

Party Activists, Campaign Funding and the Quality of Government

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Abstract

We study the formation of government policy in democracies when turnout depends on party activists and campaign spending – parties’ ‘political capital’. The functional importance of political capital determines equilibrium rent-seeking in government. If activists and donors are better than the ordinary voter at distinguishing between good governments and lucky governments, then the more potent political capital is the less the extent of rent-seeking. This situation also rules out finite limits on election spending, though a zero limit could be the optimum if donors and activists are close enough substitutes in the work they do for the party. The one policy which is never optimal is a finite limit on local spending.

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1 INTRODUCTION

In the recent US presidential election the Obama and McCain campaigns respectively spent \$730mn and \$368mn. Obama in particular also managed to recruit several million volunteers, who contributed labor as well as money to their candidate.¹ It seems likely, taken in aggregate, that such resources played a part in the election outcome.² Furthermore, the non-trivial sums of both money³ and time contributed are of course endogenous variables; but there is incomplete understanding of how contributors respond to policy platforms, and in turn how policy is modified to appeal to contributors.

An improved understanding of the linkages between policy, voting and contributions is desirable because there are important policy issues at stake. Calls for legal limits on either donations or campaign expenditure are frequently heard, typically on the grounds that such sums of money are perceived inevitably to be associated with corruption or some other distortion of policy. On the other hand economists and political scientists alike have frequently taken a more agnostic position, recognizing that finance can have an important functional role in the electoral process.

In our analysis two parties compete for election, setting policy defined by ideological position, and expenditure on public goods. Voters are distributed uniformly along the ideological scale, but all voters prefer greater amounts of the public good for given taxes. In contrast party leaders are motivated by office, and the wedge between tax and public good expenditure. Any surplus may be spent on ego-projects, wasted through bureaucracy, or more simply may reflect pure rent-seeking. By definition the

greater the level of rent-seeking, the lower the quality of government. Importantly, voting is argued to be determined by policy as well as by campaigning activities, which in turn are supported by financial donations and the contributed labor of activists - inputs which are themselves also determined by policy. To make this idea operational we define 'political capital' as the set of assets, in particular donors and activists, available to parties which can help deliver the vote. But as we detail below there are grounds for supposing that the policy preferences of contributors are in general different from those of potential voters. Following May (1973) and subsequent theoretical and empirical work in the political science literature we assume they are more ideologically extreme. Therefore party leaders face a trade-off between ideological centralization as in standard Downsian models, and polarizing to please activists and donors. Political capital thus can explain ideological divergence.⁴

However, the main focus of this paper is to analyze how the quality of government changes depending on the importance of political capital in driving turnout, and separately on the quantity of different elements of political capital. Our first finding is that, in general, you maximize the quality of government by maximizing the electoral potency of whichever factor – be it political capital or the potential voter – is least prone to mistake government competence for government luck or vice versa. We term this ability 'political wisdom'. However, this result is sensitive to the exact role played by political capital. The better it is at converting voters from one party to another, and the worse it is at mobilizing its existing supporters, the more likely it is that there is an interior solution where we would not want to maximize the influence of either factor, even if one unambiguously possesses more political wisdom than the other.

In the case where rent-seeking is increased as political capital becomes more potent in driving the vote, we will want to reduce its potency. In the light of this we therefore discuss possible means to reduce the impact of political capital, in particular compulsory voting.

Reducing the importance of political capital is nonetheless a very distinct argument from limiting the *quantity* of political capital through particular legal limits on campaign spending and advertising. In order to address the consequences of specific legal limits the analysis disaggregates political capital into constituent parts: national spending on advertising, local spending, and activists. Our second main finding is that partial limits on total campaign expenditure, as frequently observed in practice, can be optimal only if potential voters possess more political wisdom than either donors or activists (and will not necessarily be optimal even then.) It is feasible that an absolute ban on total spending could maximize the quality of government, but this depends on activists being both more responsive to good government than donors, and good substitutes for them in carrying on the campaign. In this case the stronger the ban on spending the better. The third main finding is that any partial limit on local spending alone can never be optimal.

In the next section we review some related literature before presenting the model framework in Section 3. Equilibrium government quality and its relationship with the potency of political capital is analyzed in Section 4. Section 5 analyzes how government quality changes when legal limits on spending are imposed and Section 6 concludes.

2 RELATED LITERATURE

The argument that voters are somehow malleable and in particular that campaign expenditure can affect the vote is not uncontentious.⁵ Austen-Smith (1991) and Baba (1997) argue that a positive voting response to campaign expenditure implies irrational voters because expensive advertising is a visible sign that money was paid over to promote special interests against their own. On the other hand recent theoretical work identifies a functional role for advertising. Prat (2002) rationalizes advertising in a micro-founded model of campaign advertising in which an interest group responds to insider signals relating to candidate quality. The interest group is able to distort the policy platform (which is orthogonal to candidate quality) in exchange for effectively broadcasting candidate quality.⁶ Advertising thus facilitates election of the better quality candidate. This insight is incorporated here in that campaign advertising generates a positive voting response, and also that better quality government generates larger donations and more willing activists thus creating a brake on politicians' rent-seeking behavior.⁷ Coate (2004a) also highlights the importance of advertising as a means of providing information about candidates.

Empirically Levitt (1994) found that campaign spending has little impact in determining voting in US House elections. Nonetheless more recent work has been supportive of the link. Ansolabehere and Iyengar (1996) find that advertising influences voting in field experiments. Gerber (2004) and Moon (2006) provide a rationale for the weaker evidence that seems to relate especially to incumbents, distinguishing between the objectives of maximizing vote share and gaining re-election. In straight-

forward terms it is hard for an incumbent to increase vote share, whilst evidence relating to re-election is more favorable. Indeed Erikson and Palfrey (1998 and 2000) overturn this asymmetry finding spending by both incumbents and challengers to be effective drivers of the vote in a simultaneous equations specification. Relatedly Gerber and Green (2000) provide experimental evidence in support of the idea that wider campaigning activities undertaken by party activists have a positive effect on voter turnout.

The second key ingredient of the model is the assumption that donors and party activists are skewed towards the ideological extremes. For activists, there is much support for this proposition in the political science literature. Hirschman (1970) argues this to be a consequence of spatial electoral competition: to exercise ‘voice’ extremists join parties. May (1973) argues for this as a general rule in all modern democracies⁸ and Seyd et al (1996) provide supporting evidence from the UK. Scarrow (1994) also characterizes party membership as distorting policy away from the median, which is conceivable only if members are themselves influential and relatively extreme as we argue. Pedersen et al (2004) find that party membership, and Ansolabehere et al (2003) find that donations, are driven by ideology, which we argue is consistent with our approach. If party membership or financial donation is costly, and a function of your relative ideological distance from each party, then moderates (those in between parties) are less likely to contribute than extremists all else equal.

The proposition that donors and activists can influence the vote, together with the observation that party activists and donors are more skewed toward the political extremes, provides a mechanism underpinning ideological divergence. Of course, the

academic literature is not at all short of explanations for divergence. Wittman (1977 and 1983) models candidates as motivated by position rather than office. Palfrey (1984) suggests that putting your party in the centre invites someone else to start a new one, place it on your outer flank, and steal all your support. Alternatively candidates might be policy motivated and partially liberated from the median voter due to a degree of uncertainty (Wittman, 1983; Calvert, 1985; Alesina, 1988.) The well-attested fact that incumbents have an advantage over challengers has been used to develop models where the candidates have different strategies which include different ideological positions (Londregan and Romer, 1993). Groseclose (2001) predicts centralization by the high quality candidate and polarization by the low quality candidate and Bruter et al (2010) demonstrate that equilibrium may not exist at all in this framework.⁹

But a further version of the story - and one which is now popular following recent presidential elections in the US - has parties tacking away from the centre to mobilize their potential supporters actually to come out and vote for them (Peress, 2011). Political commentators like the story that you do better if you make your 'core' voters turn out rather than chasing floating voters in the centre. (George Bush's campaign of 2004 is held up as a successful example of this.) Political scientists have looked at the evidence and are skeptical. Some of this skepticism rests on the finding that people who say they care a lot who wins are scarcely more likely to vote than people who care little (Rosenstone and Hanson, 1993). So even if 'core voters' are alienated it doesn't make them that much less likely to vote.

But it may make them much less likely to work for or give money to the party

and help deliver other people's votes. Party activists and donors have to date been a neglected force in Downsian theories of spatial political competition.¹⁰ A notable exception, however, is Aldrich (1983a, 1983b). Aldrich's political activists are selected negatively – the ideologically alienated and indifferent exclude themselves. Each party's position is that of its median activist. The ideological position and the cohort of activists are thus simultaneously determined, and Aldrich shows that this always gives an equilibrium where the two parties are ideologically distinct. This an improvement over 'candidate selection' models where candidates get nominated by replicating the views of their party's median activist, a figure treated as exogenous. Where such models do score over Aldrich is when they bring in candidates who choose a position to maximize the joint probability of being nominated and then elected (Aranson and Ordeshook, 1972).

In this article we combine the approaches of Aldrich and of Aranson and Ordeshook. The number and political stance of activists and donors is endogenous, but at the same time someone is looking at the goal of being elected and sees pleasing the activists and potential donors as just a means to that end. We assume in fact that party policy is decided centrally, with an eye on both the potential vote and the political capital needed to get that vote out. The ideological location decision turns out to be non-trivial: ideology drives voting through more than one channel. A party that moves to the center may gain territory from its opponent, but at the cost of party membership or income or both. For this reason parties don't necessarily converge in the middle.

However whilst ideological divergence is an interesting by-product of the analysis,

the main concern of our paper is the quality of government. A key relationship in the analysis below is how donations respond to this variable. Donations have themselves been typically modelled in the literature, in our opinion rather narrowly, as either 'position-induced' or 'service-induced' (Ashworth, 2008). In the former case donations buy ideological influence, in the latter the quid pro quo is special favor "at the expense of citizens in general". On the other hand Ansolabehere et al (2003) document that the vast majority of campaign contributions in the case of the U.S. come in the shape of very small donations from individuals. Such donations seem inconsistent with policy procurement. Instead Ansolabehere et al (2003) propose that donating is a form of political participation or consumption. One possible story is that donors obtain a return in the shape of votes generated from ensuing advertising. Relatedly, it is not impossible that donors are acting out of altruism. This may be unappealing to much of the economics literature, but it has to be acknowledged that in most cases the quid pro quo from donations is far from obvious. An example could be the 2008 US Presidential race in which Barack Obama enjoyed a massive financial advantage over John McCain. Anecdotal evidence at least suggests that in many cases the donors were motivated through a perception that Obama was the more effective candidate and not solely through some self-interested agenda.¹¹

Previous literature has addressed questions of campaign finance legislation and advertising, though only within the context of position- and service-induced donations. Prat (2002) finds that a ban on donations or advertising can be welfare enhancing depending on the trade-off between position-distortion and greater competence (signaled through truthful advertising). Coate (2004b) also models position-distorting

donors, finding that a ban may be welfare-enhancing especially because of a mechanism in which advertising effectiveness increases with the strength of the limit on campaign finance. This paper differs from these approaches in three ways. Firstly donations are motivated by competence as well as position. This seems appropriate given the micro evidence discussed in Ansolabehere et al (2003). The second key point of departure is that we look at campaign finance limits independently from possible policies to alter the potency of political capital. Finally we disaggregate campaign expenditure into local and national components and argue for distinct policy on each.

3 MODEL FRAMEWORK

The basic framework is two-party pre-electoral competition where both parties simultaneously announce policy, consisting of an ideological position and spending on a public good (as distinct from waste or rent). As is common in the literature we utilize a probabilistic voting framework, first proposed by Hinich (1977) and Lindbeck and Weibull (1987). Suppose there are two parties, L and R , facing an imminent election. Voters are forward-looking, parties pre-commit to policy, and the penalties of renegeing are prohibitive. The parties' objectives are symmetric, with party L 's expected utility function written as

$$U_L = p_L(1 - g_L) \tag{1}$$

where p is its probability of being elected, and $0 \leq g \leq 1$ measures spending on a public good. Parties (or more accurately party leaders) are motivated firstly by office, and secondly the rents they may be able to extract in government. In (1) the normalized maximum possible rent equals unity.¹² There is no direct return to ideological position taking, but any money not spent on public goods adds to utility. As described in the introduction this may be spent on ego-projects, be wasted through bureaucracy, or more simply may reflect pure rent-seeking. An alternative interpretation of g is that it represents politicians' effort (good for voters, but a 'bad' for politicians). Whilst we use the term 'rent-seeking' it is worth bearing in mind throughout that more general interpretations of g are possible and that it is a measure of the overall quality of government.

The electorate is uniformly distributed along two axes. The horizontal one ($0 - 1$) is ideological (left to right) and the vertical one ($C_{\min} - C_{\max}$) represents the net cost of voting. The voting decision is modeled as a two-step sequence. Citizens first decide how to vote by considering which party they would prefer to be in power. This stage determines the potential vote. Secondly citizens decide whether to vote for it or to abstain – the potential vote translates into the actual vote. In the first step let citizen i 's perceived utility from a L government be:

$$U_{iL} = -|\theta_i - \theta_L| + 2\omega g_L + \mu K_L^\gamma - \mu K_R^\gamma + \Omega h.$$

Here the first term is i 's absolute ideological distance from party L , g is the party's spending in government (at the expense of its own rents) and K is political capital,

so that the terms in K represent the persuasive propagandist effect of each party organization as to who would govern best. The first role of political capital is thus to convert potential voters. We also assume that $\gamma < 1$, i.e. these effects are subject to diminishing returns. (We measure utility on whatever scale eliminates a coefficient on θ .) h is a random popularity shock (positive or negative) in favour of L and against R . Let the value of h have a uniform frequency distribution between $-\frac{h^*}{2}$ and $\frac{h^*}{2}$. Hence

$$U_{iR} = -|\theta_R - \theta_i| + 2\omega g_R + \mu K_R^\gamma - \mu K_L^\gamma - \Omega h$$

so that, if i^* is the voter who is indifferent between L and R (i.e. $U_{i^*L} = U_{i^*R}$),

$$\theta_{i^*} = \frac{\theta_L + \theta_R}{2} + \omega (g_L - g_R) + \mu K_L^\gamma - \mu K_R^\gamma + \Omega h,$$

which, given the 0–1 ideological scale represents L 's *potential vote* J_L , the proportion of voters who prefer party L to party R , and hence the vote party L would get in the event of a 100% turnout, i.e.

$$J_L = \frac{\theta_L + \theta_R}{2} + \omega (g_L - g_R) + \mu K_L^\gamma - \mu K_R^\gamma + \Omega h. \quad (2)$$

We interpret h to measure a party's luck and g to measure its competence. In the analysis below we make use of $\rho = \frac{\omega}{\Omega} = \frac{dJ/dg}{dJ/dh}$, which measures the electorate's *political wisdom* – its ability not to mistake luck for competence or vice versa. If it mistakes luck for competence, $\frac{dU}{dh}$ and hence $\frac{dJ}{dh}$ rises; and if it mistakes competence for luck $\frac{dU}{dg}$ and hence $\frac{dJ}{dg}$ falls.

But whether any potential voter actually turns out for party L depends on the second, possibly more important, role of political capital, its capacity to induce turnout. In the second step we thus represent voter i 's net subjective cost of voting, after his preferred party's political capital has been to work on him, as $C_i - \left(\frac{K_L}{J_L}\right)^\alpha$, so he will vote if $\left(\frac{K_L}{J_L}\right)^\alpha > C_i$.

$\left(\frac{K_L}{J_L}\right)^\alpha$ arises as follows. Party L 's political capital is applied evenly to all its potential voters. Voter i 's ration is thus $\frac{K_L}{J_L}$. But because L 's efforts over each voter are presumably subject to diminishing returns (ten leaflets through the mailbox will not be ten times as effective as one) we write its impact on each voter as $\left(\frac{K_L}{J_L}\right)^\alpha$ where $\alpha < 1$.

We now normalize C so that $C_{\max} = 1$. Since a party with no money and no volunteers would presumably get a zero turnout (if only because no one would have heard of it), we set C_{\min} at zero, so that $K = 0$ ensures that even the voter at C_{\min} abstains. With C on this 0 – 1 scale, the proportion of voters for whom $C < \left(\frac{K_L}{J_L}\right)^\alpha$ will simply be $\left(\frac{K_L}{J_L}\right)^\alpha$ which thus measures turnout.

<<COMP: Place Fig. 1 about here>>

Hence the situation is as in Figure 1 and party L 's vote will be

$$V_L = \text{potential vote} \times \text{turnout} = J_L \left(\frac{K_L}{J_L}\right)^\alpha = K_L^\alpha J_L^{1-\alpha},$$

with a similar form for party R . This represents the vote production function, and has political capital driving the vote through two distinct channels. To summarize so far, then, voting performance depends on the potential voter base (J_L) and political

capital (K_L) - the parties' party finances and activists. This is a generalization of the standard Downsian model which is the special case of $\alpha = 0$ and $\gamma = 0$. In the remainder of this section and section 4 policy is analyzed using an aggregate measure of political capital, with the objective of asking how policy depends on the importance of political capital as a whole in driving votes (as captured by α). Section 5 disaggregates political capital into national advertising, local advertising and activism, enabling analysis of the consequences of limiting campaign spending.

3.1 POLITICAL CAPITAL

Given the argument made in the literature review, we assume that party activists and donors are more skewed toward the political extremes than the electorate as a whole. In what follows we assume that political capital is spread across the ideological spectrum with a distribution

$$K(\theta) = Q \exp |c(0.5 - \theta)| \quad (3)$$

where $c \geq 0$, the size of c determining how skewed towards the extremes. (In the limiting case of $c = 0$ political capital, like potential voters, is distributed uniformly). Q is a scale parameter.

Thus there is a stock of political capital part of which parties can obtain through choosing their policy platforms. It is this that potentially drags parties away from the ideological middle ground. We assume that activists and contributors help a party if they like it enough (i.e. if the psychic gains of helping it exceed the trouble.) A

natural assumption is that the psychic gains of helping a party are inverse to your ideological distance from it, but the cost (time, money and effort) is constant. Let z be the critical ideological distance. L 's range of activists therefore stretches from $\theta_L - z$ to $\theta_L + z$. The centrifugal force follows from the parameter c : parties can increase their political capital by moving away from the centre.

We are thus treating political capital differently from potential voters in three ways. First, it is banked up towards the extremes, not evenly distributed across the spectrum. Second, given that no one is acting on the activists to raise *their* turnout, there is no need to introduce the complication of different individual costs. (Putting it in greatly complicates the mathematics without altering any of our conclusions.) Finally, we model them as being driven by absolute distance from the nearest party, not by the relative proximity of the two parties.¹³

As with potential voters, we assume that activists and donors are also susceptible to good governance.¹⁴ and possibly also to popularity shocks. To incorporate these ideas we assume that the popularity shock h will widen L 's range of capital and narrow that of R by bh at either end, while, if party L spends more than party R , that will widen L 's range of capital, and narrow that of R by $\beta g'$ (where $g' = g_L - g_R$) at either end (like bh this amount of course can be positive or negative). Then if, for instance, $\beta = 2b$, we would have the situation depicted in Figure 2.

<<COMP: Place Fig. 2 about here>>

Generalizing, then, $\frac{dK}{dg'} = \frac{dK}{dg} = \frac{\beta}{b} \left(\frac{dK}{dh} \right)$. In section 4 we make use of $\lambda = \frac{\beta}{b}$, which represents political capital's *political wisdom* just as ρ did for the potential voters.

And, given the symmetrical distribution of both potential voters and political capital between left and right, it follows that the two parties' incentives, as they choose public spending and ideological distance from the centre, are identical. So in any Cournot-Nash equilibrium the parties' positions are symmetrical i.e. $\theta_L + \theta_R = 1$, and $g_L - g_R = 0$.

Given this structure it is possible that there are activists and donors simultaneously within distance z of both parties. In this instance we assume that they work for the one to which they are closest. In the Cournot-Nash equilibrium, this amounts to working for $L(R)$ if their ideological score is less (greater) than 0.5. Also note that the range of activists is truncated at 0 and 1, so that L 's leftmost activist will be at $\max(0, \theta_L - z)$. But, precisely because of the truncation, $\theta_L - z$ will always be non-negative: as long as $\theta_L - z < 0$, a move to the center would gain both potential voters and centre-ground political capital without losing any of the ideologically-extreme capital. Hence $\max(0, \theta_L - z) = \theta_L - z$.

To summarize, L 's range of political capital will be $[\theta_L - z, \bar{\theta}]$ where $\bar{\theta} = \min(\theta_L + z, 0.5)$. Its total capital will therefore be the integral of the density function between these two limits:

$$K_L = \int_{\theta_L - z}^{\bar{\theta}} K(\theta) d\theta = \frac{Q}{c} \left(\exp [c(0.5 - \theta_L + z)] - \exp [c(0.5 - \bar{\theta})] \right). \quad (4)$$

The comparative statics (i.e. how political capital responds to changes in ideological stance) can now be considered. Suppose θ_L increases by $d\theta$ (L moves towards the centre.) Given $\theta_L - z \geq 0$, L will lose $K(\theta|_{\theta=\theta_L-z})$ capital on the left. If its stock

of activists is abutting that of R at 0.5, then it will gain $0.5K(\bar{\theta})$ capital from R ; if not, it will gain $K(\bar{\theta})$ unemployed capital. Either way, the sum of L 's gain and R 's loss will be $K(\bar{\theta}) - K(\theta|_{\theta=\theta_L-z})$, i.e.

$$\begin{aligned} \frac{dK_L}{d\theta_L} - \frac{dK_R}{d\theta_L} &= K(\bar{\theta}) - K(\theta|_{\theta=\theta_L-z}) = Q\left(\exp\left[c(0.5 - \bar{\theta})\right] - \exp\left[c(0.5 - \theta_L + z)\right]\right) \\ &= -cK_L. \end{aligned} \tag{5}$$

Equation (5) gives a useful and simple result: when the left-wing party marginally shifts to the centre, its relative political capital falls proportionately to its existing stock. Thus even though the centrist shift increases capital in the centre, and may also eat into the opposition's capital, the net effect on relative political capital is still negative due to the larger loss on the party's extremist wing.

3.2 IDEOLOGICAL EQUILIBRIUM

Now consider how the parties choose their ideological position so as to maximize their objective in equation (1). Since $U = p(1 - g)$ parties will choose a position (θ) such that $p(\theta)$ is maximized. We now establish what determines $\frac{dp}{d\theta}$.

Lemma 1 $\frac{dp_L}{d\theta_L} = \frac{dV'/d\theta_L}{h^* \cdot dV'/dh}$

Proof. Let $V' = V_L - V_R$ and $v' = V'|_{h=0}$. Then $V' = V'(v', h)$ and $\frac{dp_L}{d\theta_L} = \frac{dp_L}{dv'} \frac{dv'}{d\theta_L} = \frac{dp_L}{dv'} \frac{dV'}{d\theta_L}$. Let \hat{h} be the value of h needed for $V' = 0$. Then $p_L = p(h > \hat{h}) = 0.5 - \frac{\hat{h}}{h^*}$ (given h 's rectangular distribution between $-\frac{h^*}{2}$ and $\frac{h^*}{2}$) and $\frac{dp_L}{dv'} = \frac{d}{dh} \left[p(h > \hat{h}) \right] \cdot \frac{d\hat{h}}{dv'} = -\frac{1}{h^*} \frac{d\hat{h}}{dv'}$. Since $V' = V'(v', h)$, $dV' = dv' \frac{dV'}{dv'} + dh \frac{dV'}{dh}$ and therefore (since \hat{h} is the value

of h such that $V' = 0$) $\frac{\widehat{dh}}{dv'} = -\frac{dV'/dv'}{dV'/dh} \cdot \frac{dp_L}{dv'} = \frac{1}{h^*} \cdot \frac{dV'/dv'}{dV'/dh} \cdot \frac{dp_L}{d\theta_L} = \frac{dV'/d\theta_L}{h^* \cdot dV'/dh}$.

As a reminder, the flow of effects from ideology to the vote is as in Figure 3 below.

<<COMP: Place Fig. 3 about here>>

Figure 3 shows the two distinct effects of capital on the vote. Capital can both increase the volume of potential voters through the conversion effect, and increase the actual vote by mobilizing its potential voters.

In what follows, we use $\frac{\partial V}{\partial K}$ to represent the mobilization effect of political capital, and $\frac{dJ}{d\theta}$ to represent the total effect of ideology on the potential vote, i.e. the sum of the direct effect and the indirect effect from conversions made by the changing stock of political capital.

Proposition 1 *Parties will either centralize to the median voter, or polarize to the point where $\theta_L = z, \theta_R = 1 - z$.*

Proof. *See appendix.* ■

Parties will either end up at the poles or converge in the middle. The reason is simple. Because political capital is skewed towards the extremes, your loss of political capital becomes successively smaller as you move from a polar position to a central one and your gain of political capital successively larger as you move from a central position to a polar one. If the journey either way is worth starting, it must be even more worth finishing. It will thus always pay parties to move towards or away from the centre. If they do the latter, however, party L will not end up at $\theta_L = 0$, but rather at $\theta_L = z$, the point at which, as we have discussed, any further leftward

move results in an unambiguous loss of votes. R , by similar reasoning will end up at $\theta_R = 1 - z$.

Proposition 2 *There is a unique value of α above which $\theta_L = z = 1 - \theta_R$ (which we will call the polarity outcome) and below which $\theta_L = \theta_R = 0.5$ (the median voter outcome).*¹⁵

Proof. *See appendix.* ■

Proposition 2 establishes that as α increases there is a tipping point at which the ideological equilibrium moves from a median voter equilibrium to the polarity equilibrium. When the mobilization channel becomes sufficiently important in generating votes, then party leaders are obliged to raise capital through polarizing to please activists and donors. It is possible that the model provides a vehicle for understanding the increased polarization of political parties in the US in the 1980s documented by Abramowitz and Saunders (1998).¹⁶ More generally, we observe that political competition in Anglo-Saxon countries seems to fluctuate between consensual and polarized politics, and has on occasion switched rather rapidly. As the value of α increases, then a tipping point may be reached at which the two parties diverge. In contrast to most models of political competition, which either predict convergence or divergence, the model proposed here can accommodate both depending on the strength of α .

4 THE QUALITY OF GOVERNMENT

In this section we consider how the choice of public spending, g (and therefore equilibrium rent-seeking and social welfare) also depends on α . We discuss possible means

by which α might be modified so as to maximize the quality of government, and compulsory voting in particular.

From (1) the party maximizes its expected utility at

$$g_L = 1 - \frac{p_L}{dp_L/dg_L} = 1 - \frac{0.5}{dp_L/dg_L} \text{ (in a Cournot-Nash equilibrium where } p = 0.5\text{).}$$

Maximizing welfare thus comes down to maximizing dp_L/dg_L , i.e. making a party's election chances as sensitive as possible to the sacrifice of rents. Here, by analogy with the expression we derived for $\frac{dp}{d\theta}$, $\frac{dp_L}{dg_L} = \frac{dV'/dg_L}{h^* \cdot dV'/dh}$.

In contrast to the previous section, the results now fall out more easily if we use $\frac{dV}{dK}$ to represent the *total* effect of K on V , i.e. the sum of the direct (mobilization) effect and the indirect effect via K 's effect on J (conversion effect.) This time, then, it is $\frac{dJ}{d(g,h)}$ that we write as a partial derivative, signifying that it represents only the direct effect of g or h on J and not the indirect effect via K . Hence:

$$h^* \frac{dp_L}{dg_L} = \frac{dV'/dg_L}{dV'/dh} = \frac{\frac{dV'}{dK_L} \frac{dK_L}{dg_L} + \frac{dV'}{dK_R} \frac{dK_R}{dg_L} + \frac{dV'}{dJ_L} \frac{\partial J_L}{\partial g_L} + \frac{dV'}{dJ_R} \frac{\partial J_R}{\partial g_L}}{\frac{dV'}{dK_L} \frac{dK_L}{dh} + \frac{dV'}{dK_R} \frac{dK_R}{dh} + \frac{dV'}{dJ_L} \frac{\partial J_L}{\partial h} + \frac{dV'}{dJ_R} \frac{\partial J_R}{\partial h}}$$

where $\frac{dV'}{dK} = \frac{\partial V'}{\partial K} + \frac{dV'}{dJ} \frac{dJ}{dK}$.

Since $\frac{dV'}{dK_L} = -\frac{dV'}{dK_R}$ and $\frac{dV'}{dJ_L} = -\frac{dV'}{dJ_R}$,

$$h^* \frac{dp_L}{dg_L} = \frac{\frac{dV'}{dK_L} \frac{dK'}{dg_L} + \frac{dV'}{dJ_L} \frac{\partial J'}{\partial g_L}}{\frac{dV'}{dK_L} \frac{dK'}{dh} + \frac{dV'}{dJ_L} \frac{\partial J'}{\partial h}} = \frac{\lambda \frac{dV'}{dK_L} \frac{dK'}{dh} + \rho \frac{dV'}{dJ_L} \frac{\partial J'}{\partial h}}{\frac{dV'}{dK_L} \frac{dK'}{dh} + \frac{dV'}{dJ_L} \frac{\partial J'}{\partial h}} \quad (6)$$

where $K' = K_L - K_R$ and $J' = J_L - J_R$. Equation (6) is a weighted average of λ and

ρ . If we write the weight on λ as w , then (omitting the L subscript from now on)

$$\frac{w}{1-w} = \frac{\frac{dV'}{dK} \frac{dK'}{dh}}{\frac{dV'}{dJ} \frac{\partial J'}{\partial h}}. \quad (7)$$

But we are now taking dV'/dK as the total derivative of V' with respect to K , i.e.

$$\frac{w}{1-w} = \frac{dK'/dh}{\partial J/\partial h} \left(\frac{\partial V'}{\partial K} + \frac{dV'}{dJ} \frac{dJ}{dK} \right) = \frac{dK'/dh}{\partial J/\partial h} \left(\frac{\partial V'}{\partial K} + \frac{dJ}{dK} \right). \quad (8)$$

Since the only terms on the right hand side that will change as α changes are $\partial V'/\partial K$ and dV'/dJ (we are either at the polar or the median voter equilibrium so that the value of the other terms is fixed by the value of θ), it follows that

$$\frac{d}{d\alpha} \left(\frac{w}{1-w} \right) = \frac{dK'/dh}{\partial J/\partial h} \cdot \frac{d}{d\alpha} \left[\frac{\partial V'}{\partial K} \right] = \frac{dK'/dh}{\partial J/\partial h} \cdot \frac{d}{d\alpha} \left[\frac{\alpha J}{(1-\alpha)K} \right]$$

(using the production function $V = K^\alpha J^{1-\alpha}$.) $\frac{d}{d\alpha} \left(\frac{w}{1-w} \right)$, and thus $\frac{dw}{d\alpha}$, are positive.

So the higher α the greater the weight of λ as against ρ in determining dp/dg . It follows that dp/dg is increasing (decreasing) in α when $\lambda > (<) \rho$.

The intuition here is that the incentive to govern better (raise g) depends on how far this will raise the probability of being elected. What equation (6) shows us is that the standard of government will depend not on dK/dg and dJ/dg (absolute response of K and J to lower rents) but on λ and ρ , the ‘political wisdom’ parameters that measure how J and K weight a government’s competence against its luck when deciding who to support. Even if political capital is twice as impressed by good government as are potential voters, an increase in its potency via α will not help

welfare if it is three times as impressed by fortunate government. Parties would tell themselves that they might get twice as big a present from political capital if they ran the country better, but that they will be handed three times as big a penalty come the next unpopularity shock. In this case parties would actually be less sensitive to the opinions of activists and donors than to those of ordinary voters, and welfare would be increased by the latter having more say with lower α .

However, it is not yet possible to turn this analysis into a general proposition concerning the quality of government because we have not yet considered what will happen to g as α crosses α^* and the system tips from the median voter to the polarity outcome. The mathematics here is cumbersome and we work it out in the Appendix (Proposition A1.) The result we get is that, at $\alpha = \alpha^*$,

$$h^* \left[\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M \right] = \frac{2(\lambda - \rho)(1 - \alpha^*)V_M V_P}{(X_P + Y_P)(X_M + Y_M)} \left[\alpha^* \left\{ \left(\frac{dK'/dh}{K} \right)_P - \left(\frac{dK'/dh}{K} \right)_M \right\} + 2(1 - \alpha^*) \left\{ \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_P - \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_M \right\} \right] \quad (9)$$

where the subscripts P and M relate to the polarity and median voter cases respectively and $X = \frac{dV'}{dK} \frac{dK'}{dh}$ and $Y = \frac{dV'}{dJ} \frac{\partial J'}{\partial h}$. The expression dp/dg will jump as the ideological equilibrium tips from the median voter to polarity. The direction of the jump, i.e. the sign of the right-hand side of (9) depends on what political capital is doing. If it is simply mobilizing voters and not converting them, then $dJ/dK = 0$ and the right-hand side has the opposite sign to $(\lambda - \rho)$ iff $\left(\frac{dK'/dh}{K} \right)_M > \left(\frac{dK'/dh}{K} \right)_P$. But since (as we show in the appendix: Proposition A2) this is always the case, it follows that $\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M$ always has the opposite sign to $(\lambda - \rho)$ and hence the

opposite sign to $\frac{d(dp/dg)}{d\alpha}$ at all $\alpha \neq \alpha^*$. Whatever the trend of dp/dg (and thus of the quality of government) as α rises, it is interrupted by a jump in the opposite direction at α^* . The situation is as depicted in Figure 4(a) or 4(b).

<<COMP: Place Fig. 4 about here>>

While political capital's power to mobilize voters at the margin rises with α , it falls as we cross from the median voter to the polarity outcome, simply because parties now have more political capital and its marginal product is thus down. So, whether the effect of rising α is to raise or lower the quality of government, there will be an interruption at α^* .

If, however, K is capable both of mobilizing existing supporters and creating new ones, the sign of $\left[\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M \right] \Big|_{\alpha=\alpha^*}$ becomes ambiguous. To show that it can now be the same as the sign of $\lambda - \rho$, take the case where c and γ are both large, i.e. the supply of political capital is steeply banked towards the ideological extremes and its power to convert voters subject to only mildly diminishing returns. Since, as $c \rightarrow \infty$, $dp/d\theta \rightarrow -\infty$ (equation (A3) in the appendix), so that $\alpha^* \rightarrow 0$ (parties go for the poles however low α is) and since as $\gamma \rightarrow 1$, $dJ/dK \rightarrow \mu$ equation (9) shows us that as $c \rightarrow \infty$ and $\gamma \rightarrow 1$,

$$h^* \left[\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M \right] \rightarrow \frac{4(\lambda - \rho) V_M V_P \mu}{(X_P + Y_P)(X_M + Y_M)} \left\{ \left(\frac{dK'}{dh} \right)_P - \left(\frac{dK'}{dh} \right)_M \right\}.$$

We show in the appendix (proposition A3) that, if c is large enough, $\left\{ \left(\frac{dK'}{dh} \right)_P - \left(\frac{dK'}{dh} \right)_M \right\}$ must be positive. In this case, the jump in dp/dg , and hence g , at $\alpha = \alpha^*$ enhances the trend in these variables as α rises: $\lambda > (<) \rho$ now means that dp/dg not only

rises (falls) with rising α at all $\alpha \neq \alpha^*$ but jumps up (down) at $\alpha = \alpha^*$. We are in Figure 4(c) or (d).

So why might dp/dg , and hence g , jump in different directions at $\alpha = \alpha^*$ depending on the ability of donors and activists to convert, and not just mobilize, voters? The intuition is as follows. As α crosses the threshold and you move to the polar equilibrium, two forces are acting on the power of increased g to raise more votes by increasing political capital. On the one hand, provided c is large enough,¹⁷ the absolute increase in capital from a given rise in g is now enhanced. On the other hand, because the number of your existing donors and activists underwent a discontinuous leap when you moved out from the centre ground, each new unit of political capital you pick up brings a lower return. Which tendency will dominate, the fact that rising g will bring in more new capital, or the fact that each unit of this new capital will be less productive? The answer is that it may very well depend on whether ‘productive’ means productive in mobilizing voters or converting them. If you are converting voters, the increase in your share of the total vote is proportional to the number you convert. Turnout is unaffected and you are simply taking voters away from the other side. Admittedly you are doing so at a diminishing rate but the diminishing returns are not as bad as they are when you are in the business of mobilizing voters who prefer you already. In this latter case, not only does each additional unit of political capital mobilize fewer additional voters but its contribution to your share of the total vote diminishes even faster, because each time you are picking up new voters against an ever larger voter base (created by you and your rival as you pushed up turnout with your political capital.) It is therefore entirely possible for the leap from the

median voter outcome to the polarity outcome to strengthen the incentive to give up rents for capital that will convert voters, but weaken the incentive to give up rents for capital that will merely mobilize them.¹⁸ In that case, the key variable dp/dg could jump either way at $\alpha = \alpha^*$, depending on what your donors and activists are best at doing.

However, even if the upward (downward) trend in g is interrupted rather than enhanced at α^* , it will still reach its absolute maximum or minimum at $\alpha = 1$. $\alpha = 0$ by contrast, is not invariably a maximum or a minimum.

Proposition 3 *g will always have an extreme value at $\alpha = 1$, but not necessarily at $\alpha = 0$.*

Proof. *When $\frac{w}{1-w}$ (relative weight of λ to ρ in determining dp/dg) is maximized, then dp/dg will be maximized (minimized) when $\lambda > \rho$ ($\lambda < \rho$). But when $\alpha = 1$, $dV'/dJ = 0$ and so $\frac{w}{1-w}$ becomes infinite (equation (7)). Hence dp/dg will always have an absolute maximum or minimum value at $\alpha = 1$. But at $\alpha = 0$ things are less certain. If political capital is only mobilizing voters and not converting them, $dJ/dK = 0$. When $\alpha = 0$ it is also the case that $\partial V'/\partial K = 0$ and so $\frac{w}{1-w} = 0$ (equation (8)). dp/dg thus has an extreme value at $\alpha = 0$ as well as $\alpha = 1$. But when $dJ/dK > 0$, not only does $\frac{w}{1-w}$ remain positive when $\alpha = 0$ but, as equation (9) shows, the size of the jump in dp/dg as α crosses α^* does not tend to zero as $\alpha^* \rightarrow 0$. Therefore there must be some α^* close enough to zero that the jump in dp/dg at α^* is greater than the change in dp/dg between $\alpha = 0$ and $\alpha = \alpha^* - \partial$. If these two changes are in opposite directions (i.e. if we are not in the situations depicted by Figure 4c and 4d) then dp/dg will have a more extreme value at $\alpha = \alpha^* + \partial$ than at $\alpha = 0$. In*

such a case we are in Figure 4(e) or (f). ■

Once again, then, the ability of political capital to convert voters and not just mobilize them adds ambiguity to an otherwise clear-cut result. The logic this time is that the effect at $\alpha = 1$ is unambiguous; capital no longer suffers diminishing returns as it gets the electorate out to vote, and the number of potential voters is irrelevant. Political capital is already doing everything to win the election and the size of the potential electorate doing nothing, and this will be the best (worst) case for the public welfare if political capital possesses more (less) political wisdom than the electorate at large. When $\alpha = 0$ the situation is more nuanced. The ability of any additional political capital to mobilize electors has been reduced to zero but its ability to convert them may have increased: we are at the median voter equilibrium and the stock of political capital is smaller. Once again we have to ask the question: does the increased marginal ability of capital to deliver converts outweigh the decreased marginal ability of g to deliver capital? Suppose the answer is yes. Then, should a party raise g by enough to recruit, say, 1000 more potential voters, the indirect effect via political capital will have delivered more of them than would be the case in the polarity outcome. If political capital is less swayed by popularity shocks than are the potential voters themselves, it follows that it will now need a bigger popularity shock for the 1000 voters to disappear again. In other words, so far as the conversion of voters is concerned, dp/dg is up.

It is thus possible that, even if $\lambda > (<) \rho$, $\alpha = 0$ will not be the worst (best) outcome for the standard of government. But this result, to repeat, depends on donors and activists being able to convert voters to their side, not just get existing

supporters out to vote. If all political capital does is bring out its core vote, then welfare has an absolute maximum or minimum at $\alpha = 0$ as well as $\alpha = 1$. The ability of political capital to make converts is necessary – and not sufficient – to upset this result.

If the result does stand, then a benevolent authority which could manipulate α , for the general good, to wherever it liked, could ignore the zigzag in the curves in Figure 4: we want whatever policies will give political capital the largest (if $\lambda > \rho$) or smallest (if $\lambda < \rho$) influence on the outcome of the election. But what if $\alpha = 1$ and $\alpha = 0$ are unattainable? Take, for instance, the option of making voting compulsory. If this really did raise turnout to 100%, political capital would be unable to mobilize any voters because the law would have done this already. In this case $\alpha = 0$. But before inferring that compulsory voting must therefore produce the worst (best) of all outcomes if donors and activists possess more (less) political wisdom than ordinary voters, we should note that even under compulsory voting it is unlikely that party workers and advertising would ever be completely superfluous, as a look at Australia will show. There is still a role for suasion, encouragement, and knocking up one hour before the polls close.

And if compulsory voting does serve to reduce α , but not to zero, it could conceivably represent a welfare improvement in any of the cases depicted in Figure 4 with the exception of case 4c. In all the others we can find a lower and a higher α such that dp/dg is raised by moving α from the higher to the lower value. In cases 4a and 4e, this is despite the fact that $\lambda > \rho$. It is true that a case for compulsory voting could exist in these cases only if we start off at the polar equilibrium, but empirical

research often finds that there are systematic party differences in ideology, as found e.g. in the US by Ansolabehere et al (2001) and Poole and Rosenthal (1984 and 1997) and internationally within analyses of Manifesto content (Budge et al, 1987). In the context of our model this evidence suggests that α is high enough for democracies to end up above α^* regardless of the relative political wisdom of political capital and the electorate. So, even in cases 4a and 4e, if α is close to (but greater than) α^* , then a reduction in α of the right size would improve government quality. Assuming compulsory voting does reduce the role of capital (to the extent people now go and vote anyway), it could raise economic welfare in both these cases. We might even want to vary the penalties for failing to vote (which presumably reduce α as they strengthen) to try and get to the optimal α .

To summarize this section, you want the election result to be called not by the people who give a government the most credit for good performance but by those who see most clearly what counts as merit and what counts as luck. Voters or activists who give credit or blame where it is not due will hinder the cause of better government, even if they give the politicians larger rents with which they can console themselves for the unfairness of it all. If voters and activists fall into the opposite error – mistaking competence for luck – the effect is much the same, except that now, instead of dK/dh or dJ/dh having risen, dK/dg or dJ/dg has fallen.

5 THE EFFECTS OF LEGAL LIMITS ON CAMPAIGN EXPENDITURE

We now generalize the vote production function to consider the consequences of legal limits on total election spending, as well as separate limits at the national and local levels. In contrast with Section 4, instead of examining how government quality is driven by the importance of political capital through the parameter α , we now examine the consequences of limiting aspects of K . Farrell and Webb (2000) document limits on total campaign spending in general elections in Canada, France, Ireland, Japan as well as in presidential elections in the US. There are also limits on spending at the constituency level in the UK and New Zealand.

To see what happens when campaign spending is limited, we must start treating donors and activists separately. If $V = f(M[g, h], A[g, h], J[g, h])$ and if we now write $\frac{dM/dg}{dM/dh}$ and $\frac{dA/dg}{dA/dh}$ as λ_1 and λ_2 respectively, then (6) becomes

$$h^* \frac{dp}{dg} = \frac{dV'/dg}{dV'/dh} = \frac{\lambda_1 \frac{dV'}{dM} \frac{dM'}{dh} + \lambda_2 \frac{dV'}{dA} \frac{dA'}{dh} + \rho \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}{\frac{dV'}{dM} \frac{dM'}{dh} + \frac{dV'}{dA} \frac{dA'}{dh} + \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}. \quad (10)$$

Suppose now that the government imposes a binding limit M^* on what parties can spend on an election. dV'/dM is now zero. What will happen to our measure of the standard of government dp/dg ?¹⁹ If we initially assume M and A to be perfectly unsubsittutable, so that dV'/dA is independent of M , (10) becomes

$$h^* \frac{dp}{dg} \Big|_{M=M^*} = \frac{\lambda_2 \frac{dV'}{dA} \frac{dA'}{dh} + \rho \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}{\frac{dV'}{dA} \frac{dA'}{dh} + \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}. \quad (11)$$

dp/dg will thus be raised (lowered) by the cash limit if $\lambda_1 < (>) w_c \lambda_2 + (1 - w_c) \rho$ where $w_c = \frac{\frac{dV'}{dA} \frac{dA'}{dh}}{\frac{dV'}{dA} \frac{dA'}{dh} + \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}$.

But this is on the basis that there is no substitutability between M and A . If they are even partial substitutes, any reduction in M will raise dV'/dA ; and the greater the substitutability, the stronger this effect. So the question now is whether a rise in dV'/dA will raise or lower the quality of government. From (11),

$$h^* \frac{d(dp/dg)}{d(dV'/dA)} \Big|_{dV'/dM=0} = \frac{(\lambda_2 - \rho) \frac{dA'}{dh} \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}{\left(\frac{dV'}{dA} \frac{dA'}{dh} + \frac{dV'}{dJ} \frac{\partial J'}{\partial h}\right)^2}$$

hence, if $\lambda_2 > \rho$, the position is as follows. The lower M^* , the more productive the substitute or part-substitute factor A ; and the more productive A becomes, the higher dp/dg . So, if the fact of imposing a limit on election spending damages the quality of government, any tightening of that limit will mitigate some of the damage. If the mere existence of a limit is good for the quality of government, tightening it will make things even better. Either way we are raising the potency of the politically wise activists with every dollar we remove from their substitute resource, the campaign fund. When by contrast $\lambda_2 < \rho$, a tighter restriction on M^* will still raise dV'/dA but this will now amplify any damage and reduce any benefit from the fact that M^* is limited at all.

<<COMP: Place Fig. 5 about here>>

Altogether the possibilities are:

(1) $\lambda_1 < w_c \lambda_2 + (1 - w_c) \rho$ and $\lambda_2 > \rho$. Here all restrictions on election spending are desirable, and the bigger the restriction the better. The spending limit removes

the influence on policy of donors, who are relatively ill-informed politically: tightening it then raises the influence of the activists, the wisest of the three groups.

(2) and (3) $\lambda_1 < w_c \lambda_2 + (1 - w_c) \rho$ and $\lambda_2 < \rho$. Setting a limit just below what parties would have chosen freely leads to better government, but the benefits tail off again as the limit is tightened. In case (2) any limit remains preferable to no limit but in case (3) some limits are strict enough to be worse than a free-for-all. Here, once again, it is a good thing to remove the influence of the donors, but you spoil things if you then ramp up the influence of the activists against that of the ordinary voters, who are wisest of all the three classes. If dV'/dA is sensitive enough to M , and the impact effect of limiting M weak enough, you end up in case (3) rather than (2).

(4) and (5) are the opposite cases to (2) and (3) respectively. Here $\lambda_1 > w_c \lambda_2 + (1 - w_c) \rho$ and $\lambda_2 > \rho$. A limit on election spending in itself is a bad but the damage will be reduced (and in case (4) actually reversed) by a strict enough limit. Having made the mistake of taking away the donors' powers to influence the government or would-be government, we make some amends by pushing up that of the activists.

Finally case (6) ($\lambda_1 > w_c \lambda_2 + (1 - w_c) \rho$ and $\lambda_2 < \rho$) is the case where any limit on election spending is bad, and it gets worse as the limit is tightened. The donors should never have had their influence on their party reduced; insult is then added to injury by favouring the activists against the more astute electorate-at-large.

So the optimal policy towards election spending is in each case is:

(1) and (4) zero limit.

(2) and (3) limit just below M_F (the amount the party would spend if not re-

stricted).

(5) and (6) no limit.

All the above, however, is relative to the substitutability of volunteers and money as the party goes about its work. As the substitution becomes more imperfect, the effect, as we have argued, is to lower the sensitivity of dV'/dA to the level of M^* ; all the slopes in Figure 5 become flatter. In particular, we might shift from case (4) to case (5). It is thus entirely possible that whether a zero limit or no limit on election spending is preferable comes down to the extent that money and volunteers can do one another's work.

But the substitutability between M and A may depend on the level at which the electioneering is taking place. They are likely to be closer substitutes at local than at national level, where there are some things that only money can do (buying television and radio time, buying advertisement space, hiring professional propagandists.) We examine the consequences of this by taking the simplest case, where M and A are perfect substitutes at local level²⁰ but not in the national campaign. To represent this we now write the vote production function as

$$V = M_1^\psi (M_2 + A)^{\alpha-\psi} J^{1-\alpha} \quad (12)$$

where M_1 is money spent on the national campaign (advertising, broadcasts, spin etc.) and ψ captures the effectiveness of this spending, M_2 is money spent on local campaigns and A is the effort put in by volunteers. In the absence of legal restrictions, a party's money (M) can be divided between M_1 and M_2 as it pleases. It can be seen

that M_2 and A are perfect substitutes in the production of votes.

A party trying to maximize its vote will, if allowed, split its funds between M_1 and M_2 so that $dV/dM_1 = dV/dM_2$. Given (12), this requires that $(\alpha - \psi)M_1 = \psi(M_2 + A)$ i.e.

$$M_2 = \frac{\alpha - \psi}{\alpha}M - \psi A.$$

This relationship will hold whether total election spending is unrestricted or held down to some M^* .

Let us therefore compare a limit of total spending of a given $M^* = \bar{M}$ and a limit on local spending of $M_2^* = \frac{\alpha - \psi}{\alpha}\bar{M} - \psi A$. Local spending will be the same in both cases, and therefore so will the value of dV'/dA – the volunteers have their potency increased by exactly the same reduction in the substitute M_2 . The difference between the two cases is that the limit on total spending as always cuts dV'/dM to zero. The limit on local spending also reduces dV'/dM – some money which could be more effectively spent at local level will now have to be spent nationally instead – but it doesn't reduce it to zero.

The situation is therefore as depicted in Figure 6, which is Figure 5 with the effects of local limits added. The horizontal axis always measures local spending M_2 , but the L line traces what happens to dp/dg when $M_2 = M_2^*$ (local limit) while the G line represents the case where $M_2 = \frac{\alpha - \psi}{\alpha}M^* - \psi A$. The L line is above or below the G line because with a limit on purely local spending dV'/dM is merely reduced, not zero. The lines have the same slopes because a given level of M_2 , however it was reached, gives us a given value of dV'/dA .

<<COMP: Place Fig. 6 about here>>

None of the optima change, except in case (4) where the optimum is now a local limit of zero. The one policy which is never optimal is a partial limit on M_2 : and the reason is simple. For partial limits to be better than zero limits *and* no limits, the impact effect (i.e. effect at $M_F - \delta$) of a restriction has to be positive, and for local limits to be better than general ones, the impact effect has to be negative.

6 CONCLUSIONS

In this paper we analyze the importance of campaign advertising and finance in determining voting equilibria and the quality of government. If this political capital is more skewed towards the political extremes than the electorate in general it may, but does not necessarily, pull the parties away from a Downsian equilibrium where both are at the centre. Whether it does so is sensitive to very small changes in its power to raise turnout, which could help explain the large and sudden changes in parties' ideological positions observed around the world.

The equilibrium level of rent-seeking, and hence the quality of government, depends on both the potency and the permitted level of political capital. The analysis hinges on three questions.

(1) Is it political capital (donors and activists) or ordinary voters who are better at assessing the quality of the government?

(2) Is political capital better at changing voters' party preferences or at delivering the votes of existing supporters?

(3) How close a substitute are activists and money at national and local level?

Whether we want to enhance or reduce the potency of political capital depends on the answers to questions (1) and (2). If it is activists and donors who are better at distinguishing between rent-seeking and random events which affect a government's performance through no fault of its own, then to maximize their influence on the result of the election is to maximize welfare. If ordinary voters are the better guardians of competent government, then we would want to maximize their influence and minimize that of political capital, if all the latter does is deliver the votes of existing supporters. Compulsory voting would be one way of doing this. If, however, donors and activists are capable of converting voters to their own side and not just getting existing supporters out to vote, the best result may be an interior solution where neither voters nor political capital have their potency at its possible maximum.

Whether we want to restrict the quantity of political capital, by putting limits on campaign expenditure, depends on the answers to questions (1) and (3). Because of concerns that contributors influence policy, limits on expenditure and donations have been called for and implemented in many different countries. In Section 5 we split political capital into money and volunteer effort. Whether financial limits improve government quality again depends on which factor has the greater power to deter rent-seeking, i.e. which factor has the most elastic supply as government improves, compared to its elasticity of supply in relation to popularity shocks. If donors' political wisdom is high, a limit on campaign spending will damage welfare. If donors' political wisdom is low and volunteers' political wisdom is high, then the tighter the limit the better. A finite nonzero limit on total spending is optimal only if it is the ordinary

voter who has the greatest political wisdom, and even this can never make a partial limit on purely local spending, as used in a number of countries, socially optimal.

APPENDIX

Proof of Proposition 1

For party L

$$h^* \frac{dp_L}{d\theta_L} = \frac{dV'/d\theta_L}{dV'/dh} = \frac{\frac{\partial V_L}{\partial K_L} \frac{dK_L}{d\theta_L} + \frac{\partial V_R}{\partial K_R} \frac{dK_R}{d\theta_L} + \frac{dV_L}{dJ_L} \frac{dJ_L}{d\theta_L} + \frac{dV_R}{dJ_R} \frac{dJ_R}{d\theta_L}}{\frac{\partial V_L}{\partial K_L} \frac{dK_L}{dh} + \frac{\partial V_R}{\partial K_R} \frac{dK_R}{dh} + \frac{dV_L}{dJ_L} \frac{dJ_L}{dh} + \frac{dV_R}{dJ_R} \frac{dJ_R}{dh}} \quad (\text{A1})$$

where $\frac{dJ}{d\theta} = \frac{\partial J}{\partial \theta} + \frac{dJ}{dK} \frac{dK}{d\theta}$. Since $dJ_L + dJ_R \equiv 0$, $\frac{dJ_L}{d\theta_L} = -\frac{dJ_R}{d\theta_L}$ and $\frac{dJ_L}{dh} = -\frac{dJ_R}{dh}$ and, since we are considering a Nash equilibrium, $\frac{\partial V_L}{\partial K_L} = -\frac{\partial V_R}{\partial K_R}$, $\frac{dV_L}{dJ_L} = -\frac{dV_R}{dJ_R}$. Putting all this into (A1) gives:

$$h^* \frac{dp_L}{d\theta_L} = \frac{\frac{\partial V_L}{\partial K_L} \left(\frac{dK_L}{d\theta_L} - \frac{dK_R}{d\theta_L} \right) + 2 \frac{dV_L}{dJ_L} \frac{dJ_L}{d\theta_L}}{\frac{\partial V_L}{\partial K_L} \frac{dK'}{dh} + 2 \frac{dV_L}{dJ_L} \frac{dJ_L}{dh}} \quad (\text{A2})$$

where $K' = K_L - K_R$. Then, since in a Nash equilibrium $J_L = 0.5$ and since $V = K^\alpha J^{1-\alpha}$, so that $\frac{\partial V}{\partial K} = \frac{\alpha V}{K}$ and $\frac{\partial V}{\partial J} = \frac{(1-\alpha)V}{K}$ and given equation (5) (A2) simplifies to

$$h^* \frac{dp_L}{d\theta_L} = \frac{-\alpha c + 4(1-\alpha) \frac{dJ_L}{d\theta}}{\frac{\alpha}{K_L} \frac{dK'}{dh} + 4(1-\alpha) \frac{dJ_L}{dh}} \quad (\text{A3})$$

Therefore,

$$h^* \frac{d^2 p_L}{d\theta_L^2} = \frac{4(1-\alpha) \frac{d^2 J_L}{d\theta_L^2}}{\left(\frac{\alpha}{K_L} \frac{dK'}{dh} + 4(1-\alpha) \frac{dJ_L}{dh} \right)}.$$

Given equation (2) $[J_L = \frac{\theta_L + \theta_R}{2} + \omega(g_L - g_R) + \mu K_L^\gamma - \mu K_R^\gamma + \Omega h]$,

$$\frac{d^2 J_L}{d\theta_L^2} = \frac{d}{d\theta_L} \left(0.5 + \frac{dJ_L}{dK_L} \frac{dK_L}{d\theta_L} + \frac{dJ_L}{dK_R} \frac{dK_R}{d\theta_L} \right).$$

and $\frac{dJ_L}{dK_L} = -\frac{dJ_L}{dK_R}$. Hence, given also equation (5):

$$\frac{d^2 J_L}{d\theta_L^2} = -c \frac{d}{d\theta_L} \left(K_L \frac{dJ_L}{dK_L} \right) = -c\mu\gamma^2 K_L^{\gamma-1} \frac{dK_L}{d\theta_L}.$$

Since $\frac{dK_L}{d\theta_L} < 0$, $\frac{d^2 J_L}{d\theta_L^2} > 0$ and hence $\frac{d^2 p_L}{d\theta_L^2} > 0$.

There is thus no interior equilibrium. $dp/d\theta$ will not necessarily reach a turning-point at all between $\theta = 0$ and $\theta = 0.5$, but if it does, the parties will be at a pessimum, not an optimum.

Proof of Proposition 2

As we have seen, the only two possible equilibria are $\theta_L = z = 1 - \theta_R$ and $\theta_L = \theta_R = 0.5$. However, consider what would happen at the disequilibrium position $\theta_L = z$, $\theta_R = 0.5$. If $\alpha = 1$, then $V' = K|_{\theta=z} - K|_{\theta=0.5} > 0$. If $\alpha = 0$, then $V' = J|_{\theta=z} - J|_{\theta=0.5} < 0$, while $dV'/d\alpha = \alpha (\log K_L - \log J_L - \log K_R + \log J_R) > 0$. Therefore, when $\theta_L = z$, $\theta_R = 0.5$, there is a unique α (call it α^*) at which $V' = 0$ and hence $p_L = 0.5$; and when $\alpha > (<) \alpha^*$, $p_L > (<) 0.5$. Now suppose $\alpha > \alpha^*$ and $\theta_L = \theta_R = 0.5$. Then L will raise p_L by moving to $\theta_L = z$ and R will bring p_L back down to 0.5 by moving to $\theta_R = 1 - z$. Similarly, if $\alpha < \alpha^*$ and $\theta_L = z = 1 - \theta_R$, R will lower p_L by moving to $\theta_R = 0.5$ and L will bring p_L back to 0.5 by moving to $\theta_L = 0.5$ too, which completes the proof.

Proposition A1: At $\alpha = \alpha^*$,

$$h^* \left[\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M \right] = \frac{2(\lambda - \rho)(1 - \alpha^*) V_M V_P}{(X_P + Y_P)(X_M + Y_M)} \left[\alpha^* \left\{ \left(\frac{dK'/dh}{K} \right)_P - \left(\frac{dK'/dh}{K} \right)_M \right\} + 2(1 - \alpha^*) \left\{ \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_P - \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_M \right\} \right]$$

Proof (omitting the L subscript): Our expression for $h^* \frac{dp}{dg}$ is

$$h^* \frac{dp}{dg} = \frac{\lambda \frac{dV'}{dK} \frac{dK'}{dh} + \rho \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}{\frac{dV'}{dK} \frac{dK'}{dh} + \frac{dV'}{dJ} \frac{\partial J'}{\partial h}}.$$

Or, if we call $\frac{dV'}{dK} \frac{dK'}{dh}$ and $\frac{dV'}{dJ} \frac{\partial J'}{\partial h}$ X and Y respectively, $h^* \frac{dp}{dg} = \frac{\lambda X + \rho Y}{X + Y} \therefore$

$$\begin{aligned} h^* \left[\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M \right] &= \frac{(\lambda X_P + \rho Y_P)(X_M + Y_M) - (\lambda X_M + \rho Y_M)(X_P + Y_P)}{(X_P + Y_P)(X_M + Y_M)} \\ &= \frac{(\lambda - \rho)(X_P Y_M - X_M Y_P)}{(X_P + Y_P)(X_M + Y_M)} \end{aligned}$$

where $X_P Y_M = \left(\frac{dV'}{dK} \frac{dK'}{dh} \right)_P \left(\frac{dV'}{dJ} \frac{\partial J'}{\partial h} \right)_M$ and $X_M Y_P = \left(\frac{dV'}{dK} \frac{dK'}{dh} \right)_M \left(\frac{dV'}{dJ} \frac{\partial J'}{\partial h} \right)_P$. Given that

$$\frac{dV'}{dK} = \frac{\partial V'}{\partial K} + \frac{dV'}{dJ} \frac{dJ}{dK} = \frac{\alpha^* V}{K} + 2(1 - \alpha^*) V \frac{dJ}{dK}$$

and $\frac{dV'}{dJ} = 2(1 - \alpha^*) V$ then

$$X_P Y_M = \left[\alpha^* \frac{V_P}{K_P} + 2(1 - \alpha^*) V_P \left(\frac{dJ}{dK} \right)_P \right] \left(\frac{dK'}{dh} \right)_P \cdot 2(1 - \alpha^*) V_M$$

and

$$X_M Y_P = \left[\alpha^* \frac{V_M}{K_M} + 2(1 - \alpha^*) V_M \left(\frac{dJ}{dK} \right)_M \right] \left(\frac{dK}{dh} \right)_M . 2(1 - \alpha^*) V_P$$

therefore

$$h^* \left[\left(\frac{dp}{dg} \right)_P - \left(\frac{dp}{dg} \right)_M \right] = \frac{2(\lambda - \rho)(1 - \alpha^*) V_M V_P}{(X_P + Y_P)(X_M + Y_M)} \left[\alpha^* \left\{ \left(\frac{dK'/dh}{K} \right)_P - \left(\frac{dK'/dh}{K} \right)_M \right\} + 2(1 - \alpha^*) \left\{ \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_P - \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_M \right\} \right]$$

Proposition A2: $\left(\frac{dK'/dh}{K} \right)_M - \left(\frac{dK'/dh}{K} \right)_P > 0$.

Proof: dh , an increase in h increases (reduces) the ideological range of L 's (R 's) political capital by $b.dh$ at both ends (see section 3.1 above) where this is possible. However, in the polarity case $\theta_L - z = 0$ and there is no more capital on the leftward fringe to rake in if h rises: the most left-wing person in the country is already working for party L . But it still gains activists at its rightward fringe $\theta_L + z (= 2z)$ and R will lose activists at both ends. Hence (using equation (3)):

$$\frac{dK_L}{dh_L} - \frac{dK_R}{dh_L} = b (K|_{\theta=2z} + K|_{\theta=1-2z} + K|_{\theta=1}) = bQ (\exp(0.5c) + 2 \exp[c(0.5 - 2z)]).$$

Using (4), which gives the result that when $\theta_L = z$, $K_L = \frac{Q}{c} (\exp(0.5c) - \exp[c(0.5 - 2z)])$, we have

$$\frac{dK_L/dh}{K_L} = bc \frac{\exp(0.5c) + 2 \exp[c(0.5 - 2z)]}{\exp(0.5c) - \exp[c(0.5 - 2z)]}.$$

In the median voter case a rise in h will, on our above assumptions, rake in activists on both L 's fringes and cause an equal loss to R . The sum of L 's gain and R 's loss

can be written as:

$$\frac{dK_L}{dh_L} - \frac{dK_R}{dh_L} = 2b (K|_{\theta=0.5} + K|_{\theta=0.5-z}) = 2bQ (1 + \exp(cz)).$$

Using (4), which gives the result that when $\theta_L = 0.5$, $K_L = \frac{Q}{c} (\exp(cz) - 1)$ we have

$$\frac{dK_L/dh}{K_L} = 2bc \frac{\exp(cz) + 1}{\exp(cz) - 1}$$

and therefore

$$\frac{1}{bc} \left[\left(\frac{dK'/dh}{K} \right)_M - \left(\frac{dK'/dh}{K} \right)_P \right] = \frac{2(\exp(cz) + 1)}{\exp(cz) - 1} \frac{\exp(0.5c) + 2 \exp[c(0.5 - 2z)]}{\exp(0.5c) - \exp[c(0.5 - 2z)]}.$$

Writing this as $\frac{H_1}{H_2} - \frac{H_3}{H_4}$, it must have the same sign as $\frac{H_1 H_4 - H_3 H_2}{\exp[c(0.5-z)]} = \exp(cz) + 3 \exp(0.5cz) - 4$. Given that z and c are both positive, this expression must be positive too.

Proposition A3: *If c is sufficiently large, $\left(\frac{dK'}{dh}\right)_P > \left(\frac{dK'}{dh}\right)_M$*

Proof: Proposition A2 showed that

$$\begin{aligned} \left(\frac{dK'}{dh}\right)_P - \left(\frac{dK'}{dh}\right)_M &= bQ [\exp(0.5c) + 2 \exp(0.5 - 2z)c - 2 - 2 \exp(zc)] \\ &= bQ \exp(0.5c) [1 + 2 \exp(-2zc) - 2 \exp(-0.5c) - 2 \exp(z - 0.5)c]. \end{aligned}$$

Given our assumption that $z < 0.5$, the expression in the square brackets $\rightarrow 1$ as $c \rightarrow \infty$.

FOOTNOTES

Acknowledgement. We are grateful to two anonymous referees for their constructive comments which have helped to substantially improve the paper.

1. Exact numbers of volunteers are not readily available, though an article in Time magazine (Newton-Small, 2008) reported an estimated 8mn for the Obama campaign. Obama's advantage in volunteers was at least clearly manifest in direct voter contact. Data from the American National Election Studies Time Series Study reveal that 17% of the population were contacted directly by the Democrats against 9% for the Republicans (Panagopoulos and Francia, 2009).
2. The legitimacy of this argument is addressed in the literature review below.
3. Notwithstanding the question posed by Ansolabehere et al (2003).
4. There are already a large number of separate explanations for polarization. This literature is partially reviewed below.
5. Our review of this literature is limited. Ashworth (2008) provides a good introduction to the issues involved.
6. This idea is also explored by Denzau and Munger (1986) who model special

interest groups as potential donors.

7. If campaign advertising has no effect on voting, then the question of why parties advertise at all is hard to answer. Parties demonstrably do not have unlimited resources and could use scarce finances in other ways.

8. May (1973) also cites Hume (1748) and Tocqueville (1835) as supporting the 'Leaders as Centrists' model.

9. Schofield (2007) proposes that low quality politicians move away from the centre, in order to distinguish themselves at least on one dimension.

10. Roemer (2001) studies the behavior of intra-party factions and finds that the presence of factions can help to solve the problem of cycling in political equilibria. Related to the theory proposed in this paper Cox (2006) studies redistributive politics and argues for a role for mobilization.

11. Of course whether or not this perception is correct is a question for posterity.

12. This occurs when spending on the public good is zero. To make ideas concrete, suppose that g represents the proportion of the fixed public purse spent usefully. That which is not usefully spent is termed 'rent'.

13. We acknowledge that activists and donors in reality may also be motivated by relative distance. For example leftist activists may support (desert) their party when it positions itself centrally given an extreme (central) position taken by the right. This response would place a greater premium on centralizing. A defence of the approach taken here is that activists and donors, behaviorally in practice, are ideological as distinct from pragmatic. When their own party ‘betrays’ its roots, activists and donors become alienated - regardless of the position taken by the opposition. In Hirschman’s (1970) terminology their capacity to exercise ‘voice’ may depend on compatible ideology. A supportive anecdote is the experience of the UK between 1997 and 2005. According to Marshall (2009) the highly centralist Labour administration lost over half of its membership during this period whilst the consistently rightist (at least until the election of David Cameron in December 2005) Conservatives lost only 25% of its membership. Given the secular decline in party membership and that the two parties maintained a more or less constant ideological stance over this time frame the data in this instance at least are supportive of the ‘absolutist’ approach taken in the paper.

14. In the case of activists this seems obvious. In the case of donors a possible foundation for this argument comes from Prat (2002), discussed above. Donors recognize that higher quality (better governance) politicians are more likely to be elected, and hence are more predisposed to donate.

15. The ‘median voter’ and polarity’ outcomes would merge in the event of $\theta_L =$

$z = 0.5$. We rule out such a high value of z as implausible.

16. Heath et al. (1985) also document a marked shift in the 1980s towards polarized two-party competition in the UK.

17. Why is c decisive? Because, as you move from M to P , the extra political capital you get from higher g increases so far as you are now in the fat lands of political radicalism, with plenty of capital at your (and your opponent's) margins. But this is counteracted by the fact that at P you get no additional capital on your own extreme fringe because they're all working for you already. However, if c is high enough, the capital you take away from your opponent at its extreme fringe will (a) dominate all other considerations and (b) be much larger at P than at M .

18. Looking at equation (9) the mobilization effect will strengthen as we move to the polarity outcome if $\left\{ \left(\frac{dK'/dh}{K} \right)_P > \left(\frac{dK'/dh}{K} \right)_M \right\}$ i.e. never (see proposition A3 in the Appendix), while the conversion effect will strengthen if $\left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_P > \left(\frac{dJ}{dK} \frac{dK'}{dh} \right)_M$ i.e. if $\left(K^{\gamma-1} \frac{dK'}{dh} \right)_P > \left(K^{\gamma-1} \frac{dK'}{dh} \right)_M$.

19. In linking M to g , we are not assuming M depends only on g . This would be to ignore the money given to political parties in the hope of receiving favors. All we are saying is that, *ceteris paribus*, a party which hands rents back to the country may get more financial support as a result, and will not get any less i.e. $dM/dg \geq 0$.

20. What counts as local? The answer is that we draw the borderline at whatever level maximizes the distinction between campaigning where volunteers and money can and cannot stand in for each other. Space on national or statewide television (M_1) would be difficult to substitute with activists, whilst volunteers could be replaced by salaried campaign staff (M_2).

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FIGURES

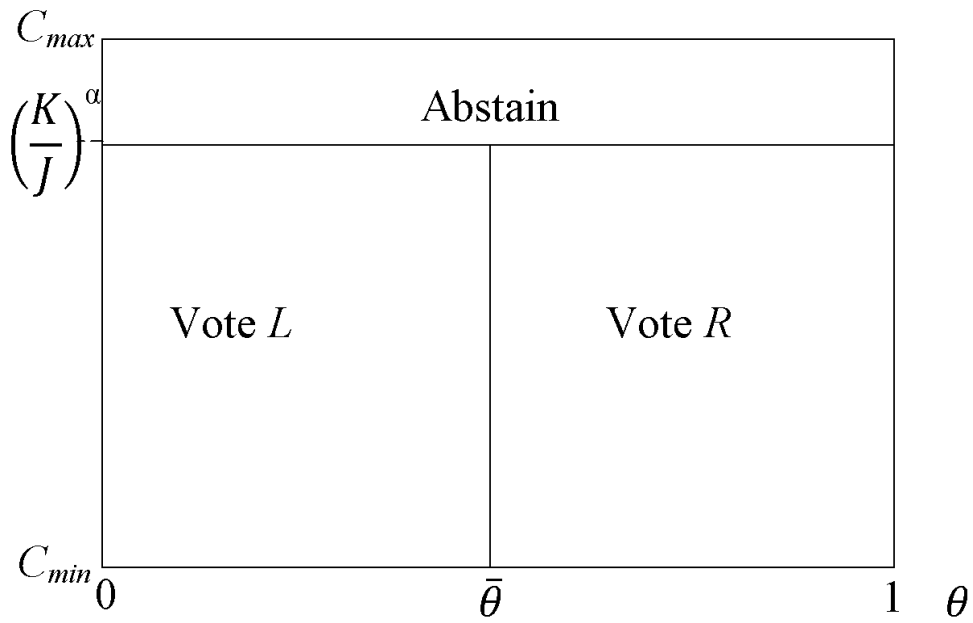


Figure 1: Voting/Abstention Decisions

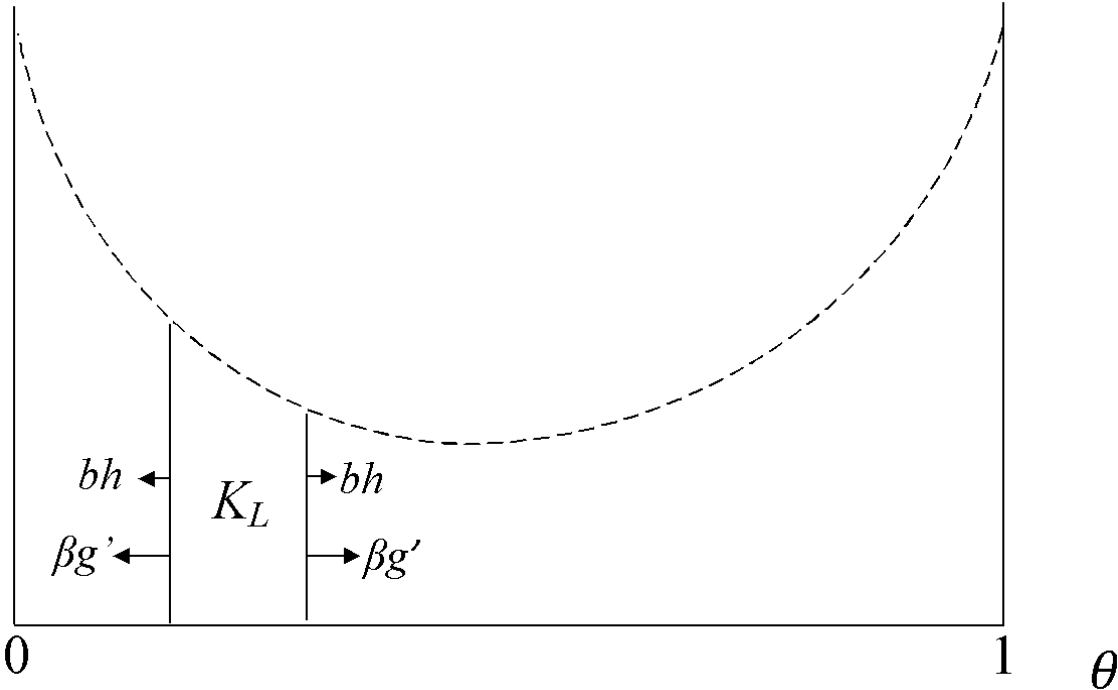


Figure 2: Political Capital

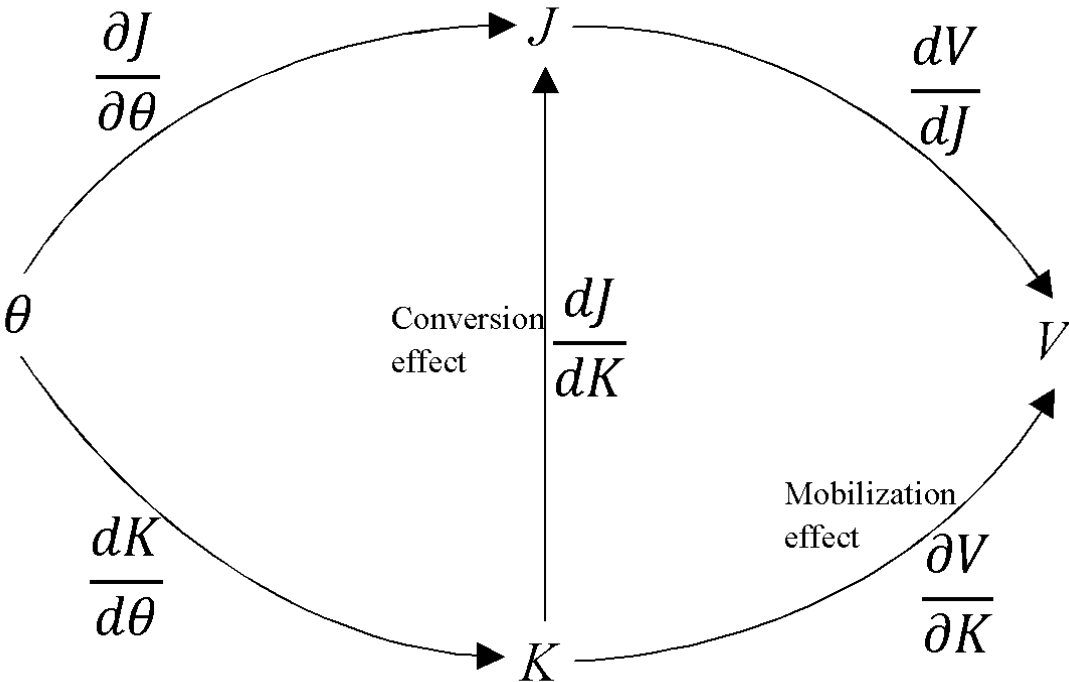


Figure 3: Channels Through Which Ideology Impacts the Vote

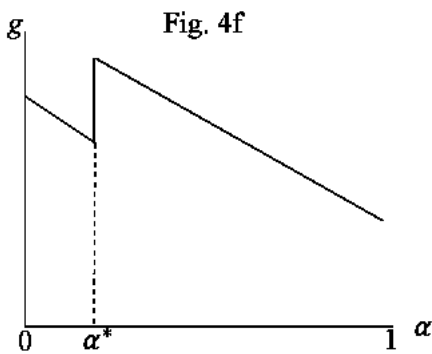
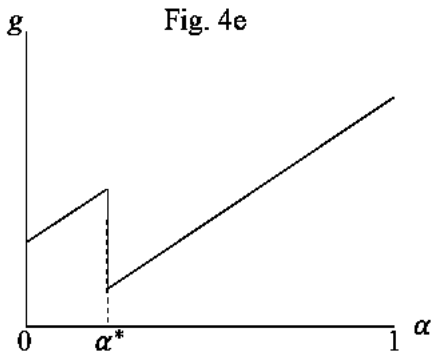
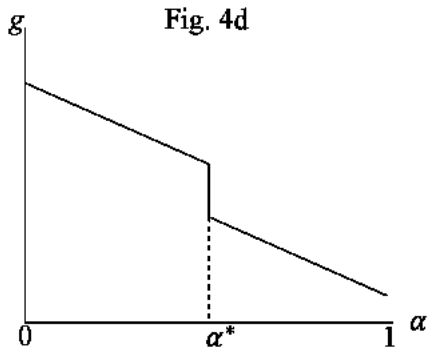
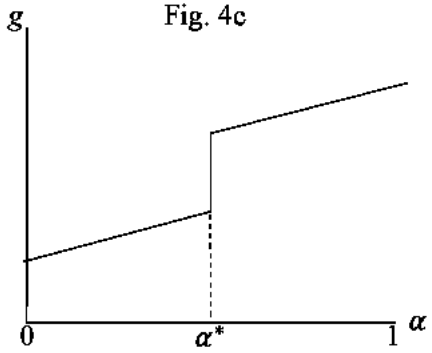
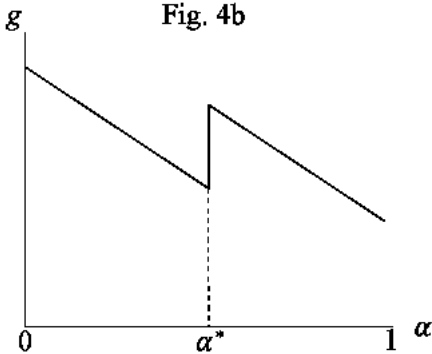
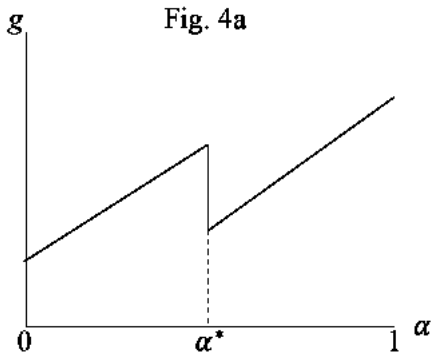


Figure 4: How α Impacts the Quality of Government

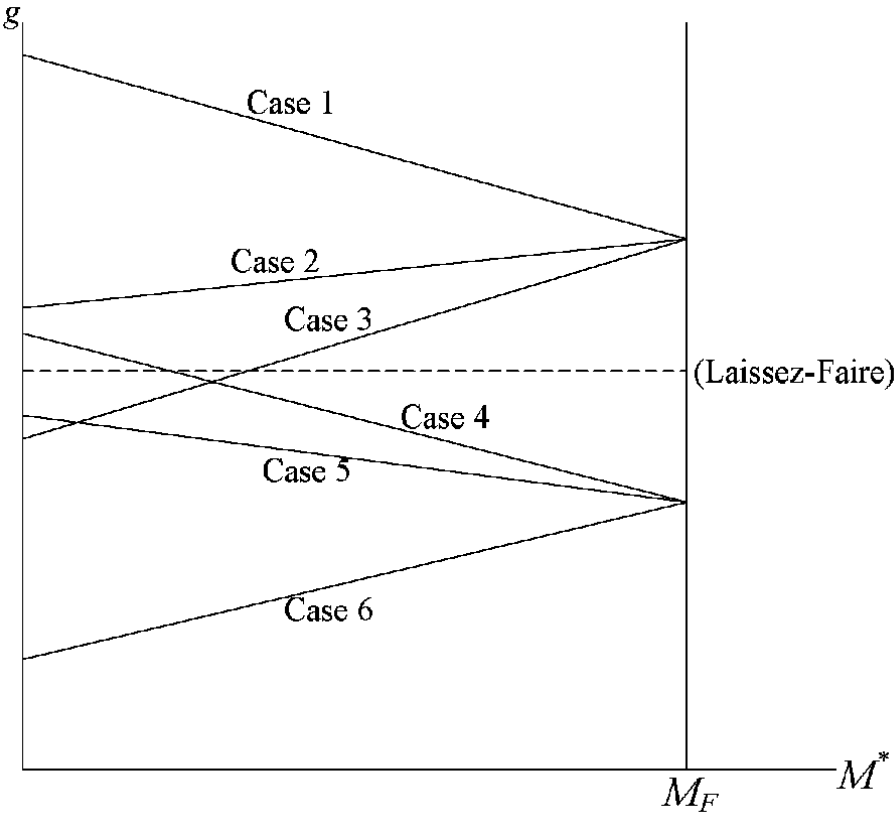


Figure 5: The Effects of a Limit on Total Campaign Expenditure

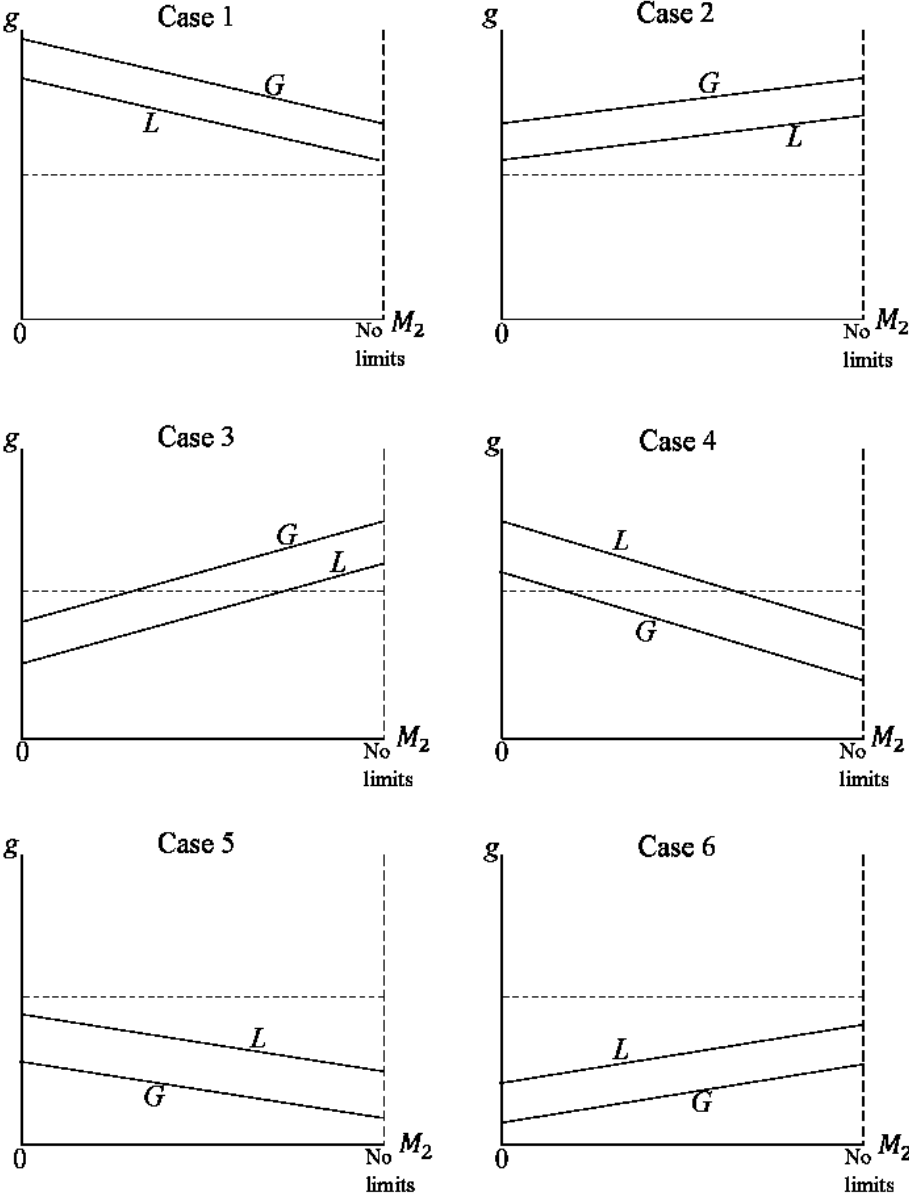


Figure 6: The Effects of Limits on Total (G) and Local (L) Campaign Expenditure