \geq 1 - \pi$, while no transfer is needed to let low ability people participate.

The second remark regards the incentive compatibility constraints. Applicants' dominant strategy is truthtelling when both parties are perfectly able to discriminate, i.e. (9), (10), (11), and (12) hold. The normal form of the game would turn out to be:

| $\mathcal{L}/\mathcal{R}$ | Low | High |
|---|---|---|
| Low | $r, 0$ | $0, r - \tau_{\mathcal{R}}^H$ |
| High | $r - \tau_{\mathcal{L}}^H, 0$ | $r - \tau_{\mathcal{L}}^H, 0$ |

Where $\mathcal{L}$ wins whenever its candidate is at least as good as the opponent in expectations, while it loses when a better candidate fielded by $\mathcal{R}$.

**Proposition 7. Separating Equilibrium with Skewed Distribution and High Cheating Costs.**. When A1', A2 and A3 hold and $\phi \geq 1$, the equilibrium strategies are:

- $\tau_j^L = 0$.
- $\tau_j^H = 1 - \pi$.
- Truthtelling for any applicant to any party, therefore there is perfect revelation of abilities.
- Parties $\mathcal{L}$ and $\mathcal{R}$ pick a high-signal applicant (PSNE of the normal form game shown above).
- Elections are won by the left wing candidate who is high ability with probability 1.

Proof in Appendix. ■.

Again the economic intuition is pretty easy: as long as it is difficult to fool parties and electorate, no applicant will have the incentive to deviate from truthtelling. At the same time party competition (namely, the fact that a very good right-wing candidate could win against a very bad left-wing one), gives incentive to parties $\mathcal{L}$ and $\mathcal{R}$ to bear the (potentia ) cost of hiring a good candidate.

More interesting is to see the case in which is not so difficult to fool the electorate or, analogously, in which it is difficult for parties to screen ability of applicants.

This case does not have an equilibrium in which parties play in pure strategies in their choice between a high and a low signaller.

### Non-existence of pure strategy equilibrium with quasi-balanced or moderate population and low cheating costs.

**Proposition 8.** If $\phi < 1$ and $F^{-1}(1/2) \in [-(1-s)\frac{1-\alpha}{\alpha}, 0]$, there is no equilibrium in pure strategies.

Proof in appendix. ■

Here is given the intuition, while the formal proof is given in the appendix. As an example, we can start from the equilibrium just stated above: both parties field a good candidate and $\mathcal{L}$ wins for sure. When is not too difficult to cheat ($\phi < 1$), the incentive constraint for low ability left-wing applicants (9) will not hold anymore . Given that a high-signalling, left wing candidate post brings to victory with probability 1, why not pretend to be high ability?

### Equilibrium with radical population and low cheating costs.

**Proposition 9.** If $\phi < 1$ and $F^{-1}(1/2) \in [-\frac{1-\alpha}{\alpha}, (s-1)\frac{1-\alpha}{\alpha}]$ (populations'ideology is radically leaning on the left):

- $\tau_j^L = 0$.
- $\tau_j^H = 1 - \pi$.
- Low ability applicants to party $\mathcal{L}$ signal $H$ (cheat). The equilibrium signalling strategy of every other applicant is truthtelling

- Parties and voters guessed ability for $H$-signallers applying to $\mathcal{L}$ is $s$ (equal to the prior).
- Beliefs on other applicants' ability reflects correctly their truthtelling strategy
- The equilibrium strategies equilibrium of party primaries are:
  - Party $\mathcal{L}$ picks a high signaller (who is high ability with probability $s$) with probability 1.
  - Party $\mathcal{R}$ (which is perfectly able to screen the ability of applicants) either picks a high ability candidate with probability 1, or it mixes between picking a low and a high ability candidate, picking a low ability candidate with probability $1 - (\tau^H_{\mathcal{R}}/r)$.
- Elections are won by a left wing candidate of random ability (high with probability $s$). The losing candidate could be either a good or a bad type.

# 5 Conclusions

We analyzed the interaction between the concern for ideology and for competence of the elected official in a model with political parties and exogenous policies.

A higher concern for ideology (higher $\alpha$) generates a smaller flexibility of citizens' voting behaviour, a smaller number of citizens willing to change their mind on who to vote on the basis of the belief on the differential ability between the two candidates.

Parties' concern for victory gives them incentive to bear the cost of hiring better politicians. This incentive could be diminished by a larger popular (ideological) support, which could bring the party to victory in elections also without fielding a very good candidate.

At the same time citizens would more likely want to be candidate for a party who starts from a position of advantage, especially if the citizen in question has a lower opportunity cost of going to work in the private market (i.e. is a low ability individual).

In a situation where the population is balanced between the two parties the quality of politicians and elected officer is (coherently with, among others, Caselli and Morelli (2004) ) positively affected by the pay of the politician ($\pi$) and the spoils from the office ($r$). Moreover a more transparent politics (higher $\phi$) have as well a positive effect on the quality of the elected officer. The higher is the pay $\pi$ the easier (cheaper) it will be for a party to hire a good politician. Parties will be therefore more willing to actually 'invest' in a competent candidate the higher is the pay $\pi$ and the larger is the 'prize' $r$ at stake in case of victory.

When the ideological distribution of voters is moderately skewed towards (say) left, we might have a counterintuitive result. Party $\mathcal{L}$ would be disadvantaged by the (ex-ante) higher probability to win: running for party $\mathcal{L}$ leads to a victory which is (ex-ante) more likely. Citizens with a less attractive 'outside option', i.e. low ability individuals, would have a higher expected income in trying to be chosen as $\mathcal{L}$ candidates, with respect to a situation where the population is ideologically perfectly balanced between left and right. The fact that the position of left-wing candidate is more attractive makes more difficult the screening job of party $\mathcal{L}$. At the same time party $\mathcal{R}$ would not suffer this difficulty, but rather an opposite situation: the smaller (theoretical) probability to win would actually make the discrimination of applicants' ability more easy, the "$\mathcal{R}$ight-wing candidate" job is less attractive with respect to a situation in which the population is balanced between left and right. It is in fact less likely (ex-ante) to win the elections and therefore the relative expected income is lower. The result of this is that when the population is moderately leaning on the left, it can happen that the elected officer is a right-wing high ability candidate who wins over a left-wing candidate whose ability is high with some positive probability.

We can think, as an example, to the elections in Palestine in 2005, where it is believed that the majority of the population was ideologically near to Fatah (Arafat's and Mahmud Abbas' party), which was believed to be very corrupted (low quality). This fact opened the way to the victory of Hamas which, even if it didn't have the ideological favours of the majority of people, was able to attract the majority of votes due to a higher (believed, at least!) quality.

This model, which has been thought specifically to be applied to elections of public officials, could also give some interesting insights to many other situations. I am thinking in particular to situations in which a group of people has to take a collective decision, and in which this group decides according to two dimensions: one shared among all people (competence) and one on which preferences are heterogeneous. One easy example could be a university department in which all the members are (hopefully) interested in hiring good lecturers and researchers, but everyone would like to have someone researching in his or her own field, or even someone who shares the same political ideas, or nationality.

There are numerous extensions and improvements that can be made to this model. First of all I considered a case in which elections are decided through plurality vote. With a small modification to the parties' objective function it can be analyzed the case of proportional representation and found the effect of a different electoral system on quality of candidates and elected officials. This might also lead us towards the direction of testing the impact of the electoral system on candidate and politicians' quality.

It could also be possible to change the time horizon of this model and making it at least a two-period model, so to catch also the dynamics related to reelection, the choice of a candidate for the incumbent party (keep the incumbent candidate or change it?) as well as the career choices of incumbent politicians, and the reputation effect of parties' choices.

Looking more into the polity, the model can be further enriched in many directions. First of all it can be weakened the assumption according to which a citizen can apply only to one party: it can be thought that the choice of running for the primaries of a particular party takes into consideration many issues. It could depend on the ideological distance with the party, such that more 'centrist' people could also at a small cost apply to the opposite party. Moreover the choice of standing could be linked with selfish motivations, for example for the fact that a particular party could be more or less harmful for the category or class one belongs to. It could also be added a stage at the beginning of the game in which the choice of the policy is endogenized, such that candidates are not anymore simple 'managers' but the policy is a result of strategic interaction between the party and the population of potential candidates.

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# A Appendix

## A.1 Proof of Proposition 1.

Whether choosing a $H$-signalling applicant means to hire a good candidate for sure or only with probability$s$ (which happens when the party in question is not able to discriminate), the normal form game played by parties during primaries is the following:

| $\mathcal{L}/\mathcal{R}$ | Low | High |
|---|---|---|
| Low | $\frac{1}{2}(r-\tau_{\mathcal{L}}^{L}), \frac{1}{2}r-\tau_{\mathcal{R}}^{L}$ | $0, r-\tau_{\mathcal{R}}^{H}$ |
| High | $r-\tau_{\mathcal{L}}^{H}, 0$ | $\frac{1}{2}(r-\tau_{\mathcal{L}}^{H}), \frac{1}{2}(r-\tau_{\mathcal{R}}^{H})$ |

It's easy to see how the PSNE of this game are $\{L, L\}$ and $\{H, H\}$ when $r \leq 2\tau_j^H$ and just $\{H, H\}$ unique when $r \geq 2\tau_j^H$.

## A.2 Proof of Proposition 2.

Condition 1 comes from Proposition 2: from it we know that this equilibrium exists only if $r \leq 2\tau_j^H$.

Condition 2 comes from the IRs and ICs: we can rewrite the incentive constraints (3), (4), (5), and (6) as:

$$IR_j^L : \pi + \tau_j^L \geq 0 \tag{13}$$

$$IR_j^H : \pi + \tau_j^H \geq 1 \tag{14}$$

$$IC_j^L : \frac{1}{2}[\pi + \tau_j^L] \geq -\phi \tag{15}$$

$$IC_j^H : 1 \geq \frac{\pi + \tau_j^L}{2} + \frac{1}{2} \tag{16}$$

A Low ability candidate knows that if chosen will have a 50% probability to be elected, given that the equilibrium we are analyzing is $\{L, L\}$. A high ability candidate knows that if he or she declares himself $H$ will not be chosen, while if he or she declares himself $L$ will be chosen and will win with a 50% probability.

As we can see from this case, for the $\{L, L\}$ equilibrium to be such, we just need low ability people to participate (i.e. (13) to hold) and both of the incentive constraints (15) and (16) to hold as well, so that truthtelling is dominant strategy.

In this case it is clear how both (13) and (15) always hold. The only condition imposed by these constraints is $\pi + \tau_j^L \leq 1$ from (16).

## A.3 Proof of Proposition 3

For a High Quality Equilibrium all the four IRs (3), (4) and ICs (5), (6) must hold. We can rewrite them as:

$$IR_j^L : \pi + \tau_j^L \geq 0 \tag{17}$$

$$IR_j^H : \pi + \tau_j^H \geq 1 \tag{18}$$

$$IC_j^L : \pi + \tau_j^H \leq 2\phi \tag{19}$$

$$IC_j^H : \pi + \tau_j^H \geq 1 \tag{20}$$

Participation constraints should by now be of immediate comprehension.

Incentive constraints might need a little explanation. $Pr[win]_j^L = 0$ because if the $\{H, H\}$ equilibrium for an applicant who declares to be low ability is not going to be chosen. $Pr[win]_j^H = 1/2$ because an applicant signalling $H$ if chosen would win the elections with probability 1/2. One must also remember that the outside option of working in the private market is worth 0 for low ability citizens and 1 for high ability citizens.

For the constraints (18) and (20) to hold each party must pay at least a transfer $\tau_j^H \geq 1-\pi$. From the incentive constraints (19) we can see that when the transfer exceeds a certain threshold, the constraint doesn't hold ($\tau_j^H \leq 2\phi - \pi$).

## A.4 Proof of Proposition 4.

What we need to happen in a $\{High(s), High(s)\}$ equilibrium is that all applicants declare themselves to be high ability, and therefore parties are not able to discriminate between the two types.

We can again substitute in the four IRs (21), (22) and ICs (23), (24), having the attention that (23) must hold 'in the other direction'.

$$IR_j^L : \pi + \tau_j^L \geq 0 \tag{21}$$

$$IR_j^H : \pi + \tau_j^H \geq 1 \tag{22}$$

$$IC_j^L : Pr[win]_j^L[\pi + \tau_j^L] \leq Pr[win]_j^{Pool}(\pi + \tau_j^H) - \phi \tag{23}$$

$$\begin{aligned} IC_j^H : Pr[win]_j^{Pool}(\pi + \tau_j^H) + (1 - Pr[win]_j^{Pool}) \geq \\ \geq Pr[win]_j^L[\pi + \tau_j^L] + (1 - Pr[win]_j^L) \end{aligned} \tag{24}$$

$Pr[win]_j^L = 0$ because in the $\{High(s), High(s)\}$ equilibrium an applicant who declares to be low ability is not going to be chosen. $Pr[win]_j^{Pool} = 1/2$ because an applicant signalling $H$ if chosen would win the elections with probability 1/2. One must also remember that the outside option of working in the private market is worth 0 for low ability citizens and 1 for high ability citizens.

$$IR_j^L : \pi + \tau_j^L \geq 0 \tag{25}$$

$$IR_j^H : \pi + \tau_j^{Pool} \geq 1 \tag{26}$$

$$IC_j^L : \pi + \tau_j^{Pool} \geq 2\phi \tag{27}$$

$$IC_j^H : \pi + \tau_j^{Pool} \geq 1 \tag{28}$$

Joining together equations (26) and (27) we get the condition $\pi + \tau_j^H \geq max\{1, 2\phi\}$ reported in the proposition.

## A.5 Proof of Proposition 5

What need to be proved is that the equilibria we hypothesized are actually stable and there is no preferred transfer scheme that would make a unilateral deviation convenient for any of the two parties. It is to be demonstrated that no party wants to deviate from the transfer scheme $[\tau_j^L = 0;\ \tau_j^H = 1 - \pi]$. The idea is to go through the three possible equilibria one by one.

$\{L, L\}$: increasing $\tau_j^L$ is not a profitable deviation: it would just decrease the expected payoff. Increasing the transfer $\tau_j^H$ would have no effect, given that each party will choose a low ability candidate: it would instead decrease the expected value of deviating (ie. choosing a $H$-signaller), making the deviation evenss advantageous. Therefore a unilateral deviation is not advantageous for any party.

$\{H, H\}$: if $\tau_j^L$ is marginally increased no effect is sorted, given that the low quality candidate is not going to be chosen. If $\tau_j^L$ is increased marginally again the only effect is to diminish the expected utility $E_j[U] = 1/2r - \tau_j^H$. We can easily rule out also the possibility in which the transfer $\tau_j^H$ is increased up to the point where the Incentive Constraint of a low ability citizen (27) doesn't hold anymore. In fact in this case the party would end up in a 'Pooling' situation in which its candidate's ability is believed to be high with probability '$s$', while other party's candidate will be high ability for sure. The result of it in this symmetric case will be to lose elections and pass from an expected utility of $1/2(r - \tau_j^H) > 0$, to a 0 utility for sure.

## A.6 Proof of Proposition 7. Extreme case: maximum skewness.

In this case of course party $\mathcal{R}$ and right-wing citizens' actions are completely irrelevant. For completeness, given that the probability to win is always zero for them, we can propose this out of many possible equilibrium strategies for them:

- Both parties proposes a transfer scheme $\tau_j^L = 0, \tau_j^H = 1 - \pi$.

- Therefore the IRs and ICs are:

$$IR_j^L : \pi \geq 0 \tag{29}$$
$$IR_j^H : \pi + \tau_j^H = 1 \tag{30}$$
$$IC_{\mathcal{L}}^L : \pi \geq -\phi \tag{31}$$
$$IC_{\mathcal{L}}^H : 1 \geq \pi \tag{32}$$
$$IC_{\mathcal{R}}^L : 0 \geq -\phi \tag{33}$$
$$IC_{\mathcal{R}}^H : 1 \geq 1 \tag{34}$$

- All of them hold, so there will be perfect separation.

Party $\mathcal{R}$ and right-wing citizens have no incentive to deviate from this equilibrium. Party $\mathcal{R}$'s payoff will be zero anyway, and citizens will lose for sure the elections and get the private market salary for sure whether they apply or not and whatever they signal.

Party $\mathcal{L}$ will choose a low-signalling candidate, therefore is indifferent towards proposing any other level of $\tau_{\mathcal{L}}^H$, and wants to minimize $\tau_{\mathcal{L}}^L$, which is the transfer that is actually going to be paid.

Finally, from the normal form game showed in the paper is evident how {Low,Low} is a PSNE of that game.

## A.7 Proof of Proposition 7. Separating Equilibrium with Skewed Distribution and High Cheating Costs.

These are the IRs and ICs in this asymmetric case:

$$IR_j^L : \pi \geq 0 \tag{35}$$
$$IR_j^H : \pi + \tau_j^H = 1 \tag{36}$$
$$IC_{\mathcal{L}}^L : 0 \geq (\pi + \tau_{\mathcal{L}}^H) - \phi \tag{37}$$
$$IC_{\mathcal{L}}^H : (\pi + \tau_{\mathcal{L}}^H) == 1 \tag{38}$$
$$IC_{\mathcal{R}}^L : 0 \geq -\phi \tag{39}$$
$$IC_{\mathcal{R}}^H : 1 \geq 1 \tag{40}$$

In equilibrium all the eight participation and incentive compatiblity constraints hold. This means that as long as $\phi > 1$ parties are perfectly able to discriminate applicants' ability. Each of the two parties can therefore choose between a low-signal low-ability and a high-signal high-ability candidate. The normal form game of this choice would appear like that:

| $\mathcal{L}/\mathcal{R}$ | Low | High |
|---|---|---|
| Low | $r, 0$ | $0, r-\tau^H_{\mathcal{R}}$ |
| High | $r-\tau^H_{\mathcal{L}}, 0$ | $r-\tau^H_{\mathcal{L}}, 0$ |

Evidently the PSNE of this game is $\{High, High\}$.

Therefore we just have to check if $\mathcal{L}$ or $\mathcal{R}$ have incentive to deviate when announcing the transfer schemes.

$\mathcal{R}$ for sure doesn't: increasing any transfer would not sort any effect at all. Decreasing $\tau^H_{\mathcal{R}}$ would let the high ability participation constraint not hold anymore, leading party $\mathcal{R}$ to loose elections anyway and having the same zero payoff as before.

$\mathcal{L}$ would sort no effect in increasing $\tau^L_{\mathcal{L}}$. This transfer is not going to be paid, given that this party will anyway choose a high signaller. Increasing $\tau^H_{\mathcal{L}}$ would let all the IRs and ICs hold, but would decrease the equilibrium payoff $(r-\tau^H_{\mathcal{L}})$. Decreasing $\tau^H_{\mathcal{L}}$ would let the participation constraint of high ability applicant not hold anymore. This will prevent party $\mathcal{L}$ to choose a $H$-type, and therefore will lead it to loose the elections and get a zero payoff.

## A.8 Proof of Proposition 8. Non-existence of pure strategy equilibrium with quasi-balanced or moderate population and low cheating costs.

To prove the non-existence I will start assuming the usual transfer scheme strategy for both parties, and guess that truthtelling is best strategy for all the applicants. Then I'll see how this is not an equilibrium, and how possible deviation in which parties and citizens always play pure strategies do not lead to equilibrium, and in the end I will prove how deviation in the transfer scheme strategy are not leading to any equilibrium either.

When all applicants' best strategy is truthtelling, parties play this game in picking the candidate:

| $\mathcal{L}/\mathcal{R}$ | Low (0) | High (1) |
|---|---|---|
| Low (0) | $r, 0$ | $0, r-\tau^H_{\mathcal{R}}$ |
| High (1) | $r-\tau^H_{\mathcal{L}}, 0$ | $r-\tau^H_{\mathcal{L}}, 0$ |

Where in brackets are indicate believed abilities of the corresponding candidates

Evidently the PSNE of this game is $\{High, High\}$. In this cases party $\mathcal{L}$ wins with probability 1 picking a $H$-signalling candidate. We can plug back in these probabilities into the IRs and ICs:

$$IR_j^L : \pi \geq 0 \tag{41}$$

$$IR_j^H : \pi + \tau_j^H = 1 \tag{42}$$

$$IC_{\mathcal{L}}^L : 0 \geq (\pi + \tau_{\mathcal{L}}^H) - \phi \tag{43}$$

$$IC_{\mathcal{L}}^H : (\pi + \tau_{\mathcal{L}}^H) \geq 1 \tag{44}$$

$$IC_{\mathcal{R}}^L : 0 \geq -\phi \tag{45}$$

$$IC_{\mathcal{R}}^H : 1 \geq 1 \tag{46}$$

From these it is evident how actually low-ability applicants to party $\mathcal{L}$ would be better off cheating (43)and signalling $H$, as long as $\phi < 1$.

If so, then we happen to be in a case in which $\mathcal{L}$'s $H$ signaller is believed to be a $H$ type only with probability $s$, and therefore the game played by parties becomes:

| $\mathcal{L}/\mathcal{R}$ | Low (0) | High (1) |
|---|---|---|
| Low (0) | $r, 0$ | $0, r - \tau_{\mathcal{R}}^H$ |
| High (s) | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $0, r - \tau_{\mathcal{R}}^H$ |

The PSNE of this game are $\{Low(0), High(1)\}$ and $\{High(s), High(1)\}$. In both cases $\mathcal{R}$ is going to win with probability 1 picking a high signalling candidate while party $\mathcal{L}$ is going to lose for sure. In this case the ICs and IRs are the following:

$$IR_j^L : \pi \geq 0 \tag{47}$$

$$IR_j^H : \pi + \tau_j^H = 1 \tag{48}$$

$$IC_{\mathcal{L}}^L : 0 \geq -\phi \tag{49}$$

$$IC_{\mathcal{L}}^H : 1 \geq 1 \tag{50}$$

$$IC_{\mathcal{R}}^L : 0 \geq (\pi + \tau_{\mathcal{R}}^H) - \phi \tag{51}$$

$$IC_{\mathcal{R}}^H : (\pi + \tau_{\mathcal{R}}^H) \geq 1 \tag{52}$$

We are verifying if it is an equilibrium a situation in which $\mathcal{L}$ cannot separate, $\mathcal{R}$ can separate, and party $\mathcal{R}$ picks a $H$ type. Nevertheless from these IRs and ICs we conclude that this cannot be an equilibrium: for party $\mathcal{L}$ it should be impossible to discriminate, while instead (49) holds. Analogously party $\mathcal{R}$ should be able to separate, while (51) doesn't hold.

From these two example we could infer that any party who wins for sure separating, is actually not in the condition to separate:

$$IC_j^L : 0 < \pi + \tau_j^H - \phi \tag{53}$$

(with $\tau_j^H \geq 1 - \pi$ and $\phi < 1$).

The 'prize' $(\pi + \tau_j^H)$ is in fact high enough (and $\phi$ low enough) to give incentive to low ability types to signal $H$. Analogously the party who loses for sure is perfectly able to discriminate: there is actually no prize at stake that could convince applicants against truthtelling. Moreover picking a low-signal candidate is never an equilibrium strategy in the primary elections' game played by parties in choosing the candidates (see the two normal form game above).

It can be argued also that any transfer scheme which allows high ability types to participate would give this non-existence result.

Roughly speaking, the party who can discriminate, wins the elections; but the party who wins cannot discriminate. The party that cannot discriminate loses the elections; but the party who loses the elections can discriminate.

The only question that it is still to be answered is if there is any other alternative transfer scheme which brings to equilibrium.

## A.9 Proof of Proposition 9.

Thus as we've seen, there are no profitable deviations.

$$IR_j^L : \pi \geq 0 \tag{54}$$

$$IR_j^H : \pi + \tau_j^H \geq 1 \tag{55}$$

$$IC_{\mathcal{L}}^L : 0 \geq (\pi + \tau_{\mathcal{L}}^H) - \phi \tag{56}$$

$$IC_{\mathcal{L}}^H : (\pi + \tau_{\mathcal{L}}^H) \geq 1 \tag{57}$$

$$IC_{\mathcal{R}}^L :\geq -\phi \tag{58}$$

$$IC_{\mathcal{R}}^H : 1 \geq 1 \tag{59}$$

It is clear how all these constraints hold but (56), given that we are analyzing the case in which $\phi < 1$.

Given these constraints, the two party will play this normal form game when choosing the candidate:

| $\mathcal{L}/\mathcal{R}$ | Low (0) | High (1) |
|---|---|---|
| Low (0) | $r, 0$ | 0,$r - \tau_{\mathcal{R}}^{H}$ |
| High (s) | $r - \tau_{\mathcal{L}}^{H}$,0 | $r - \tau_{\mathcal{L}}^{H}$, 0 |

In bracket are indicated the guessed ability of the candidates. These beliefs are direct consequence of the IRs and ICs discussion above. Evidently the PSNE of this game is $\{High(s), High(1)\}$.

For the proof analogous argument as the Proof of proposition – apply.

## A.10 Normal Form Games: General Distributions

### A.10.1 Case A (moderate)

$F^{-1}(1/2) \in [-s\frac{1-\alpha}{\alpha}, 0]$:

| $\mathcal{L}/\mathcal{R}$ | Low | Pool | High |
|---|---|---|---|
| Low | $r, 0$ | 0, $r - \tau_{\mathcal{R}}^{Pool}$ | 0,$r - \tau_{\mathcal{R}}^{H}$ |
| Pool | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $0, r - \tau_{\mathcal{R}}^{H}$ |
| High | $r - \tau_{\mathcal{L}}^{H}$,0 | $r - \tau_{\mathcal{L}}^{H}$, 0 | $r - \tau_{\mathcal{L}}^{H}$, 0 |

### A.10.2 Case B (moderate)

$F^{-1}(1/2) \in [(s-1)\frac{1-\alpha}{\alpha}, -s\frac{1-\alpha}{\alpha}]$:

| $\mathcal{L}/\mathcal{R}$ | Low | Pool | High |
|---|---|---|---|
| Low | $r, 0$ | $r$, 0 | 0,$r - \tau_{\mathcal{R}}^{H}$ |
| Pool | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $0, r - \tau_{\mathcal{R}}^{H}$ |
| High | $r - \tau_{\mathcal{L}}^{H}$,0 | $r - \tau_{\mathcal{L}}^{H}$, 0 | $r - \tau_{\mathcal{L}}^{H}$, 0 |

### A.10.3 Case C (radical)

$F^{-1}(1/2) \in [-\frac{1-\alpha}{\alpha}, (s-1)\frac{1-\alpha}{\alpha}]$:

| $\mathcal{L}/\mathcal{R}$ | Low | Pool | High |
|---|---|---|---|
| Low | $r, 0$ | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | 0,$r - \tau_{\mathcal{R}}^{H}$ |
| Pool | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $r - \tau_{\mathcal{L}}^{Pool}$, 0 | $r - \tau_{\mathcal{L}}^{Pool}$, 0 |
| High | $r - \tau_{\mathcal{L}}^{H}$,0 | $r - \tau_{\mathcal{L}}^{H}$, 0 | $r - \tau_{\mathcal{L}}^{H}$, 0 |