Campaign Funds and Platform Choice*

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PRELIMINARY AND INCOMPLETE

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Abstract

I study political competition between two candidates, that are both policy and office motivated, in majoritarian electoral systems. Candidates first select the policy they stand for and compete then in a political campaign by spending money to woo voters. I generally study the interconnections between platform choice and campaign spending, depending on candidate characteristics. The three main results are the following. If a candidates has an advantage due to greater valence or lower costs of funding, he will take a more extreme position than his competitor. Lower marginal costs of campaign funds increase platform competition and candidates move closer to the median's preferred policy. The introduction of caps on campaign spending stifles policy competition and allows candidates to adopt more extreme positions, that is positions that are farther away from the median's preferred policy.

Keywords: Platform choice, campaign spending, spending caps, endogenous valence
JEL-Classification: D72, D82, L12

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1 Introduction

[...]increasingly, and especially in the US, it seems
that the political system is more akin to "one dollar, one vote"
than to "one person, one vote"
Joseph Stiglitz (2013), p. 17

In recent years the validity of the old mantra of 'one man, one vote' has increasingly been cast into doubt and some scholars believe it should more appropriately read 'one dollar, one vote', as is exemplified by the above quote due to Joseph Stiglitz (2013). Usually, this is meant to express worry about the functionality of our democracies, because greater spending seems to buy politicians and their supporters the opportunity to change policies in a socially undesirable manner and lends political power to the wealthy. To limit the influence of money on political outcomes, caps on campaign spending are often demanded. However, as often matters are a bit more complex and the possible pro-competitive effects due to increased availability of funds is often neglected: Greater availability of funds makes it easier to punish the opponent during a campaign and hence competition gets fiercer. As a consequence, it is unclear in which way money influences policy making in the end.

In this paper I advance a theoretical model of political competition that explicitly considers the interplay of campaign spending and policy choice. The modeling approach is similar to the one of Ashworth and Bueno de Mesquita (2009), with the difference that candidates care about both the spoils of office and the policy that is implemented. In a first stage they determine their respective policy platforms. In a second stage they spend money and time during the campaign in an effort to win voters' support on Election Day. The campaigning stage is modeled as a tournament à la Lazear and Rosen (1981) with possible and partly endogenous head starts due to valence advantages and policy platforms. In this framework I am interested in three main questions: How does the increased availability of campaign funds affect policy choices in equilibrium? How do equilibrium policy platforms depend on differences in campaigning funds between candidates? And how do spending caps, a mechanism discussed to limit the influence of money, affect policies?

The main results are the following:

- Having an advantageous position due to greater valence or lower costs of campaigns funds makes a candidate adopt a more extreme position compared to the opponent, reversing the predictions of Groseclose (2001).

- Lowering the marginal costs of campaign funds generally increases competition, both in terms of campaign spending and in terms of policy choice. As a result, lower marginal costs of campaign funds lead to less extreme policies. In other words, as marginal costs of campaign funds decrease, aggregate spending in the campaign increases but candidates both choose policy platforms closer to the median voter's preferred policy.

- The introduction of a spending cap stifles competition on both stages and leads–if the cap is binding–to lower campaign spending and more extreme policy platforms.

The paper extends the literature studying the interconnectedness of political campaigns and platform choice. The closest antecedents are Ashworth and Bueno de Mesquita (2009), Iaryczower and Mattozzi (2013), and Aragonès, Castanheira, and Giani (2014). The papers by Ashworth and Bueno de Mesquita (2009) and Iaryczower and Mattozzi (2013) study platform choice and campaign spending in models with purely office motivated candidates and they are not interested in unraveling the relationship between availability of campaigning funds and policy outcomes. Aragonès, Castanheira, and Giani (2014) study how office motivated candidates optimally draft their policy proposals and how they invest in the proposals's quality, when the policy space is multidimensional and the different issue's importance can be altered by spending during the campaign. In contrast to those papers I study politicians that are both policy and office motivated, which matters for conclusions, and I am interested in the relation of funds and outcomes. A paper that actually studies the effect of the availability of campaign funds for political selection is Gul and Pesendorfer (2012). However, in this paper policies are exogenous and candidates only care about the spoils of office.

The paper also adds to the literature analyzing spending caps or limits. Che and Gale (1998) and Kaplan and Wettstein (2006) study the effect of spending limits on overall expenditures during a campaign and show conditions under which caps may actually increase total outlays. Pastine and Pastine (2010) generalize their framework by allowing politicians to have preferences for both the spoils of office and policies. In contrast to all these papers, I study the effect of spending caps on policies, not only on aggregate spending. Iaryczower and Mattozzi (2012) show that spending caps can increase competitiveness during campaigns when the electoral system is non-majoritarian. In contrast, I show that in majoritarian systems spending caps actually decrease competitiveness and allow candidates to move closer to their ideal policies.

The paper generally adds to the theoretical literature studying political campaigns. Snyder (1989) and Brams and Davis (1973) study the optimal allocation of campaigning funds to different states under different political institutions. Klumpp and Polborn (2006) study the dynamics during the series of primaries that determine who gets to be a party's candidate in the presidential election. Denter and Sisak (2014) study the dynamics of campaign spending over time and the importance of public opinion polls. Denter (2013) studies the optimal allocation of campaigning funds to the different issues, depending on voters' beliefs about issues' importance and candidates' qualities. In contrast to all of those papers the focus here is on the interplay of campaign spending and platform choice.

The paper is organized as follows. In the next section I lay down the baseline model. In Section 3 I study the relation between campaign spending and policy choices in this baseline specification. In Section 4 I show that results are robust to modifications of the model of the campaigning process. Section 5 studies spending caps. Section 6 concludes.

2 Model Set-up

There are two candidates for political office, $i = \{L, R\}$, left and right. Each candidate has a most preferred policy $I_i \in \mathbb{R}$. Being elected generates spoils from office of V and has the benefit of being able to determine policy, $p_i \in \mathbb{R}$, to which candidates commit at the beginning of the campaign. During the campaign, candidates can influence the probability of being elected by exerting effort, which in turn creates valence. As we will see later, exerting effort can be understood as a tug-of-war in which both candidates try to influence voters. Exerting effort $x_i \geq 0$ implies costs $C_i(x_i) = \frac{c_i}{2}x_i^2$. A candidates expected utility is

$$\pi_i \quad = \quad \Pr[i \text{ wins}]\left(V - W(p_i - I_i)^2\right) - \Pr[j \text{ wins}]W(p_j - I_i)^2 - C_i(x_i) \qquad (1)$$

$W \geq 0$ is a parameter determining the intensity of candidates' policy preferences and is, as all other variables of the game, common knowledge. If $W = 0$ the model is identical to Ashworth and Bueno de Mesquita (2009).

There is a continuum of voters v of mass 1. Voters have a most preferred policy $b_v \in \mathbb{R}$ and b_v has density $f(b_v)$. Denote the median by $v = M$. Voters' utility if candidate i gets elected is

$$u_v(i) \quad = \quad v_i - w(b_v - p_i)^2 + x_i + \epsilon_i.$$

v_i represents valence and may be positive or negative. Hence, without loss of generality let $v_R = 0$ and $v_L = v$. x_i is candidate i's campaign spending, which is diluted by an additive noise component ϵ_i. The difference in utilities Δu_v between candidate i and j determines for which candidate v votes:

$$\begin{aligned}
\Delta u_v &= u_v(L) - u_v(R) \\
&= v + x_L - x_R + \epsilon_L - \epsilon_R - (b_v - p_L)^2 + (b_v - p_R)^2 \\
&= v + \Delta x - \Delta\epsilon - (b_v - p_L)^2 + (b_v - p_R)^2,
\end{aligned}$$

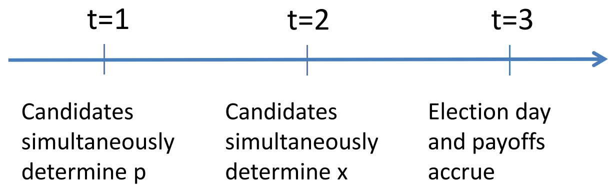

Figure 1: Sequence of moves.

where $\Delta x := x_L - x_R$ and $\Delta\epsilon := \epsilon_R - \epsilon_L$. I assume (for now) that $\Delta\epsilon$ is uniformly distributed on $[-m, m]$ with $m > 0$. Note that this implies that *effective valence* is uniformly distributed on $[v + \Delta x - m, v + \Delta x + m]$. Assume without loss of generality that $b_M = 0$. Hence, L wins at the ballot if

$$\Delta u_M > 0$$
$$\Leftrightarrow v + \Delta x - \Delta\epsilon - p_L^2 + p_R^2 > 0$$

and loses otherwise.[1]

The timing of the game is as follows: First, candidates simultaneously commit to a policy vector $p = (p_L, p_R)$. Once determined, the vector of policies p is common knowledge. In the second stage candidates simultaneously determine the vector of campaigning spending $x = (x_L, x_R)$. Finally, in stage 3, voters cast their ballot for the preferred candidates and rents accrue. The sequence of moves can also be seen in Figure 1. The solution concept is subgame-perfect equilibrium.

3 Equilibrium behavior

3.1 Campaign Spending

In this section we determine equilibrium spending. Candidates maximize their expected payoffs defined in 1. To determine expected payoffs we need to specify the respective probabilities to win at the ballot. A candidate wins the election if the median likes him better. Hence, L's probability to win is

$$\begin{aligned} \Pr[L \text{ wins}] &= Pr\left[v + \Delta x - \Delta\epsilon - p_L^2 + p_R^2 > 0\right] \\ &= Pr\left[v + \Delta x - p_L^2 + p_R^2 > \Delta\epsilon\right] \\ &= U_m(v + \Delta x - p_L^2 + p_R^2) \end{aligned}$$

[1] In case of $\Delta u_M = 0$, what happens with zero probability, each candidate wins with 50 per cent probability.

where $U_m(.)$ is the CDF of the uniform distribution on $[-m, m]$. I assume m is sufficiently large to allow interior equilibria in stage 2, which implies $0 < \Pr[L \text{ wins}] < 1$.[2] The probability that R wins is simply the remaining probability,

$$\Pr[R \text{ wins}] = 1 - \Pr[L \text{ wins}].$$

We can now determine candidates' optimal spending. Since each candidate's optimization problem is continuous and strictly concave[3], we can use first order conditions to determine equilibrium spending in stage 2. The respective FOCs are:

$$\frac{\partial u_i}{\partial x_i} = \frac{\left(V - W(p_i - I_i)^2\right) - W(p_j - I_i)^2}{2m} - c_i x_i \overset{!}{=} 0.$$

Equilibrium campaign spending follows immediately:

Proposition 1. *In an interior Nash equilibrium, candidate i's campaign spending is*

$$x_i^* = \frac{\left(V - w(p_i - I_i)^2\right) + w(p_j - I_i)^2}{2mc_i}.$$

Note that spending is a dominant strategy, which follows from the constant density of the uniform distribution.[4] Individual as well as aggregate campaign spending is strictly increasing in the value of spoils of office V and decreasing in the randomness of the campaigning contest m. Each candidate's spending is increasing in her own marginal costs c_i and flat in the opponent's marginal costs c_j, implying aggregate spending also decreases in both c_L and c_R. Comparative statics with respect to the preference weight W are not as clear cut. Whenever a candidate's own policy is closer to his own most preferred platform then the policy of his opponent, this candidate's spending increases in W. This is of course the likely outcome taking into account endogenous platform choice in stage 1, but taking also into account off-equilibrium platforms it might well be the case that individual and/or aggregate spending sometimes decreases in W. The same is of course true for comparative statics with respect to candidates' ideal points I_i and policies p_i.

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[2] The assumption implies that each candidate, once the campaigning stage is entered, still has a strictly positive chance of winning the election. If this assumption does not hold, equilibrium spending is $x_L^* = x_R^* = 0$.

[3] The second derivative is $-c < 0$ for both.

[4] A generalization is discussed in the appendix.

Candidates' equilibrium utilities are

$$
\begin{aligned}
\pi_L^* &= U_m\left(v - p_1^2 + p_2^2 + \Delta x^*(p)\right)\left(V - W(p_L - I_L)^2\right) \\
&- \left(1 - U_m\left(v - p_1^2 + p_2^2 + \Delta x^*(p)\right)\right) W(p_R - I_L)^2 - \tfrac{c_L}{2}(x_L^*(p))^2, \\
\pi_R^* &= \left(1 - U_m\left(v - p_1^2 + p_2^2 + \Delta x^*(p)\right)\right)\left(V - W(p_R - I_R)^2\right) \\
&- U_m\left(v - p_1^2 + p_2^2 + \Delta x^*(p)\right) W(p_L - I_R)^2 - \tfrac{c_R}{2}(x_R^*(p))^2.
\end{aligned}
\tag{2}
$$

We will need these to determine equilibrium platforms in stage 1.

3.2 Policy Platforms

In stage 1 candidates maximize their expected utilities by choosing (and committing) to policy platforms $p = (p_L, p_R)$, taking into account the effect on stage 2 competition. The optimization problems are quite intricate and expressions become unwieldy. To be able to solve the game I first simplify the game by assuming complete symmetry. Once the symmetric game is studied, I go on and derive comparative statics.

Complete symmetry means $c_L = c_R = c$ and $v = 0$. With respect to policy positions, I focus on symmetry with respect to the median's preferred position, $I_L = -I_R = I > 0$.

3.2.1 Symmetric Equilibrium

Consider a situation in which candidates are located symmetrically around the median, that is where $I_L = -I_R = I$. Without loss of generality, let the de facto policy space be $P = [-I, I]^2$. As we will see later, this assumption is without loss of generality and all combinations of platforms p will lie within P. Under the assumptions made above, each candidate's optimization problem is strictly concave and continuous and strategy spaces are compact and convex. Hence, a pure strategy equilibrium exists in stage 1 and we can again use first-order conditions to determine behavior.

Taking stage 2 behavior into account, candidate i chooses p_i to maximize her utility as described in (2). First-order conditions are

$$
\begin{aligned}
\frac{\partial \pi_L^*}{\partial p_L} &= \frac{-2p_L + \frac{\partial x_L^*(p)}{\partial p_L} - \frac{\partial x_R^*(p)}{\partial p_L}}{2m} \times \left(V - W(p_L - I_L)^2\right) \\
&- \; 2W\,U_m\left(v - p_L^2 + p_R^2 + \Delta x^*(p)\right) \times (p_L - I_L) \\
&+ \; \frac{-2p_L + \frac{\partial x_L^*(p)}{\partial p_L} - \frac{\partial x_R^*(p)}{\partial p_L}}{2m} \times W(p_R - I_L)^2 - c_L \frac{\partial x_L^*(p)}{\partial p_L} \\
\frac{\partial \pi_R^*}{\partial p_R} &= \frac{-2p_R + \frac{\partial x_R^*(p)}{\partial p_R} - \frac{\partial x_L^*(p)}{\partial p_R}}{2m} \times \left(V - W(p_R - I_R)^2\right) \\
&- \; 2W\,\left(1 - U_m\left(v - p_L^2 + p_R^2 + \Delta x^*(p)\right)\right) \times (p_R - I_R) \\
&+ \; \frac{-2p_R + \frac{\partial x_R^*(p)}{\partial p_R} - \frac{\partial x_L^*(p)}{\partial p_R}}{2m} \times W(p_L - I_R)^2 - c_R \frac{\partial x_R^*(p)}{\partial p_R}
\end{aligned}
\tag{3}
$$

where

$$
\begin{array}{ll}
\frac{\partial x_L^*(p)}{\partial p_L} = -\frac{W(p_L - I_L)}{m\,c_L} & \frac{\partial x_R^*(p)}{\partial p_L} = \frac{W(p_L - I_R)}{m\,c_R} \\
\frac{\partial x_R^*(p)}{\partial p_R} = -\frac{W(p_R - I_R)}{m\,c_R} & \frac{\partial x_L^*(p)}{\partial p_R} = \frac{W(p_R - I_L)}{m\,c_L}
\end{array}
$$

Intuition is a good guide in choosing an equilibrium candidate: With symmetric candidates, a symmetric equilibrium in which candidates locate symmetrically and equidistantly around the median's preferred policy is plausible. Indeed, that is the unique equilibrium:

Proposition 2. *Assume a completely symmetric game in which candidates' ideal policies are equidistant to the median's bliss point, $I_L = -I_R = \hat{I} > 0$. There is a unique equilibrium in stage 1 in which both candidates choose opposite policies, $p_L = -p_R = \hat{p}$, and where*

$$
\hat{p} = \frac{\sqrt{c^2m^4 + 4c\hat{I}^2m^2(4cm+3) + 4\hat{I}^4} - cm^2 - 2\hat{I}^2}{4(2c\hat{I}m + \hat{I})}
$$

Candidates choose policy platforms that are equidistant around zero but differ in sign and where the sign of each candidate's policy is the same as his ideology's sign. Note that candidates choose platforms that are strictly between their most preferred policies and what the median likes best, $\hat{I} > \hat{p} > 0$. Only in the limit, as $c \to 0$, do platforms converge to the median's ideal point, $\hat{p} \to 0$. The intuition is that as campaigning gets cheaper, the opponent can easier punish any move towards one's own ideal point: the campaign gets more competitive, which improves efficiency of the political process. This resembles findings from goods markets models (for example, Betrand vs. Cournot): As competitiveness increases, firms' profits decrease. Hence, one prediction of the model is decreasing differentiation of candidates/parties as the costs of campaigning decrease, or, to put it more loosely, a tendency to "Tweedle Dum and Tweedle Dee".

Of course, as c increases, candidates' differentiation increases. As $c \to \infty$, platforms converge

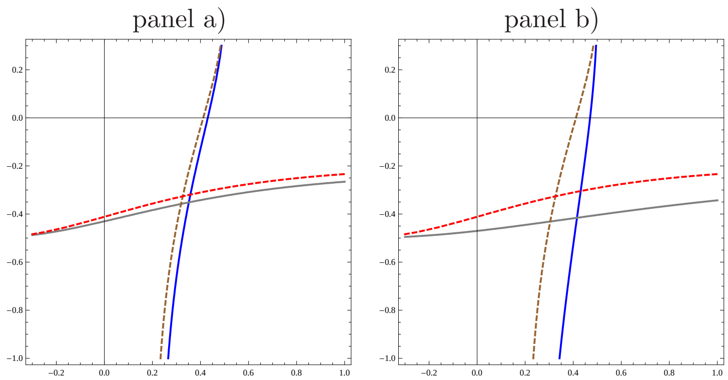

Figure 2: Comparative statics with respect to a decrease in m (panel a)) and a decrease in c (panel b)). The curves represent the candidates reaction functions in stage 1. The solid curves represent the original situation, the dashed curves the situation after the change.

to

$$\lim_{c\to\infty} \hat{I}(c) = \hat{I}^{\infty} = \frac{\sqrt{m\left(16\hat{I}^2 + m\right)} - m}{8\hat{I}}.$$

This is still strictly smaller than $\hat{I}$ for all $m \in [0, \infty)$. Platforms only converge to candidates ideal point as $m \to \infty$. This is intuitive. As m gets larger, policy choice becomes less important and campaign spending goes down as well, because it is less effective. Hence, if candidates move their platforms closer to their preferred policies it will not be punished as harshly when m is larger. It becomes less and less costly to choose policies that are in line with one's own goals and so candidates will both move closer to their own preferred policies. To the contrary, as m approaches zero $|\hat{I}|$ decreases. Greater competition makes ideological differentiation more costly and hence candidates converge to the median's preferred policy.

These two results are summarized in the

Corollary 1 (Symmetric comparative statics)**.** *Take the equilibrium from Proposition 2. As*

1. $m \to 0$, *policies converge to the median's preferred policy,* $\hat{I} \to 0$,
2. $m \to \infty$, *policies converge to the candidates' preferred policies,* $\hat{I} \to I_L$,
3. $c \to 0$, *policies converge to the median's preferred policy,* $\hat{I} \to 0$,
4. $c \to \infty$, *policies converge to the median's preferred policy,* $\hat{I} \to \hat{I}^{\infty} < I_L$.

In Figure 2 I plotted the candidates' first-stage reaction functions to exemplify comparative statics.

3.2.2 Comparative statics

In this section we now derive comparative statics with respect to candidates' individual characteristics c_i, I_i, and v. So far candidates were identical with respect to preference intensity (relative to the median's position, had identical marginal costs of campaigning and there was no valence advantage. We now first study how introducing valence changes behavior.

The effect of valence on positional choice has been studied before, e.g. by Groseclose (2001). There introducing a valence advantage has an unexpected effect because it makes the candidate with the disadvantage more extreme and at the same time the candidate with a valence advantage becomes more moderate. This effect is unexpected effect because choosing a more radical position additionally dampens electoral prospects. But this is a structure that differs from the one studied in the current paper and indeed this matters for conclusions:

Proposition 3. *Assume without loss of generality $I_L > 0$. As v increases from zero, both p_L^* and p_R^* increase, i.e. the candidate with a valence advantage becomes more radical while the disadvantaged candidate becomes more moderate. Formally,*

$$\frac{\partial p_L^*}{\partial v}|_{v=0} > 0 \quad \textit{and} \quad \frac{\partial p_R^*}{\partial v}|_{v=0} > 0.$$

Increasing valence allows the stronger candidate to move a bit towards his own preferred outcome, without jeopardizing his electoral chances. The disadvantaged candidate, in an effort to increase his own chances, reacts by moving towards the median.

Proposition 4. *Assume without loss of generality $I_L > 0$. Starting at $\hat{p}$, both p_L^* and p_R^* locally increase in I_L. Formally,*

$$\frac{\partial p_L^*}{\partial I_L}|_{I_L=I_R} > 0 \quad \textit{and} \quad \frac{\partial p_R^*}{\partial I_L}|_{I_L=I_R} > 0 > 0.$$

4 Discussion

—to be written—

Proposition 5. *Assume candidates are symmetric. As the noise of the campaigning process vanishes, $E[\sigma^2] \downarrow 0$, candidates adopt the median voter's ideal position, $(p_L, p_R) \to (0, 0)$.*

Proposition 6. *Assume the random variable distorting campaigning efforts is Gaussian with mean $\mu = 0$ and variance $\sigma^2 > 0$ and that candidates are symmetric. Then lower marginal cost of campaign funds increase competitiveness and candidates choose positions closer to the median's ideal point.*

5 Spending regulations

—to be written—

Proposition 7. *The introduction of a hard spending limit makes candidates get closer to their own preferred policies and further away from the median.*

Proposition 8. *The introduction of a soft spending limit makes candidates get closer to their own preferred policies and further away from the median.*

6 Conclusion

—to be written—

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