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The Economic Consequences of Political Donation Limits*

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Abstract

The economic consequences of limits on political donations depend on the degree of political competition. Donors, who are ideologically aligned with candidates, decide how much to contribute to their own candidate. They may benefit from rent-seeking by their own candidate but dislike rent-seeking by the opposition. Increased rent-seeking by politicians thus generates campaign contributions for themselves but also mobilizes donations to the opposing candidate, potentially to a greater extent. This latter effect acts as a deterrent to rent-seeking when contributions finance electoral campaigns and positively affect election chances. When political competition is low, incumbent donors outnumber opposition donors and limits reduce rent-seeking. When political competition is high, donors are equalized and laissez-faire reduces rent-seeking. Consistent with these hypotheses, data from the US states suggest that limits are associated with better policies and stronger growth performance at low levels of political competition, whilst laissez-faire is preferred when political competition is high.

1 Introduction

This paper proposes that limits on political donations are mistaken when political competition is sufficiently high. Besley et al (2010) establish that political competition has a strong beneficial role in terms of improving policy and generating better growth outcomes in the context of the US states. In this paper we argue that this mechanism is enhanced by political donations, provided that the degree of political competition is sufficiently high. However if political competition is low, then money acts corrosively, and thus political donations should be constrained.

At a basic level the question of whether to limit political donations depends on the motives of donors. In our model donors are ideologically aligned and may benefit or be harmed by rent-seeking by their own candidate. The conception of rent-seeking used in this paper is general (and is defined more fully below) but necessarily implies some overall wastefulness in policy. Importantly donors also dislike, potentially to a greater extent, rent-seeking by the opponent. Hence increased rent-seeking in office can have the effect of both increasing donations to the candidate herself, but also increasing donations to the opposition. When donations finance campaigns that positively affect electoral outcomes, the response of opposition donors acts as a brake on rent-seeking.

The question of whether or not limits on political donations are to be preferred therefore depends on the extent of political competition. Lower political competition means relatively higher donations and core voters for the incumbent candidate, and a reduced likelihood of the opposition winning. Incumbent politicians therefore discount this outcome and rent-seeking rises as the incumbent's own rent-seeking incentives are aligned with their support base. Limits on donations thus reduce rent-seeking at low levels of political competition. On the other hand high political competition means more numerous opposition donors. Here both candidates face stronger incentives to reduce rent-seeking, because of the impetus to reduce donations to the opposing candidate, thereby enhancing their own electoral chances when donations finance effective electoral campaigns. Here *laissez-faire*, by which we mean absence of limits on donations, is the optimal policy.

Empirical evidence supports these hypotheses. Using the same data set as Besley et al (2010) and extending it through 2014, we find consistent evidence that limits improve policy,

and indeed are associated with higher economic growth in reduced form regressions, when political competition is low. However, when political competition is high, then it is laissez-faire which is associated with improved policy and growth.¹ At current *average* levels of political competition then the results suggest that laissez-faire should be preferred, although limits are predominant in practice (currently applying in 38/48 states). Moreover 7 out of the 10 states with laissez-faire are currently experiencing political competition levels that are sufficiently low that limits would in these instances be preferred. Hence we conclude that most states are, at the time of writing, getting their campaign finance laws wrong.

A key issue, on which the literature has not reached consensus, is the extent to which donors are motivated by rent-seeking. Typically donations have been modeled in the literature as either ‘position-induced’ or ‘service-induced’ (Ashworth, 2008). Donations buy ideological influence in the former case, and special favors at the expense of citizens in the latter. However, Ansolabehere et al (2003) document that the majority of campaign contributions in the case of the US come in the shape of small donations from individuals. Arguably such donations are inconsistent with policy procurement (of either type).² Instead Ansolabehere et al (2003) propose that donating (for many at least) is a form of political participation or consumption. One possible story is that donors obtain a return in votes generated from ensuing advertising: either because voters believe its claims or because its mere existence is an endorsement signal. 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 the case of small donors the quid pro quo is not obvious.³

Our model is therefore flexible on donor motives. These can vary from the ‘strongly

¹On political competition Becker (1958), Stigler (1972), Wittman (1989) and Acemoglu (2003) all draw a parallel between monopoly in economics and the absence of competition in politics. In both instances welfare is generally compromised when power is uncontested. In practice scale economies, high entry costs, commitment problems, voter ignorance or outright corruption of the process, may all serve to reduce political competition and undermine the democratic ideal. Nonetheless, the idea that political competition is always virtuous is not a total consensus. Acemoglu and Robinson (2006) suggest a mechanism wherein competition can lead to instability - leading to greater discounting by the incumbent. Analyzing the effect of political competition on policy and growth is the substance of Besley et al (2010), which we build upon in this paper.

²Milyo, Primo and Groseclose (2000) also argue that there is no obvious link between political favors and contributions.

³Similarly the literature on charitable giving is not consensual on donor motives, e.g. see Andreoni (2006).

benign’, when they are aligned with the electorate at large, to the ‘strongly malign’, when they are aligned with the politicians, who we assume to be rent-seeking. Arguably the former position underpins the idea of donations as a form of free speech,⁴ whilst the latter relates to the buying of favors or straightforward (service-induced) corruption. In the extreme cases, the policy implications are trivial - if donors are strongly benign then laissez-faire is preferred, and if donors are strongly malign limits are preferred. However, the analysis below identifies an intermediate category, where donors are defined as ‘weakly benign’. Here the policy implications are conditional on the degree of political competition.

The extant theoretical literature examining the consequences of contribution limits has not reached consensus.⁵ Prat (2002) finds that a ban can be welfare-improving depending on whether the gain from reduced policy distortion outweighs the lost advertising channel through which candidate quality may be signalled. Coate (2004b) argues more strongly that limits on donations can be Pareto optimal even when advertising is fully truthful.⁶ Nonetheless Coate acknowledges (p. 642) that in his model the donors’ incentives are narrowly defined as motivated only through (service-induced) direct transfers. On the other hand Coate (2004a) analyzes the case of position-induced contributions and finds that the imposition of limits raises the likelihood that parties will select extremist candidates - to the detriment of the welfare of ordinary citizens.⁷

In empirical work Milyo (2012) and Cordis and Milyo (2013) ask respectively whether contribution limits affect trust and confidence in state government, and whether they affect public corruption in the US. In both cases no relationship is found. Similarly Primo and Milyo (2006) find no significant link between campaign finance laws and political efficacy.⁸

⁴The first amendment underpinned the decision of the Supreme Court of the United States to strike down campaign expenditure limits in *Buckley v. Valeo* (1976). More latterly it also informed *McCutcheon v. the Federal Election Commission* (2014).

⁵Stratmann (2005) is an excellent review of the earlier literature.

⁶A further beneficial channel, identified by Cotton (2012), is that limits will reduce politician access costs, thereby encouraging informative lobby group formation.

⁷Moreover Dahm and Porteiro (2008) and Cotton (2009) emphasize the functional importance of interest groups as information providers. Contribution limits can serve to restrict this channel.

⁸Relatedly, there is some disagreement on the impact of limits on political competition. Stratmann and Aparicio-Castillo (2006) find that limits lead to greater political competition, in particular closer elections in the lower house of US state governments, whilst Lott (2006) conversely finds that contribution limits in US state senate elections reduces competitiveness. Following Besley et al (2010) we instrument for political

As we show below all of this is consistent with our notion of ‘weakly benign’ donors. In this case limits will lead to greater rent-seeking when political competition is high, but less rent-seeking when political competition is low. It follows that the arguments for laissez-faire are more potent when competition is high - indeed the key rationale for laissez-faire in general, whilst the arguments for limits (that they will act against corruption or diversion of resources) are most potent when political competition is low.

This paper is also related to the literature examining the effectiveness of campaign expenditure on voting. Its effectiveness (or lack thereof) might say something about the perceived motives of donors. If donations were service-induced, voters might recognize that extravagant campaigns simply signal promised favors, and thus would not respond to the advertising, as argued by Coate (2004b). However, given position- (or even altruistically-) induced donations - donors who are aligned with the electorate - then a positive vote response is viable.⁹ In support of the first argument, Levitt (1994) found little effect using evidence from US House elections. However, recent work is more supportive, e.g. Ansolabehere and Iyengar (1996) and Rekkas (2007). Johnston and Pattie (2006) apply Levitt’s methodology for the case of the UK and find that challenger campaign spending in particular has a substantial impact on the vote. Gerber (2004) provides a rationale for the weak evidence relating to incumbents, distinguishing between the objectives of maximizing vote share and gaining re-election. Gerber and Green (2000) and Green and Gerber (2008) identify interesting differences in effectiveness across types of campaigning: some are estimated to substantially increase vote shares, but others, notably broadcast advertising, have often been found to be relatively expensive in terms of delivering votes (Krasno and Green, 2008). Overall, this literature certainly doesn’t allow us to rule out the possibility that advertising, and more generally candidate or party resources, play some role in affecting the vote.

Following the theory the empirical analysis examines how policymaking and growth change depending on the existence of limits on donations by individuals to particular political candidates, and how this relationship changes with political competition. The analysis first

competition in the empirical analysis to deal with potential endogeneity in the political competition variable.

⁹Potters et al (1997) analyze a mechanism through which uninformed voters glean positive signals through campaign expenditure funded by an informed donor.

follows previous literature by first taking the presence of limits to be exogenous.¹⁰ Indeed Milyo (2012) describes variation in campaign finance laws as a "natural experiment". The econometric results consistently find that the existence of limits are detrimental for policy at high levels of competition, for example are associated with high taxes and the absence of right-to-work laws, but are beneficial for policy at low levels of competition. Similarly growth is negatively related to limits at high levels of competition, whilst the association is positive when political competition is low.

However, whilst these results are indicative, there remains the possibility that state-level campaign finance regulation is determined jointly with state level policy. (After all, the central message of this paper is that rent-seeking conditionally depends on campaign finance regulation, and a rent maximizing incumbent might set the financing regime accordingly.) To alleviate this concern we supplement the analysis using an instrument variable (IV) approach. As we discuss below the clear driver of the existence of limits on donations was the Watergate scandal, which culminated in the resignation of President Nixon in 1974, and a resultant hardening of the Federal Elections Campaigns Act also in that year. In the following year 15 states switched, permanently, from laissez-faire to the imposition of limits. Because Watergate was an issue for federal government it can be considered exogenous in terms of its effect on state-level policy. In order to obtain geographic variation in the 'Watergate effect' we propose an instrument where the effect is discounted with geographic distance from Washington DC - the argument being that the event was more salient for proximate states. Diagnostic testing indicates that distance as well as the timing of this event influenced the regime choice. The results from the IV regressions support the inference from the OLS regressions: limits are found to be harmful at high levels of political competition and beneficial at low levels of political competition.

We also examine how political competition affects economic policy and growth in a reduced sample consisting of the 15 states that switched regime in 1975, permanently, from laissez-faire to a system of limits. Within these 15 states we find a significant change in how political competition affects policy and growth, following the regime change. Prior to 1974,

¹⁰Stratmann (2011) and Milyo (2012) take contribution limits as exogenous in their empirical analysis. Besley and Case (2003) also take this approach their review of the effects of political institutions in the US.

under laissez-faire, in both policy and growth regressions, the beneficial effect of political competition is estimated to be statistically significant as would be expected. Post-1974, under limits, the effect of political competition, on both policy and growth, is reduced. Under the identifying assumption that the regime change in this instance was exogenous, then we infer that this change itself caused the change in the political competition gradient.

The next section develops the theoretical analysis, and formalizes the proposition that rent-seeking in government depends on the existence of limits on political donations, and that this relationship is conditioned by the level of political competition. Section 3 contains the empirical analysis and section 4 concludes.

2 Theory

The model is a generalization of Besley et al (2010) to include donors and a voting response to political advertising. There are two candidates standing for election, denoted L and R . Both are motivated by the rents they can extract from the electorate,¹¹ which in equilibrium are non-zero because of probabilistic voting. The electorate is split into three factions. There is an ideological spectrum from 0 (where L is positioned) to 1 (where R is positioned) with mass points at 0 and 1 representing habitual voters who vote for their candidate regardless of campaign advertising or indeed differences in rent-seeking. The sizes of these two factions are denoted by γ_L and γ_R , where the relative advantage of the left is denoted $\lambda = \gamma_L - \gamma_R$.¹² The third group (size $\sigma = 1 - \gamma_L - \gamma_R$) are swing voters, spread out uniformly along the ideological spectrum. The model departs from Besley et al in allowing a role for donations. In the model the habitual voters are also potential donors. If donations are to be characterized by ‘consumption’ - as argued by Ansolabehere et al (2003), then it seems plausible that the donors be partisan.¹³ Furthermore it seems plausible that numerical advantage in core voters

¹¹Rent extraction and resource diversion are synonymous in this analysis. Both are the antonym of pro-growth policies.

¹²Without loss of generality the Democrats are modeled as potentially possessing electoral advantage, i.e. $\gamma_L \geq \gamma_R$ (essentially because we have Southern Democrats in mind). The model is symmetric and the results below would not be altered if instead it were the right in a position of dominance.

¹³In a survey of donors Barber (2016) finds that individual donors consistently rank ideological concerns as highly important in determining donation decisions.

will also map to numerical advantage in donations.

2.1 The political-economic model

Candidates' ideological platforms are fixed exogenously at 0 or 1. Following Besley et al (2010) in the first stage of the model candidates commit to economic policy, conducive or otherwise to growth and thereby implying a level of rent extraction. Donors contribute funds in the second stage - assuming they are permitted - in order to maximize their own objective function, and voting occurs in the final stage. The model is solved backwards.

All electors vote for the candidate whose policies they think will give them the most utility. A swing voter with ideology i obtains the following payoffs from left and right governments:

$$U_L^i = -\beta i - r_L + \frac{\mu}{2}(M_L - M_R) + \frac{\eta}{2} \quad (1)$$

$$U_R^i = -\beta(1 - i) - r_R - \frac{\mu}{2}(M_L - M_R) - \frac{\eta}{2} \quad (2)$$

where β denotes the (preference) weight attached to ideology. Define r_C ($C = L, R$) as rents associated with candidate C .¹⁴ Rent-seeking could take the form of lower effort by elected officials, or it could represent wasteful or indulgent spending programmes, and outright corruption as monetary transfers. Besley et al (2010) establish that such policies are detrimental to growth. M_C represents funds raised by candidate C , which then facilitates advertising expenditure and η is a relative popularity shock distributed uniformly between $-\frac{1}{2\xi}$ and $\frac{1}{2\xi}$.

To model utility as directly responsive to campaign expenditure is a reduced form representation of arguments outlined in the introduction.¹⁵ This is undeniably a short cut, but a full treatment of this issue is beyond the scope of this paper. One possible justification is that donations pay for favorable publicity which raises the perceived utility of getting that

¹⁴In our model we explicitly model rent-seeking, whereas Besley et al (2010) examine a payoff-function (in their model v) that depends monotonically on a policy variable (in their model - τ). Our approach is to model rents directly. The substance of the results relating to political competition are very similar.

¹⁵Maloney and Pickering (2013) model voting as a direct function of 'political capital', which includes finances.

candidate in. Alternatively the advertising may indirectly (Prat, 2002) or directly (Coate, 2004b) signal candidate quality, and having money in the utility function at least captures these consequences in the voting decision. The debate concerning advertising effectiveness is encapsulated in the parameter $\mu \geq 0$. Given (1) and (2) the indifferent voter is characterized by

$$i^* = 0.5 + \frac{r_R - r_L}{2\beta} + \frac{\mu(M_L - M_R)}{2\beta} + \frac{\eta}{2\beta}, \quad (3)$$

hence given the uniform distribution of the popularity shock the probability of a left-wing victory (p_L) is

$$p_L = 0.5 + \frac{\beta\xi\lambda}{\sigma} + \xi(r_R - r_L + \mu(M_L - M_R)). \quad (4)$$

As conventional in this literature it is assumed that the popularity shock η is sufficiently large to rule out corner solutions.¹⁶ The second term on the RHS encapsulates political competition. Its effect on the candidates' chances declines with greater popularity shocks (lower values of ξ), and increases with β , the weight placed on ideology by the swing voters (which, as with Besley et al (2010), serves to reduce the potency of the popularity shock). Political competition also increases (i.e. $\frac{\beta\xi\lambda}{\sigma}$ gets closer to zero) when the proportion of swing voters (σ) increases.

Donors come from the habitual voters (γ_L and γ_R). They are "citizen-donors" in that an election loss yields ideological loss as well as a utility loss due to rent-seeking by the opposing candidate. Donors are also potentially motivated by rent-seeking of their own candidate. Formally the individual (j) donors' payoffs are represented by:

$$U_L^{D_L^j} = \theta r_L - \frac{\phi(M^j)^2}{2} \quad (5)$$

$$U_R^{D_L^j} = -\beta - r_R - \frac{\phi(M^j)^2}{2} \quad (6)$$

$$U_L^{D_R^j} = -\beta - r_L - \frac{\phi(M^j)^2}{2} \quad (7)$$

$$U_R^{D_R^j} = \theta r_R - \frac{\phi(M^j)^2}{2} \quad (8)$$

¹⁶See Persson and Tabellini (2000) pp. 54.

where $U_L^{D^j}$ captures the utility to the leftist donors of a left-wing victory whilst $U_R^{D^j}$ defines their payoffs under a right-wing victory. $U_L^{D^j}$ and $U_R^{D^j}$ symmetrically define the payoffs to the right-wing donors.^{17,18} $\phi > 0$ is a quadratic costs parameter¹⁹ and M^j is the money donated by individual donor j . θ characterizes donor motives as follows:

When $\theta = -1$ donors are entirely benign. Their interests are perfectly aligned with those of the electorate.

When $-1 < \theta < 0$ donors are strongly benign. They expect a net disadvantage from their candidate's rent-seeking but not to the extent that voters do.

When $0 < \theta < 1$ donors are weakly benign.²⁰ They expect to gain from any rents collected by their candidate but to lose more from rents collected by the other candidate.

When $\theta > 1$, donors are malign. They are more positive about their own-candidate rents than they are averse to rents by the opposition.

If $\theta = 1$, donors' interests are perfectly aligned with those of their candidate. If θ actually exceeds 1, then donors expect to do even better from government rents than the government itself does. This might happen, for instance, if both the donors and their preferred candidate are going to profit from a tariff or licensed monopoly which keeps out competition in one or more industries but the donors stand to gain even more than the candidate does. We do

¹⁷The model assumes that only habitual voters donate. In principle floating voters could also donate, perhaps motivated against rent and by ideological distance from the partisan positions. Allowing floating voter donations might dampen but it would not eliminate the main argument of the paper. Moreover, in support of the approach taken here, in practice Barber (2016) identifies ideological alignment as the most important characteristic identifying individual donors in survey data from the 2012 election cycle.

¹⁸One implication of these payoff functions is that for either of the habitual voter groups, donations by donors with similar preferences can be welfare-enhancing (depending on θ), whilst those by donors with opposite tastes are welfare-decreasing. However, even if rent-seeking benefits a specific group of partisans, by definition it entails welfare-loss at the aggregate.

¹⁹Donors also clearly incur financial costs of donating, which we model as quadratic. A simple plausible justification for this could be that larger donations incur increasing utility losses.

²⁰We prefer 'weakly benign' to 'weakly malign' because under these preferences individual donor aversion to opposition rent-seeking exceeds their weaker liking for own-candidate rent-seeking. Net preferences, at the individual level, are averse to rent.

assume, however, that θ has an upper limit in order to rule out the implausible case in which higher rents attract so much donor money that their net effect on the candidate's chance of winning is non-negative. This would result in both parties going for infinite rents. θ , then, is low enough to satisfy the condition $\frac{dp_C}{dr_C} < 0$. (This can be shown to mean that $\theta < \frac{\phi + \xi N \mu^2 \gamma_R}{\xi N \mu^2 \gamma_L}$ when N is the state population size and $\gamma_L > \gamma_R$.) We have set the lower limit of $\theta = -1$ because if it were any lower, donors would be even more averse to their candidate collecting rents than the electorate as a whole. We cannot think of any circumstances in which this would arise.

In practice political candidates receive donations from many sources, indeed from contributors with differing motives (though we do not model this heterogeneity in this paper). Hence increased rent-seeking might induce some donors to increase donations whilst others may reduce donations. The parameter θ can be interpreted as capturing how donations in aggregate respond to political rent-seeking. The case of $\theta = -1$ (benign donors) thus characterizes 'position-induced' contributions, whilst $\theta > 0$ (malign donors) increasingly represents 'service-induced' contributions.²¹

Note that the model ignores the common good (or cooperation) problem of donors. A possible theoretical objection is that individual donors would rationally choose to free-ride and thus not donate. However, as noted in the introduction the motives of donors are not completely understood. Indeed the common-good problem suggests there would be zero donations, certainly at the 'small donor' level, which evidently is not the case. The puzzle is related to the paradox of voting: both voting and donating are costly, and the benefits of doing so are vanishingly small, yet voting and donating still occurs. One possible countenance to the paradox of voting is Riker and Ordeshook's (1973) 'minimum rational choice theory', where voters also define their political effectiveness "in terms of the influence of groups of people like themselves... Consequently they are motivated to take action because they feel they can collectively make a difference" (Clarke et al, 2004, p. 248.) The argument applies

²¹At a deeper level the parameter θ could be considered endogenous to the level of donations. For example particular favours might merit particular prices. The approach taken here simplifies by specifying the parameter as exogenous, but still considering alternative values which it might take. In defence of this approach the degree to which donors might benefit from rent-seeking is at least to some extent (and on average) likely to be constrained by external factors such as (for example) the law.

equally (indeed perhaps more strongly) to donors as it does to voters. Hence donors, like voters, may still positively act.

When donors are malign, candidates have an unambiguous incentive to increase rents, for themselves and also to please donors in order to raise money for advertising. Conversely when donors are strongly benign they effectively hold the candidates to account and it pays candidates to raise money by cutting rents: were they to increase them this would now both mobilize opposition donors, and deter their own support base. The interesting case is where donors are ‘weakly benign’ - when $0 < \theta < 1$. Here, increasing rents generate a positive, though relatively small, financial response from the candidate’s own support base, whilst simultaneously mobilizing the opposition’s support to a larger extent. However, as one candidate’s support base grows larger than the other’s - i.e. as political competition deteriorates - it may reach the point where its rent-seeking gives it a larger aggregate financial, and therefore electoral, gain than is handed to its opponent. These issues are explored in greater detail below.

Leftist donors choose donations to maximize $p_L U_L^{D^j} + (1 - p_L) U_R^{D^j}$ whilst right-wing donors maximize $(1 - p_L) U_R^{D^j} + p_L U_L^{D^j}$. Using (4) and (5)-(8) yields

$$M_L = \frac{\xi \gamma_L N \mu (\beta + r_R + \theta r_L)}{\phi} \quad (9)$$

$$M_R = \frac{\xi \gamma_R N \mu (\beta + r_L + \theta r_R)}{\phi} \quad (10)$$

where $M_L = \int_j M_L^j dj$ is total leftist donations and $M_R = \int_j M_R^j dj$ is total rightist donations. Hence money raised increases the greater the ideological stakes (β) and also when rent-seeking by the opposing candidate increases. Whether or not donations increase with own-candidate rent-seeking depends on the extent to which donors themselves accrue rents themselves when their candidate wins - the parameter θ . Combining (9) and (10) yields

$$M_L - M_R = \frac{\xi N \mu (\beta \lambda + (\gamma_L \theta - \gamma_R) r_L + (\gamma_L - \gamma_R \theta) r_R)}{\phi},$$

or, using the definitions $\gamma_L - \gamma_R = \lambda$ and $\gamma_L + \gamma_R = 1 - \sigma$,

$$M_L - M_R = \frac{\xi N \mu \left(\beta \lambda + \left[\left(\frac{1-\theta}{2} \right) (1 - \sigma) - \left(\frac{1+\theta}{2} \lambda \right) \right] r_L + \left[\left(\frac{1-\theta}{2} \right) (1 - \sigma) + \left(\frac{1+\theta}{2} \lambda \right) \right] r_R \right)}{\phi}. \quad (11)$$

Finally, candidates' expected payoffs are given by

$$U_C = p_C r_C.$$

Since $U_C = p_C r_C$, $\frac{dU}{dr} = 0$ implies that

$$r_C = \frac{p_C}{-\frac{dp_C}{dr_C}}. \quad (12)$$

Equation (12) shows that r_C is increasing in p_C , i.e. that the candidate with the best chance of winning will sacrifice some of this advantage for increased rents. He will, however, remain the favorite to win: were he to take so much rent that p_L falls below 0.5 then (again from 12) his rents would be below those of the disadvantaged candidate too. As this is self-contradictory, we can conclude that $\lambda > 0$ implies both $p_L > 0.5$ and $r_L > r_R$.

From (12) we can derive expected total government rents under limits and laissez-faire. In general:

$$E(R) = p_L r_L + p_R r_R = \frac{p_L^2}{-\frac{dp_L}{dr_L}} + \frac{p_R^2}{-\frac{dp_R}{dr_R}}. \quad (13)$$

To analyze the case of limits on donations we make the simplifying assumption that in this case $\frac{dM_L}{dr_L} = \frac{dM_R}{dr_R} = 0$. If the cap on donations is binding, then changes in policy (i.e. rent-seeking) at the margin will not affect total donations. In this case from (4) $-\frac{dp_L}{dr_L} = -\frac{dp_R}{dr_R} = \xi$ and so, using \bar{R} to denote expected rents with limits and writing p_L simply as p ,

$$\bar{R} = \frac{1}{\xi} (p^2 + (1 - p)^2). \quad (14)$$

Under limits, there is an unambiguous positive relationship between total rent-seeking (\bar{R}) and p . Note that both variables change with the level of political competition (λ) - analyzing this is the subject of the next section. \bar{R} also falls as ξ increases. Higher values of ξ reduce

the importance of the popularity shock, hence serve to improve policy (indeed under either regime).

Under laissez-faire, then putting (11) into (4) implies that

$$p = 0.5 + \frac{\xi\beta\lambda(1 + \xi m)}{\phi} - \pi_1 r_L + \pi_2 r_R \quad (15)$$

where $m = N\mu^2$ and

$$\pi_1 = \frac{\xi\phi + \xi^2 m \left[\left(\frac{1-\theta}{2}\right)(1 - \sigma) - \left(\frac{1+\theta}{2}\lambda\right) \right]}{\phi} = -\frac{dp}{dr_L} \quad (16)$$

$$\pi_2 = \frac{\xi\phi + \xi^2 m \left[\left(\frac{1-\theta}{2}\right)(1 - \sigma) + \left(\frac{1+\theta}{2}\lambda\right) \right]}{\phi} = -\frac{dp_R}{dr_R}. \quad (17)$$

Hence, writing R for expected rents under laissez-faire,

$$R = \frac{p^2}{\pi_1} + \frac{(1-p)^2}{\pi_2}. \quad (18)$$

In the case of laissez-faire the relationship between R and p depends on the composite parameters π_1 and π_2 .

2.2 Rents, political competition and campaign donations

We are now in a position to see when limits will reduce government rents. A preliminary result is:

Proposition 1 *The greater the political competition, the lower the rents.*

Proof. See Appendix. ■

Proposition 1 reflects standard arguments in favor of political competition. The stronger the constraints of electoral competition the better the quality of government. As rising λ gives one candidate a better chance of winning than the other, the stronger candidate will trade in some of her chances for additional rents, while the weaker candidate will mitigate their poorer chances by giving up rents. But given that the dominant candidate is still

more likely to win, the rise in its rents raise expected rents by more than the fall in the weaker candidates's rents reduces them. The logic here is the same as the main prediction in proposition 1 of Besley et al (2010). Furthermore:

Proposition 2 *The more malign the donors, the higher the laissez-faire rents.*

Proof. See Appendix. ■

With malign donors, candidates have a second incentive to collect rents: to increase the utility of donors, raise more money from them, spend it, increase their own chance of election, and trade some of this additional chance for still more rents. Furthermore, under malign donors, the question of whether or not limits should be imposed is simple:

Proposition 3 *If donors are malign then rents under laissez-faire (i) are higher than under limits at maximum political competition and (ii) increase more rapidly as competition declines than they do under limits. Therefore with malign donors rents are always higher under laissez-faire.*

Proof. See Appendix. ■

The intuition of this is that laissez-faire opens a channel through which candidates wish to please donors and, because politician and donor motives are aligned, money is raised by increasing total rents. As political competition deteriorates these arguments apply more strongly: there are now increasing numbers of (malign) donors contributing to the electorally advantaged candidate, and more open finance contributes to their chances of winning. However, when donors are weakly benign, the issue is more complex:

Proposition 4 *If donors are weakly benign ($0 < \theta < 1$), rents are lower under laissez-faire when political competition is high but higher under laissez-faire when political competition is low. Therefore they increase more rapidly as competition declines than they do under limits.*

Proof. See Appendix. ■

If donors are benign (even weakly so) and there is perfect political competition ($\lambda = 0$), candidates will give up more rents under laissez-faire than under spending limits because laissez-faire gives them the added incentive of raising more money than the opposition by

sacrificing rents. As political competition falls, however, the dominant candidate will trade in some of its increased probability of winning for higher rents. Since laissez-faire enhances her chances of winning still further (because she will have more money to spend than her rival by virtue of her bigger donor base) she will ‘purchase’ even more rents. The negative effect of rent-collecting via increased donations to the opposition becomes less of a consideration when that opposition is relatively small. If donors are only weakly benign, there will be some level of political uncompetitiveness at which laissez-faire leads to higher expected rents than spending limits do.

On the other hand if donors are strongly benign, then laissez-faire is unconditionally the preferred regime:

Proposition 5 *If donors are strongly benign rents are lower under laissez-faire at all levels of political competition.*

Proof. *See Appendix.* ■

In this case declining competition cannot overcome the initial incentive that candidates have to give up rents under laissez-faire.

Proposition 6 *If donors are entirely benign then rents under laissez-faire are not only lower than under limits, but increase more slowly as competition declines than they do under limits.*

Proof. *See Appendix.* ■

Increasing rents now loses so much campaign money that the stronger candidate’s incentive to raise rents as competition declines is now weaker under laissez-faire than under limits (when the loss of money does not matter.) Exactly the same applies to the weaker candidate’s incentive to cut rents, but the effects on the stronger candidate dominate the picture because she is more likely to be elected.

Whether or not limits will lower average rent-seeking in government thus depends on two factors: donors’ motives and the extent of political competition. When donors are malign it is unambiguous: regardless of political competition, laissez-faire should be avoided. However, if donors are strongly benign, then regardless of the degree of political competition, advertising

and free donations act to enhance the democratic process. When donors are weakly benign, the amount of political competition makes all the difference.

Figure 1 depicts the various possibilities. All the curves slope upwards (proposition 1) and, with laissez-faire, the more malign the donors the higher the degree of rent-seeking (proposition 2). The malign donors' laissez-faire curve is above and steeper than the 'limits' curve (proposition 3). The curve for weakly benign donors under laissez-faire intersects the curve with spending limits (proposition 4), the curve for strongly benign donors stays below the curve with spending limits (proposition 5) and the curve for entirely benign donors does the same, with the gap between the two now increasing in λ (proposition 6).

The most interesting case is that of weakly benign donors ($0 < \theta < 1$). For values of θ in this range, we know from proposition 4 that rents under laissez-faire are lower than under limits when there is maximum political competition ($\lambda = 0$) but that as political competition deteriorates this result will eventually be reversed. If λ is large enough, the dominant candidate is incentivized to raise rents, in part because this now gives smaller financial benefits to the opposition as their donor base shrinks.

This is why weakly benign donors are the most interesting ones. Otherwise the debate over laws governing campaign finance has little traction. When donors are unambiguously malign, then limits are surely desirable. When they are clearly aligned with the electorate - i.e. strongly benign - their preferences will be served by advertising with a positive informative role. The fact that this debate is as vociferous as it is, suggests that we do not have a clear idea over donor motives. Perhaps there is truth to both sides of the argument.

The clear insight from this analysis is the conditioning role of political competition. If this is high, then free-speech and advertising might be expected to have a positive role in the democratic process. Here the competition for contributions works to complement the competition for votes. However if political competition is low, then permitting donations might only serve to exacerbate rent-seeking in government. Laissez-faire can either intensify competition or entrench a near-monopoly.

3 Empirical Evidence

The theory above guides the empirical work. Limits on donations are hypothesised to have a beneficial impact on policy and growth under low political competition, but be harmful under high levels of political competition. To investigate these hypotheses we build on the empirical work of Besley et al (2010) and examine annual data for the US States over the period 1950-2014.²² Section 3.1 describes the key explanatory variables used in the analysis. In subsection 3.2 we analyze policy and in subsection 3.3 we investigate the (reduced-form) link between growth and the existence limits and how this changes with observed political competition. Subsection 3.4 investigates the robustness of the results when the existence of limits is instrumented using an interaction of the Watergate time effect in 1975 and geographic distance from DC. This subsection also focuses specifically on the 15 states which permanently changed their policy from laissez-faire to limits at this point in time. This particular regime switch plausibly was driven by exogenous events, in particular the establishment of the Federal Election Commission and the strengthening of the Federal Election Campaign Act in 1974, both of which stemmed from the Watergate scandal. Subsection 3.5 addresses the question of whether or not policy in practice is optimal, given observed measures of political competition.

3.1 Data

The dependent variables follow Besley et al (2010) and are described below. The key driving variables are political competition and the presence or not of limits on political donations. The political competition measure (κ_{st}) is an update of that used in Besley et al (2010), originating from Ansolabehere and Snyder (2002).²³ This averages out, state by state and election year by election year, the Democratic and Republican votes for all the state officials being elected in that year.²⁴ The measure increases as the difference between the vote shares

²²Besley et al (2010) examine data up until 2001.

²³We are grateful to Jim Snyder for providing an updated dataset containing data through 2014.

²⁴The length of the slates varies: in four of the states we analyze (Arkansas, Maine, New Hampshire and New Jersey) it consists simply of the Governor, while at the other extreme Oklahoma adds the Lieutenant-Governor, Secretary of State, Attorney-General and nine other officials. Having more elections does not of course give a State greater weight in our calculations: as said, the overall Democratic and Republican votes

of the two main parties in state elections declines towards zero. Formally $\kappa_{st} = -|d_{st} - 0.5|$ where d_{st} is the average Democrat vote share in all state-wide races in state s at time t . Higher κ thus means increased competition: in terms of the model in section 2, κ corresponds to $-\left|\frac{\xi\beta\lambda(1+\xi m)}{\phi}\right|$ in equation (15), which in the case of limits ($M_L = M_R$) simplifies to $-\left|\frac{\xi\beta\lambda}{\phi}\right|$.

Figure 2 depicts year-averages across states of the political competition data over time. As Besley et al (2010) discuss, the main story concerning political competition in the United States in the second half of the twentieth century is its increase over time in the Southern states.²⁵ Even though the poll taxes and literacy tests (and other barriers to voting) were formally eliminated in 1965, political competition in many of these states remained significantly less than the national average for most of the 20th century.

Interestingly, more recently the data show a slight decline in average political competition (on average in both the southern and non-southern states). Whilst still nowhere near as low as that observed earlier in the southern states the decline is of some interest. Potentially this reflects growing polarization - perhaps into ‘red’ and ‘blue’ states in part via voter migration (Tam Cho et al, 2013), but whatever its cause, the trend is of interest in its own right as well as potentially having implications for legislation for political contributions.

Institutional data on political finance comes from Milyo et al (2011). To characterize whether a regime has limits or operates under *laissez faire* we use an indicator variable defined by the presence of limits on donations by private individuals to specific candidates. It should be acknowledged that campaign finance regulations can take many different forms, for example limits on expenditure as well as donation limits for organizations. By Federal statute no state has implemented expenditure limits since 1974, so there is less usable variation in this policy variable. We focus on limits on individual donors because donations from private individuals represents the majority of total donations. For example Ansolabehere et al (2003) report that \$2.4bn out of the \$3bn total donated in the 1999-2000 election cycle came from individuals. There is also a reasonable correspondence between the individual donation limits series and the existence of limits on organizations. (The correlation coefficient between the

on each occasion are averaged out before being entered as a single figure.

²⁵The group of southern states are Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia and West Virginia.

two series is 0.51.)

A further challenge is that in practice limits (where they exist) vary in their stringency from state to state, and also often vary depending on the electoral race (for example with larger amounts often allowed in Gubernatorial races). A sufficiently large (and non-binding) limit would essentially amount to *laissez-faire*. Nonetheless, it is likely that limits are set to bind in practice.²⁶ Following the theory above we argue that the presence of limits would represent the first-order effect. For example take the case of equal numbers of donors - as long as the limits bind (regardless of their level), then limits will imply that $M_L = M_R$ - corresponding to the case of limits analyzed above. The level of the donation limit would not matter, but its presence does.

There are other features of the political finance regime not encapsulated by the individual donor limits indicator. After 2014 (i.e. beyond the last year of our sample) the cap on aggregate donations (i.e. to all candidates) will be eliminated following *McCutcheon v. the FEC*. This ruling represents a shift towards *Laissez Faire*, although has no implications for limits on donations made to specific candidates.

We maintain that the individual donations indicator variable is an appropriate overall measure of the extent to which campaign finance is regulated across states and through time. Table 1 and Figure 2 describe these data, showing that there has been a trend towards mandating limits across the US. At the start of the sample only Maryland and New Hampshire enforced limits, while by 2014 over 75% of states did. Arguably 2014 may denote a ‘high water-mark’ regarding limits on political finance. In particular if the *McCutcheon* ruling is translated into state legislation, then at least donors will be free to support unlimited candidate numbers, even if the extent to which they can support individual candidates is still limited. Also notable in the data is the clustering in ‘regime-switching’ (from *laissez-faire* to limits) that occurs in 1975. This event is discussed in more detail in subsection 3.4. Overall, there is interesting and usable variation in the start-date in which states have applied limits (if indeed they have at all).

²⁶At the time of writing data from the National Conference of State Legislatures indicate limits generally set between \$1000-\$5000 depending on the race as well as the state.

3.2 Policy

Following Besley et al (2010) we analyze three policy variables - total state tax revenue as a percentage of aggregate personal income, state infrastructure spending measured by the percentage share of capital investment in government expenditure, and whether a state has a right-to-work law. Undoubtedly these policy variables are imperfect proxies for rent-seeking or the quality of government. The true extent of rent-seeking is intrinsically difficult to measure, though like Besley et al (2010) (and many others) we argue that it is nonetheless worthwhile examining whether observed policy (and growth in the next section) changes with variables like political competition and particular institutions - and in the case of this paper with the existence of limits on political donations.

Rent-seeking is defined, broadly, as pursuit by a government of objectives of its own – however altruistic – that are opposed to those of the majority of the electorate. In the case of high taxes, an extensive literature finds taxes to be potentially growth-compromising (e.g. see Bergh and Henrekson 2011) and, at least in the context of the 50 American states, taxes have also been found to negatively affect the incumbent vote share (Besley and Case, 1995, and Niemi et al, 1995). It therefore may be unlikely that state governments which raise taxes are chasing votes, either directly or via improved growth performance. They might want to spend the receipts on a particular section of the electorate. Or it could be that they want an easy life and put low effort into ensuring the tax receipts are spent efficiently, necessitating higher taxes for any given results. In particular, if donors share in some of the government’s rents (as in the case of malign and weakly benign donors), then these rents would require that taxes be higher for a given level of useful spending. Either way higher taxes can be seen as a form of government rent to be traded off against electoral success.

In contrast the second variable - public investment - is argued by Besley et al (2010) to be positively related to government quality (hence negatively related to rent-seeking). High infrastructure spending represents low rents so far as it promotes structural non-cyclical growth, which gains votes (Maloney and Pickering, 2015) but may displace spending on other projects which are dearer to the government or sectional interests that it wants to help or please. A caveat here could be that infrastructure spending, for example the award of construction contracts, is particularly susceptible to resource diversion.

The third policy variable, right-to-work, protects workers who do not want to have to join a union in order to get a job. Here the implications for growth are perhaps more ambiguous – there is neither any convincing theory nor empirical evidence showing that in general unionization is bad for growth. But in certain cases at least it will be – unions whose pay demands push up or hold up the real exchange rate in an open economy may stifle the possibilities of export-led growth (Hein and Vogel, 2008). And in any case the issue here is not primarily about growth and its electoral consequences, but rather about governments passing laws to suit a minority – trades unionists who want everyone else to be one – against the wishes of the median voter. Again this can be seen as a trade-off between rent-seeking and popularity.

For the sake of consistency with Besley et al (2010) our benchmark empirical specification is:

$$\tau_{st} = \omega_s + v_t + \delta_1 \kappa_{st} + \delta_2 L_{st} + \delta_3 L_{st} \kappa_{st} + \varepsilon_{st}. \quad (19)$$

The dependent variable captures the policy stance in state s at time t . ω_s and v_t are fixed state and year effects. κ_{st} is the measure of political competition. L_{st} is an indicator variable set equal to one if there are limits on donations that individuals can make to candidates in state elections.^{27,28}

Initially think of the dependent variable as rents. Then δ_1 estimates the effect of political competition on the rents, and δ_2 the effect of limits on election spending at maximum political competition. δ_3 is the coefficient on the interactive term: if opposite in sign to δ_1 it is saying that spending limits reduce the effects of political competition on rents.

Table 2 sets out our model’s prediction on the signs of δ_1 , δ_2 and δ_3 under different regimes when rents are the dependent variable. δ_1 is always negative (proposition 1: political competition cuts rents). The sign of δ_2 depends on whether donors are malign or benign

²⁷Note that the existence of limits may itself affect the degree of political competition, so far as they dampen the advantages of the stronger party. (Though as noted in footnote 31 there is little correlation between the two variables in the full dataset.) This provides an additional rationale for using an instrument for political competition in the empirical analysis.

²⁸Following Besley et al (2010) the regression model uses contemporaneous data. In principle one might expect that policy might lag (or perhaps lead, if forward-looking) κ_{st} and L_{st} . The regression results reported below are largely unchanged if we replace κ_{st} and L_{st} with their lags or leads. Both variables are slow-moving, respectively with autocorrelation coefficients of 0.93 and 0.97.

(propositions 3 and 4), while δ_3 is positive as long as $\theta > 0$ but can only be said to be unambiguously negative at θ 's extreme value of -1 (propositions 5 and 6.)²⁹

Table 3 contains estimates of (19) extending the results presented in table 2 of Besley et al (2010) to include data for L_{st} and its interaction with political competition, κ_{st} over the extended time horizon. There are three alternative specifications for each dependent variable. The first (columns 1, 4 and 7) is a basic specification that includes fixed effects and time effects with robust standard errors clustered at the state level. The second (columns 2, 5 and 8) includes separate time dummies for the North and South given their separate histories. The third (columns 3, 6 and 9) instruments political competition following Besley et al (2010).³⁰

Because (like Besley et al, 2010) we are taking taxes to be positively related to rents, the predicted signs of δ_1 , δ_2 and δ_3 will be as in table 2 when taxes are the dependent variable. In the case of infrastructure spending and right-to-work laws (assumed to be inverse to rents), the predicted signs are reversed.

The first general observation is that the unconditional impact of political competition holds up in all cases. The second general observation is that the effect of limits at the point of maximum political competition (i.e. when $\kappa_{st} = 0$) in all 9 cases is suggestive of benign donors. When political competition is maximized, then limits are associated with increased taxes, reduced relative infrastructure spending (though here the estimates are insignificant), and reduced right-to-work laws. These estimates suggest that laissez-faire is the desirable policy *if* political competition is maximized.

However, when political competition deteriorates, the degree to which policy worsens is estimated to be stronger under laissez-faire than under limits: in all 9 cases the coefficient estimate for the interaction term (δ_3) has the opposite sign to δ_1 (which measures the un-

²⁹The empirical analysis assumes that the benignity of donors (i.e. θ in the theoretical analysis) is fixed across states and across time. If in practice this varies, then the parameter estimates for δ_2 and δ_3 in particular would become unstable.

³⁰The instrumental variable used is derived from the exogenous (and as Besley et al (2010) note, surprising) federal government intervention in southern states via the 1965 Voting Rights Act (VRA). For observations prior to this date the instrument takes the value of the fraction of the population that was subject to either literacy tests or poll taxes (or both) - a substantial fraction in many states, and thereafter taking the value of zero. Clearly this event was pivotal, and also exogenous, in creating political competition in the south.

conditional impact of political competition.) Again the estimated relationship is found to be stronger for taxes and right-to-work laws. Taken together with the finding of a deleterious impact of limits when political competition is maximized (δ_2 negative for taxes and positive for right-to-work), this is consistent with our notion of weakly benign donors.

In fact our quantitative estimates are consistent only with weakly benign donors. Following Besley et al (2010) if we take the example of $\kappa_{st} = -0.3$, compared with maximum political competition ($\kappa_{st} = 0$) then using the estimates of column (1) taxes are 1.20% higher (which is 0.83 standard deviations) under laissez-faire, but only 0.25% (0.17 standard deviations) higher under limits. When political competition is at its maximum, then the results suggest that laissez-faire would be preferred, because of the positive estimate for δ_2 . When $\kappa_{st} = 0$ taxes are estimated to be 0.298% higher under limits than under laissez-faire. However at $\kappa_{st} = -0.3$ the greater increase in rent-seeking under laissez-faire means that at this level of political competition limits would be preferred. Mathematically $1.20\% - 0.25\% > 0.298\%$.

So, as political competition declines, at what point do limits become the best option? From equation (19), taxes with laissez-faire will exceed taxes with limits when $\delta_2 + \delta_3\kappa < 0$ i.e. when $\kappa < -\frac{\delta_2}{\delta_3}$. So columns (1), (2) and (3) of table 3 predict, respectively, that limits are better for a state when κ is less than -0.094, -0.107 and -0.084, i.e. when, in an average election in that state, the leader has a majority exceeding 18.4%, 21.4% and 16.8%. (Less weight should perhaps be given to the middle figure because not all the coefficients in column 2 were significant.) When political competition is higher than these figures, then laissez faire should be preferred.

Columns (3), (6) and (9) report results when political competition is instrumented using the fraction of the population subject to literacy tests or poll taxes prior to the Voting Rights Act. The first-stage coefficient estimate for this variable is negative as expected and highly statistically significant, with large F-statistics. The (second-stage) results in these instances are comparable to those found using OLS, which allays concerns that political competition is endogenously related to limits (or their absence).³¹

³¹Moreover note that the correlation coefficient between political competition and the limits indicator is low (at 0.093). If political competition is regressed against the limits indicator and year effects, the coefficient estimate is statistically insignificant (with a t-statistic equal to 0.14).

One possible objection to these results is that the regressions exclude socioeconomic control variables. Table 4 contains results where the regressions reported in table 3 are augmented with state income per capita, the state population size, the percentage of the population aged over 65, and the percentage of the population aged between 5 and 17. The estimated signs and indeed the magnitude of the estimated coefficients change very little. Overall, as with table 3 the results are generally consistent with the hypotheses constructed under benign donors.

As a further robustness check, and following Besley et al, table 5 extends the analysis to control for the governor affiliation, and indicators for cases where both the lower and upper state houses are controlled by one party.³² Columns (1), (3) and (5) contain results for the three alternative dependent variables controlling for these additional variables. Columns (2), (4) and (6) additionally control for the Democratic vote share (though as noted by Besley et al (2010), it is unlikely to be an exogenous regressor). The econometric specification here in all cases includes separate time dummies for the North and South. In all 6 regressions the coefficient estimates are signed consistently with the case of benign donors. The parameter estimates for L_{st} are positive in the case of taxes and negative for relative infrastructure expenditure and right-to-work laws, whilst the interaction terms in all cases offset the estimated unconditional effect. Nonetheless, significance levels tend to be lower in these more demanding specifications.

In a final robustness check we examine whether the results are sensitive to the inclusion of alternative political institutions that might also impact rent seeking. Besley and Case (2003) examine how state taxes are affected by open/closed primaries (*primarytype*), the presence and constraining effect of tax/spending limitations (*bind* and *nonbind*), the existence of a super-majority rules (*supmaj*), governor line-item veto power (*veto*), divided government (*split*), lame duck governors that cannot re-run for office (*lameduck*), and whether or not the state allows voter initiatives (*initiatives*). Table 6 takes the benchmark specification in column 1 of table 3 and includes these institutional variables one at a time.³³ The

³²Table 5 corresponds to table 3 in Besley et al (2010), but with additional terms for L_{st} and $L_{st}K_{st}$. Columns (1) and (2) correspond to their column (1) and (2). Columns (3) and (4) correspond to their (5) and (6). Columns (5) and (6) correspond to their (9) and (10).

³³Ideally, the institutional variables would all be included at once. Unfortunately, many of these variables are correlated with each other. Besley and Case (2003) and Pickering and Rockey (2013) also take the

unconditional effect of limits (δ_2) is estimated to positively impact taxes and is statistically significant at the 10% level at least in all eight cases. The parameter estimate for δ_3 is in all cases estimated to be positive, and is in most cases statistically significant at the 10% level of better.

There are important caveats to this analysis. As noted the policy variables are imperfect measures of rent-seeking (though we are not the first to use them in this context). Indeed this mismeasurement may explain why statistical significance drops in the more demanding specifications. Nonetheless the overall conclusion we draw is that limits on political donations affect economic policy, and do so in a way which depends on the degree of political competition as proposed in the theory. The evidence is consistently suggestive of the hypotheses constructed under weakly benign donors: limits are beneficial at low levels of political competition, but harmful at high levels.

3.3 Growth

Besley et al (2010) establish an empirical link between state level growth (g_{st}), measured as the annual growth rate of personal income in state s at time t and political competition. The relationship is unambiguously positive - higher growth levels are positively associated with greater political competition. In this subsection we investigate whether and how this relationship is qualified depending on the political finance regime. The benchmark regression specification in this instance is

$$g_{st} = \theta_s + v_t + \beta y_{st-1} + \delta_1 \kappa_{st} + \delta_2 L_{st} + \delta_3 L_{st} \kappa_{st} + \varepsilon_{st}, \quad (20)$$

where y_{st-1} is lagged log income and other variables are defined elsewhere. It seems plausible that rents taken by government, perhaps in the form of higher taxes, weak public investment, corrupt labor laws, or indeed otherwise, would act to suppress economic growth. Therefore the predicted signs of the coefficients are reversed as compared with table 2 and we now have

approach of examining particular institutions in isolation.

Donor motives	δ_1	δ_2	δ_3
Malign ($\theta > 1$)	+	+	-
Weakly benign ($0 < \theta < 1$)	+	-	-
Strongly benign ($-1 < \theta < 0$)	+	-	-/+
Entirely benign ($\theta = -1$)	+	-	+

Table 7 contains estimation results. These results correspond to table 5 in Besley et al (2010), though note that our sample commences later because the limits data begin in 1949, and is extended through to 2014. The findings are consistent with the picture of benign donors that emerged from the analysis of policy and are surprisingly strong. Limits are estimated to have a small, though statistically significant, negative effect on growth when political competition is at its maximum ($\kappa_{st} = 0$). In all four specifications estimated in table 7, laissez-faire in political finance is congruent with (very slightly) higher growth performance under conditions of strong political competition. The interesting finding here, again which holds in all specifications, is that the positive impact of political competition is estimated to only manifest itself under systems of laissez-faire. δ_3 is consistently of greater magnitude than δ_1 : the interaction effect here is sufficiently strong that under limits political competition if anything has a negative impact on growth, although the combined effect is never significantly different from zero. However, under laissez-faire, departures from maximum levels of political competition are associated with a significant lowering of economic growth.

In order to quantify these results consider a permanent deterioration in political competition from 0 to -0.1 (which is approximately one standard deviation over the entire period 1949-2014). When $\kappa_{st} = 0$ income per capita in the long run is estimated to be higher by 4.8% under laissez-faire than under limits (assuming of course that the regime change is permanent).³⁴ However at $\kappa_{st} = -0.1$ the greater sensitivity of growth (to political competition) under laissez-faire means that at this level of political competition limits would be preferred. The growth differential of 5.93% (the net growth improvement under limits in response to the lower level of political competition) exceeds the direct loss of 4.8%. Thus limits might be preferred as the policy when political competition is not at its maximum.

³⁴Following Besley et al (2010) (their footnote 28), the long-run effect of political competition on income per capita is given by the estimates obtained from (20) for δ_1/β .

Table 8 contains estimation results, when socioeconomic control variables are included. The inference is unaltered both in terms of magnitude of estimated relationships and statistical significance. The statistical relationship found between growth, political competition and limits on political donations may still be due to unobserved differences, but these are not picked up in differences in state demographic controls.

Table 9 mirrors table 6 in Besley et al (2010) extending the analysis of economic growth to include political control variables. Consistent with the results from tables 7 and 8, the effect of political competition is estimated to be absent in regimes with limits on donations (Column (1)). Column (2) additionally includes the Democratic vote share, and if anything the results are strengthened. The effect of limits at maximum political competition is estimated to be negative and significant at the 10% level. However because under laissez-faire growth is estimated to deteriorate as political competition falls, then limits may still be the preferred policy at lower levels of political competition.

The key criterion is again whether $\kappa < -\frac{\delta_2}{\delta_3}$. If so, then limits on campaign spending are better for growth than laissez-faire. Using the coefficient estimates from column 1 of table 9 $-\frac{\delta_2}{\delta_3}$ approximately equals -0.095 . This critical value is quantitatively very similar to that found when examining the results examining the policy variables. When the average percentage lead of the dominant party exceeds 19%, limits are preferable.

Column (3) of table 9 looks at 5 year averages of growth as the dependent variable.³⁵ The results again suggest that political competition is *bad* for growth when limits are applied, and this time the results are statistically significant. Under laissez-faire political competition is positively associated with growth as found previously. As noted in the introduction it is possible that political competition could under particular circumstances (that are not modeled here) be detrimental to policy - perhaps raising politicians' discount rates as proposed by Acemoglu and Robinson (2006). This regression is an outlier compared with the other results reported here, but certainly lays bare the conditionality of the political competition result. Column (4) also uses 5 year averages of growth as the dependent variable, but this

³⁵Columns (3) and (4) in table 9 respectively correspond to columns (7) and (8) in table 6 in Besley et al (2010). As they note the advantage of using 5-year-averages are that it smooths out cyclical variations and fluctuations in both the dependent variable (income growth), and the explanatory variable (political competition).

time the estimation method is the Arellano and Bond GMM 1st difference estimator. The panel is a little shorter here than estimated previously, and so the Nickell (1981) bias may be more of a problem and so these results might be considered preferable. The interaction term again works strongly against the unconditional effect (of political competition), though quantitatively the results are similar to the previous ones.

Column (5) in table 9 replaces growth with a measure of structural change variable - the share of non-farm income. The argument is that economic development may be proxied by a move away from agriculture. Consistent with all of the other results here the interaction term is estimated to work against the unconditional effect, although here the significance is lower. It is possible that the later sample here is more of a problem in that a lot of the structural change happened prior to 1960 (by which time the average non-farm-income share was already 94%). The earlier sample analyzed by Besley et al (2010) is likely to be more conducive to significant results - though to repeat, the results found are supportive of the general argument.

Table 10 takes the benchmark specification in column 1 of table 7 and addresses sensitivity to political institutions. The results are essentially unchanged. In all cases the impact of limits at maximum political competition is found to be negative, whilst the positive effect of political competition is again found to be substantially stronger under laissez-faire regimes.

Overall the growth regression results corroborate those found for policy. The findings of a stronger effect of political competition under laissez-faire than under limits, and a deleterious effect of limits at maximum political competition again support the hypotheses constructed above under weakly benign donors.

3.4 Exogenous Regime Change

The above empirical analysis follows previous literature in taking the political finance regime to be exogenous. However, as noted in the introduction there remains the possibility that state-level political finance regulation is determined jointly with state level policy. Finding a satisfactory instrument that is both strong and which would satisfy the exclusion restriction is difficult. For instance it seems plausible that various institutional characteristics might explain the political finance regime. However as noted by Besley and Case (2003) institu-

tional features play an important role in determining policy and therefore outcomes in the US. Similarly it is widely recognized that the partisan composition of the state government - another plausible candidate for explaining the existence or not of limits on donations - is an important determinant of policy. Indeed variables for both institutions and partisan composition are used as controls in the above analysis.

However it still remains that the finance regime is not a random treatment. As can be seen in table 1 and figure 2, one aspect of this is that limits have increasingly been applied over time. Undoubtedly a pivotal moment came in 1975, when 15 states switched, permanently, from laissez-faire to a system of limits. The catalyst for this widespread shift was the Watergate scandal, which eventually culminated in the resignation of president Nixon in 1974. Following these events (which began in 1972) Congress established the Federal Election Commission and substantially strengthened the Federal Election Campaign Act in 1974. At the time Fleishman (1975) wrote that "But for the embarrassing and widening wake of Watergate... there would very likely have been no new campaign finance reforms in 1974." Watergate thus determined Federal level policy. It is likely that state-level regime decisions followed suit. If there is a perceived generic problem with political finance, then incumbent politicians at the state level would amend the regime to reflect the national zeitgeist.

Watergate by itself satisfies the conditions for a good instrument. It explains the widespread regime shifts that occurred in one particular year. Moreover it was an event that can be plausibly considered to be exogenous to state-level policy and growth. However, by itself Watergate simply represents a pure time effect, and these are already included in the empirical analysis. In order to generate spatial variation we further posit that Watergate had differential salience across states depending on geographic distance from Washington DC. Hence for Maryland and Virginia, Watergate has relatively strong resonance, whilst the Watergate effect was not so pronounced in Oregon and Washington State. We thus posit a spatial discount rate, where the likelihood of imposing limits in the aftermath of Watergate is modelled to fall, at least relatively, with distance from DC. For similar reasons we discount the Watergate effect temporally from 1975 at 5%. The salience of Watergate in 2005

is certain to be much less than that in 1975. Our instrument is thus:

$$IV_{st} = (0.95)^{year-1975} * \text{Watergate}_t * \text{Distance}_s$$

where Watergate_t is a dummy variable set equal to 1 for 1975 and thereafter and 0 before 1975. Distance_i is the distance in thousands of miles of the state capital from Washington DC. Recall that all econometric specifications used in this paper include time dummies. The identification thus comes from the assumption that geographic distance from Washington did not matter before 1975, whilst it did after 1975, decaying thereafter. Even this argument may be criticized: especially it is possible that economic performance since 1975 may have depended for other reasons on proximity to the capital.

Table 11 contains estimation results where *Limits* are instrumented using IV_{st} . All specifications include separate time dummies for the North and South. Column 1 contains results for the first-stage regression, where *Limits* are regressed against IV_{st} and political competition as well as the fixed state and time effects. This regression supports the above reasoning. The coefficient estimate is negative and statistically significant at the 1% level. A one thousand mile increase in distance, in 1975, reduces the incidence of limits by 27%. By 2005 however, the same distance is estimated to reduce the incidence of limits by only 6%.

Columns 2-4 contain estimation results for the policy variables, where *Limits* are instrumented as described. As with the OLS estimation, the results again support the benign donors case, where limits are found to be detrimental for policy at high levels of political competition, but beneficial at low levels. The results are statistically significant in the case of taxes and the right-to-work laws. Nonetheless it should be acknowledged that the F-statistic for the first stage regression falls short of the conventional threshold of 10 for a strong instrument.

However, when growth is used as the dependent variable in column 5 the results are all insignificant. Indeed, taking these results at face value, then limits are positively (though weakly) associated with growth at the highest level of political competition. This is in strong contrast with the OLS results above. An explanation for this finding lies in the possibility that economic performance since 1975 has depended for other reasons on distance from Wash-

ington. In column 6 we maintain the IV approach, but also control for $\text{Watergate}_t * \text{Distance}_s$ - the undiscounted version of the instrument. In this regression it can be seen that growth has been positively associated with proximity to the capital. The coefficient estimate for $\text{Watergate}_t * \text{Distance}_s$ is negative and significantly different from 0. Moreover in this specification the coefficient estimates for the main variables of interest revert to their previous status. Growth is negatively associated with limits at high levels of political competition, but improved by limits at low levels of political competition. Nonetheless in this last regression the power of the instrument inevitably drops given the additional related control.

As a further analysis of the consequences of the regime change that followed Watergate we reduce the sample to the 15 states that changed their regime in this year, and did not change at any other point (thus excluding Missouri, which reverted to *laissez-faire* for a period). The drawback of this approach is that it substantially reduces the sample, but the benefit is that it isolates an exogenous regime change. Table 12 contains regression results for the 15 ‘Watergate’ states. Column 1 and 2 respectively contain the results for the tax policy variable using data up until 1974 (i.e. under *laissez-faire*), and from 1975 onwards (i.e. under limits). The regression specification corresponds to column 1 of table 3, and includes state and year fixed effects. In column 1, under *laissez-faire* political competition significantly reduces taxes (the p-value here is 0.059), whilst in column 2 under the limits regime the relationship is, whilst still negative as expected, quite a lot weaker and statistically insignificant. Column 3 and 4 repeat the analysis using infrastructure spending as the dependent variable - corresponding to column 4 of table 3. In this instance statistical significance is lower, though it can be observed that the magnitude of the estimated coefficient falls below zero following the shift into the limits regime.³⁶

Columns 5-6 repeat the analysis for growth in personal income - hence this time corresponding to column 1 of table 7. Once again there is a significant change. In the early sample (*laissez-faire* - column 5) the relationship between growth and political competition is estimated to be positive and significant (with a p-value of 0.018). After 1974 (limits - column 6) the estimated relationship is statistically insignificant.

³⁶It is not possible to produce corresponding results for ‘right-to-work’ because there is no temporal variation in this variable in the 15 Watergate states in the later sample.

Whilst the sample here is by construction much smaller, the results are supportive of the previous analysis using OLS and IV estimation. In the states that changed their regime following the exogenous shock in 1975, the response of observable policy variables to political competition changes, in the instance of taxes significantly so. Similarly in the reduced form growth regressions, there is a marked change in the political competition gradient.

3.5 Discussion

The analysis permits an evaluation of policy in practice across US states. Table 13 lists actual current policy and the degree of political competition in the most recent observation (in almost all cases corresponding to 2014). In subsection 3.3, the point estimate of the threshold value of political competition as far as maximizing income per capita is $\kappa = -0.095$. This was very similar to the median of the three estimates of this threshold when examining policy. If we take this estimate at face value then states with political competition higher than this threshold value should have laissez-faire, whilst states with low political competition should have limits. By this criterion two thirds of states (32/48) have inappropriate policy. The modal mistake, in 25 states, is to enforce limits when political competition is greater than the threshold. There are 13 states which correctly impose limits given their lower levels of political competition. Hence within the 38 states which impose limits, political competition is in most cases high enough to warrant laissez faire. Intriguingly the opposite holds in the 10 states with laissez faire, 7 of which have political competition levels below the threshold. Hence only 3 of the states which actually deploy laissez faire observe sufficiently high political competition levels to merit this policy.

Interestingly when the same exercise is performed using older data (i.e. prior to Watergate), there are generally lower levels of political competition, yet a greater proclivity towards laissez-faire. Arguably the tendency towards limits on donations would have been correct if political competition were not simultaneously increasing. Given that political competition has increased (notwithstanding more recent declines), the tendency towards application of limits may well be mistaken.

On the other hand the recent McCutcheon ruling, which whilst not abolishing donations limits represents a relaxation of the controls on political donations. In the case of Federal

elections, aggregate caps have been lifted and hence large donors may now contribute to more candidates than before (with candidate-level limits still applying). Application of this ruling to state-level politics will represent a loosening of restrictions, though not a complete removal. At representative average levels of political competition the analysis of this paper would support McCutcheon, and indeed further movement toward Laissez Faire. Nonetheless the recent declines in state-level political competition (visible in Figure 2), with meaningful numbers of states now identifying very clearly as either red or blue, is a cause for concern. Should this continue, then there is a stronger case for maintaining and perhaps reinforcing limits on political donations.

4 Conclusions

The paper sheds light on the debate on the desirability of limits on political finance. Historically this debate has been rather ideological - with proponents on the one side arguing for the sanctity of free speech and on the other that donations and corruption must in all instances be synonymous. Both the theory and the evidence presented here are more nuanced. Under weakly benign donors, when political competition is at its maximum, then laissez-faire is preferred. Because rent-seeking also increases donations to the opposition, when the two candidates' donors are as numerous as each other, then free finance can act as a deterrent to rent-seeking. Our interpretation is that the benefits of free speech - and advertising - are maximized when political competition is also at its maximum. However, in states where incumbents have electoral advantage, then free-finance may act against the public interest, because the deterrent to rent-seeking of increased donations to the opposition is weakened. Empirical evidence, in both OLS regressions and when the existence of limits is instrumented using geographic and temporal distance from Watergate, supports the argument that policies, and growth, improve with limits only when political competition is low.

The analysis of the paper casts doubt on the trend towards enforcing limits given that political competition is still, at least for the time being, reasonably strong. Similarly it casts doubt on the practice in a small but significant number of states where political competition

is low of allowing laissez faire. At the time of writing, we conclude that most states are getting their campaign finance laws wrong.

Appendix

Proof of proposition 1:

Under limits (14) is minimized at $p = 0.5$. Thus the greater the political competition (closer p is to 0.5), the lower \bar{R} .

Under laissez-faire $R = \frac{p^2}{\pi_1} + \frac{(1-p)^2}{\pi_2}$ (18). Hereafter denoting $(.)' = \frac{d(.)}{d\lambda}$ then $R' = \frac{2pp'\pi_1 - p^2\pi_1'}{\pi_1^2} + \frac{(2p-2)p'\pi_2 - (1-p)^2\pi_2'}{\pi_2^2}$. From (16) and (17), $-\pi_1' = \pi_2'$, hence

$$R' = \pi_2' \left[\frac{p^2}{\pi_1^2} - \frac{p^2}{\pi_2^2} + \frac{(2p-1)}{\pi_2^2} \right] + p' \left[\frac{2p}{\pi_1} + \frac{(2p-2)}{\pi_2} \right].$$

Assume without loss of generality that $\lambda > 0$. We have seen (in particular the discussion on p. 12) that this means $p > 0.5$, whilst (15), (16) and (17) show that (given our assumption that $\theta \geq -1$) $p' > 0$, $\pi_2 > \pi_1$ and $\pi_2' \geq 0$. In addition we assuming that $\pi_1, \pi_2 > 0$. Therefore

$$\frac{p^2}{\pi_1^2} - \frac{p^2}{\pi_2^2} + \frac{(2p-1)}{\pi_2^2} \geq \frac{(2p-1)}{\pi_2^2} > 0$$

and

$$\frac{2p}{\pi_1} + \frac{2p-2}{\pi_2} \geq \frac{(4p-2)}{\pi_2} > 0.$$

Therefore $R' > 0$.

Proof of proposition 2:

We prove this in two parts: (i) *With maximum political competition, the more malign the donors, the higher the rents.*

When $\lambda = 0$ (maximum political competition), $p = 0.5$ and hence (18), $R = \frac{1}{4\pi_1} + \frac{1}{4\pi_2}$. Also at $\lambda = 0$, from (16) and (17) $\pi_1 = \pi_2$, hence $R = \frac{1}{2\pi_1}$. But $\frac{d\pi_1}{d\theta} < 0$ hence $\frac{dR}{d\theta} > 0$.

(ii) *As political competition declines, the more malign the donors, the faster rents increase.*

When $\lambda = 1$ (minimum political competition), $p = 1$ and hence (18), $R = \frac{1}{\pi_1}$. Therefore

$$\Delta \equiv R(\lambda = 1) - R(\lambda = 0) = \frac{1}{2\pi_1} + \frac{1}{4} \left(\frac{1}{\pi_1} - \frac{1}{\pi_2} \right).$$

But from (16) and (17) $\frac{d\frac{1}{\pi_1}}{d\theta} > \frac{d\frac{1}{\pi_2}}{d\theta}$ and $\frac{d\frac{1}{\pi_1}}{d\theta} > 0$. Therefore $\frac{d\Delta}{d\theta} > 0$.

Proof of proposition 3:

We start with the case where $\lambda = 0$. $\bar{R} = \frac{1}{\xi} (p^2 + (1-p)^2)$ (14). But if $\lambda = 0$, $p = 0.5$, hence $\bar{R} = \frac{1}{2\xi}$. Similarly $R(\lambda = 0) = \frac{1}{4\pi_1} + \frac{1}{4\pi_2}$. But

$$\begin{aligned} \frac{1}{4\pi_1} + \frac{1}{4\pi_2} &= \frac{\phi}{4 [\xi\phi + \xi^2 m [(\frac{1-\theta}{2})(1-\sigma) - (\frac{1+\theta}{2}\lambda)]]} + \frac{\phi}{4 [\xi\phi + \xi^2 m [(\frac{1-\theta}{2})(1-\sigma) + (\frac{1+\theta}{2}\lambda)]]} \\ &= \frac{\phi}{2 [\xi\phi + \xi^2 m [(\frac{1-\theta}{2})(1-\sigma)]]} \end{aligned}$$

when $\lambda = 0$. Therefore $\theta < (>) 1 \implies \frac{1}{4\pi_1} + \frac{1}{4\pi_2} > (<) \frac{1}{2\xi}$. Therefore $R > (<) \bar{R}$ when $\theta > (<) 1$ (proposition 3(i)).

In the instance of $\lambda > 0$ note first (from proposition 1) $\bar{R}' = \frac{p'}{\xi} (4p-2)$ and $R' > p' \left[\frac{2p}{\pi_1} + \frac{(2p-2)}{\pi_2} \right]$. But $\lambda > 0 \implies \frac{1}{\pi_1} > \frac{1}{\pi_2} \therefore \left[\frac{2p}{\pi_1} + \frac{(2p-2)}{\pi_2} \right] > \left[\frac{2p-1}{\pi_1} + \frac{2p-1}{\pi_2} \right] = (4p-2) \left[\frac{1}{2\pi_1} + \frac{1}{2\pi_2} \right] > (4p-2) \frac{1}{\xi}$ (given $\theta > 1$). Therefore $R' > \bar{R}'$ (proposition 3(ii)). Combined with proposition 3(i) (that $R > \bar{R}$ when $\theta > 1$ and $\lambda = 0$) this shows that rents are *always* higher under limits when $\theta > 1$.

Proof of Proposition 4:

When $\theta < 1$ and $\lambda = 0$, $R < \bar{R}$ (proposition 3).

When $\lambda = 1$, $p = 1$, $\sigma = 0$ and hence (14), (18), and (16), $\bar{R} = \frac{1}{\xi}$, $R = \frac{1}{\pi_1}$ and $\pi_1 = \xi - \frac{\xi^2 m \theta}{\phi}$.

Hence when $\lambda = 1$, $R > \bar{R}$ iff $\theta > 0$.

Proof of Proposition 5:

$-1 \leq \theta < 0 \implies \pi_1, \pi_2 > \xi$ (using (16) and (17)).

$$\therefore R - \bar{R} = \left(\frac{1}{\pi_1} - \frac{1}{\xi} \right) p^2 + \left(\frac{1}{\pi_2} - \frac{1}{\xi} \right) (1-p)^2 < 0.$$

Proof of Proposition 6:

$\theta = -1 \Rightarrow \pi_1 = \pi_2$ and $\pi'_1 = \pi'_2 = 0$ ((16) and (17)) Hence, since $\bar{R} = \frac{1}{\xi} (p^2 + (1-p)^2)$ and $R = \frac{p^2}{\pi_1} + \frac{(1-p)^2}{\pi_2}$ it follows that $\bar{R}' = \frac{\pi_1}{\xi} R'$. But at $\theta = -1$, $\pi_1 > \xi$. $\therefore \bar{R}' > R'$.

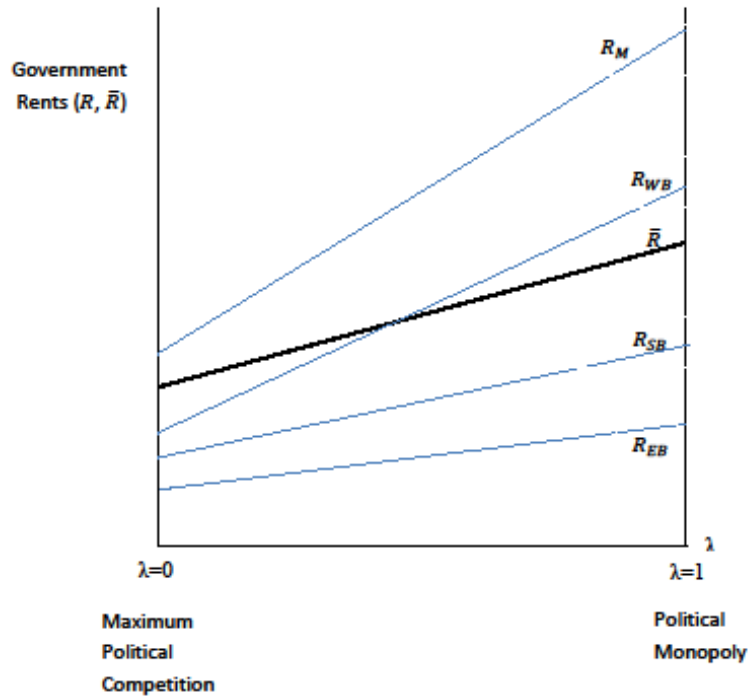


Figure 1: The effect of political competition on rent-seeking in government.

Notes. \bar{R} corresponds to the case of limits. $R_M, R_{WB}, R_{SB}, R_{EB}$ respectively denote rent-seeking when donors are malign, weakly benign, strongly benign and entirely benign (under laissez-faire conditions). Political competition is at its maximum when $\lambda = 0$, and at its minimum when $\lambda = 1$.

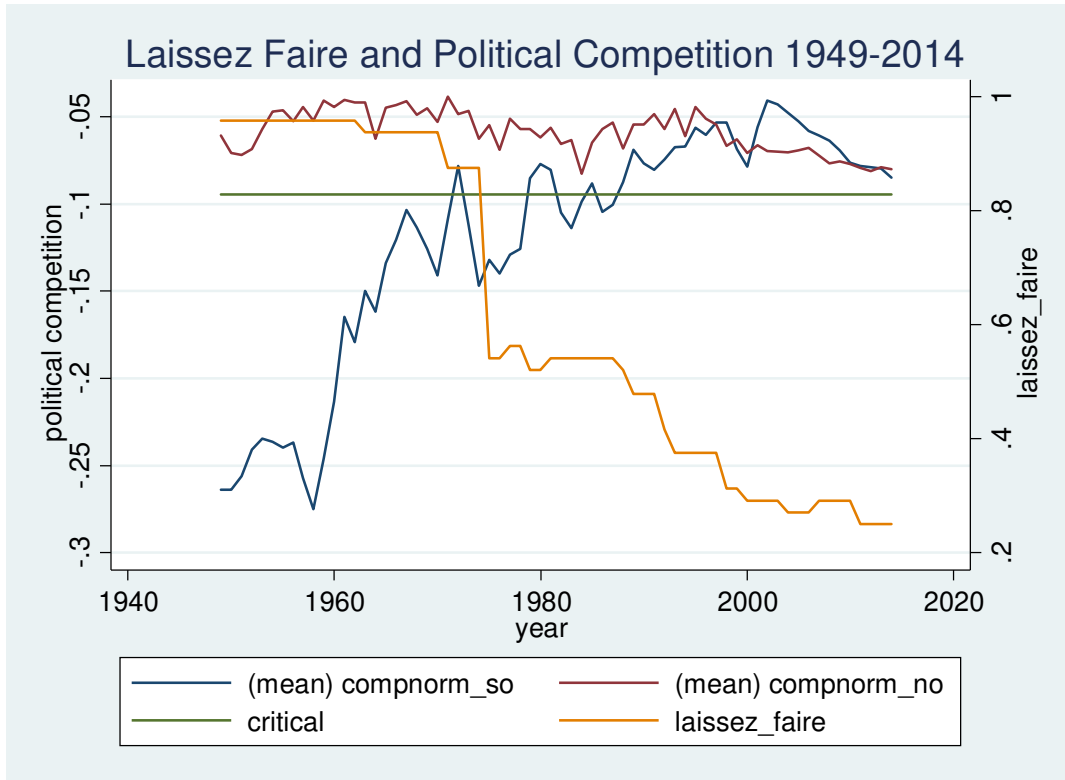


Figure 2: Political Competition and Laissez Faire in political contributions

Notes: compnorm_so and compnorm_no represent average political competition respectively in the southern and non-southern US states - both measured on the left axis. The critical degree of political competition of -0.095 is discussed in the text. laissez_faire is the proportion of states with laissez-faire (i.e. not imposing limits on individual donations to particular candidates) - measured on the right axis.

State	coverage	State	coverage	State	State	State	State
AL	never	IA	never	NE	1971-78	RI	1992-2014
AZ	1988-2014	KS	1975-2014	NV	1992-2014	SC	1992-2014
AR	1975-2014	KY	1975-2014	NH	throughout	SD	1975-2014
CA	1989-91; 2002-2014	LA	1989-2014	NJ	1975-2014	TN	1993-2014
CO	1998-2001; 2004-2014	ME	1975-2014	NM	2011-2014	TX	never
CT	1975-2014	MD	throughout	NY	1975-2014	UT	never
DE	1975-2014	MA	1971-2014	NC	1975-2014	VT	1975-2014
FL	1963-2014	MI	1975-2014	ND	never	VA	never
GA	1992-2014	MN	1977-2014	OH	1998-2014	WA	1993-2014
ID	2000-2014	MS	never	OK	1971-2014	WV	1975-2014
IL	2011-2014	MO	1975-76; 79-80; 98-2006	OR	never	WI	1975-2014
IN	never	MT	1975-2014	PA	never	WY	1979-2014

Table 1. Limits on Donations

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Notes: The data describes when and where legal limits have been applied on individual donations to candidates standing in state elections, for the period 1949-2014. Thus limits were never applied in Alabama, and were applied between 1988 and 2014 in Arizona, and so on. Limits have been applied in Maryland and New Hampshire throughout.

Donor motives	δ_1	δ_2	δ_3
Malign ($\theta > 1$)	-	-	+
Weakly benign ($0 < \theta < 1$)	-	+	+
Strongly benign ($-1 < \theta < 0$)	-	+	+/-
Entirely benign ($\theta = -1$)	-	+	-

Table 2. Theoretical Predictions

	Tax revenue as a % of state income	Tax revenue as a % of state income	Tax revenue as a % of state income	Infrastructure spending as a % of state government expenditure	Infrastructure spending as a % of state government expenditure	Infrastructure spending as a % of state government expenditure	Right-to- work laws	Right-to- work laws	Right-to- work laws
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
κ_{st}	-4.012*** (0.769)	-3.091*** (0.907)	-5.351*** (1.334)	4.572 ** (1.865)	5.081 (3.157)	6.870* (3.483)	0.663 ** (0.333)	0.500 (0.335)	0.982 ** (0.437)
L_{st}	0.298 * (0.156)	0.246 (0.171)	0.378 ** (0.170)	-0.840 (0.558)	-0.818 (0.588)	-0.977 (0.606)	-0.078** (0.036)	-0.071* (0.039)	-0.097** (0.044)
$\kappa_{st} * L_{st}$	3.177 ** (1.371)	2.303 (1.479)	4.520 ** (1.748)	-0.303 (4.510)	-0.125 (5.204)	-2.608 (5.168)	-1.024*** (0.368)	-0.905** (0.415)	-1.346*** (0.463)
South×year interactions	No	Yes	No	No	Yes	No	No	Yes	No
Method	OLS	OLS	IV	OLS	OLS	IV	OLS	OLS	IV
Sample	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1949-2014	1949-2014	1949-2014
Joint test of $\delta_2 = \delta_3 = 0$	0.039**	0.227	0.025**	0.212	0.220	0.212	0.019**	0.076*	0.020**
F-test (1st-stage)			42.36			42.36			45.05
β (1st-stage)			-0.241*** (0.037)			-0.241*** (0.037)			-0.245*** (0.036)
Observations	3117	3117	3117	3117	3117	3117	3165	3165	3165
R-squared	0.787	0.799		0.850	0.857		0.867	0.870	

Table 3. Policy: benchmark results.

Notes: All regressions include state and year fixed effects. Robustly estimated standard errors, clustered at the state level, are in parentheses. *, **, *** respectively denote significance at the 10%, 5% and 1% level.

	Tax revenue as a % of state income	Tax revenue as a % of state income	Tax revenue as a % of state income	Infrastructure spending as a % of state government expenditure	Infrastructure spending as a % of state government expenditure	Infrastructure spending as a % of state government expenditure	Right-to- work laws	Right-to- work laws	Right-to- work laws
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
κ_{st}	-3.589*** (0.899)	-2.990*** (0.947)	-5.053*** (1.679)	3.700 * (2.116)	4.188 (3.087)	5.980 (4.292)	0.649* (0.333)	0.524* (0.316)	1.002* (0.522)
L_{st}	0.314** (0.149)	0.269 (0.164)	0.393** (0.167)	-0.783 (0.564)	-0.750 (0.583)	-0.893 (0.619)	-0.082** (0.031)	-0.076** (0.035)	-0.101** (0.038)
$\kappa_{st} * L_{st}$	3.224 ** (1.365)	2.577 * (1.431)	4.621 ** (1.928)	0.344 (4.758)	0.394 (5.142)	-1.663 (5.610)	-1.126*** (0.398)	-1.015** (0.407)	-1.463*** (0.528)
South×year interactions	No	Yes	No	No	Yes	No	No	Yes	No
Method	OLS	OLS	IV	OLS	OLS	IV	OLS	OLS	IV
Sample	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014
Joint test of $\delta_2 = \delta_3 = 0$	0.027**	0.142	0.031**	0.229	0.253	0.241	0.014**	0.030**	0.022*
Observations	3117	3117	3117	3117	3117	3117	3117	3117	3117
R-squared	0.793	0.802		0.851	0.858		0.876	0.879	

Table 4. Policy: robustness check - including socioeconomic controls.

Notes: As for table 3. Regressions include state income per capita, total population size, the percentage of the population aged over 65 and the percentage of the population aged between 5 and 17 as additional control variables. Data availability slightly reduces the sample size in the instance of the right-to-work laws.

	Tax revenue as a % of state income	Tax revenue as a % of state income	Infrastructure spending as a % of state government expenditure	Infrastructure spending as a % of state government expenditure	Right-to- work laws	Right-to- work laws
	(1)	(2)	(3)	(4)	(5)	(6)
κ_{st}	-3.048*** (0.896)	-2.298** (0.859)	4.982 (3.153)	5.566 * (3.022)	0.476 (0.340)	0.048 (0.306)
L_{st}	0.224 (0.170)	0.182 (0.167)	-0.802 (0.592)	-0.834 (0.572)	-0.064* (0.037)	-0.040 (0.032)
$\kappa_{st} * L_{st}$	2.305 (1.468)	1.772 (1.430)	-0.134 (5.227)	-0.549 (5.048)	-0.880** (0.410)	-0.576* (0.329)
Democratic governor	0.015 (0.061)	-0.015 (0.065)	-0.107 (0.179)	-0.130 (0.194)	-0.009 (0.011)	0.008 (0.010)
Democratic control	0.214** (0.087)	0.202** (0.085)	-0.267 (0.246)	-0.276 (0.250)	-0.033 (0.020)	-0.026 (0.019)
Republican control	-0.152** (0.068)	-0.114 (0.068)	0.023 (0.388)	0.052 (0.377)	0.052*** (0.018)	0.031 * (0.016)
Democratic vote share		1.067** (0.508)		0.831 (1.880)		-0.606*** (0.158)
South×year interactions	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	OLS	OLS	OLS	OLS
Sample	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014
Joint test of $\delta_2 = \delta_3 = 0$	0.245	0.393	0.241	0.232	0.091*	0.200
Observations	3117	3117	3117	3117	3117	3117
R-squared	0.803	0.805	0.857	0.857	0.877	0.882

Table 5. Policy: robustness check - including political controls.

Notes: As for table 3. Democratic and Republican control implies simultaneous control of both house and senate.

	Tax revenue as a % of state income (1)	Tax revenue as a % of state income (2)	Tax revenue as a % of state income (3)	Tax revenue as a % of state income (4)	Tax revenue as a % of state income (5)	Tax revenue as a % of state income (6)	Tax revenue as a % of state income (7)	Tax revenue as a % of state income (8)
κ_{st}	-3.213*** (0.621)	-3.367*** (0.584)	-3.417*** (0.701)	-3.175*** (0.642)	-2.795*** (0.597)	-3.341*** (0.721)	-3.330*** (0.682)	-2.660*** (0.708)
L_{st}	0.346 * (0.174)	0.275* (0.161)	0.316* (0.164)	0.411** (0.170)	0.416** (0.204)	0.337** (0.167)	0.354** (0.171)	0.288* (0.154)
$\kappa_{st} * L_{st}$	2.263 (1.389)	2.617** (1.193)	2.423* (1.282)	2.589* (1.299)	1.048 (1.447)	2.729** (1.317)	2.630** (1.293)	1.889 (1.213)
primarytype	0.188 (0.124)							
nonbind		-0.502** (0.225)						
bind			0.258 (0.179)					
supmaj				-0.644** (0.257)				
veto					-0.059 (0.279)			
split						-0.118** (0.059)		
lameduck							0.085 (0.084)	
initiatives								0.183 (0.365)
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Sample	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001	1950-2001
Joint test of $\delta_2 = \delta_3 = 0$	0.086*	0.050**	0.066*	0.027**	0.128	0.047**	0.046**	0.090*
Observations	2250	2496	2496	2400	2016	2496	2448	1920
R-squared	0.832	0.836	0.833	0.839	0.839	0.833	0.832	0.814

Table 6. Policy: robustness check - including institutional controls.

Notes: As for table 3. *primarytype* is a dummy variable distinguishing open/closed primaries, *nonbind* takes a value of 1 if there are tax/spending limitations but which do not bind, *bind* equals 1 if they do, *supmaj* is equal to 1 if a state requires a supermajority to enact increases in taxation, *veto* equals 1 when a governor has a line-item budget veto, *split* equals 1 if the governor's party is not that of the united majority party in the legislature, *lameduck* equals 1 when the governor cannot re-run for office, and *initiatives* are equal to 1 when the state allows voter initiatives.

	Growth of personal income (1)	Growth of personal income (2)	Growth of personal income (3)	Growth of personal income (4)
κ_{st}	0.062*** (0.012)	0.049*** (0.015)	0.084*** (0.025)	0.056* (0.033)
L_{st}	-0.007*** (0.003)	-0.007** (0.003)	-0.009*** (0.003)	-0.007** (0.003)
$\kappa_{st} * L_{st}$	-0.086*** (0.020)	-0.071*** (0.022)	-0.110*** (0.029)	-0.079** (0.038)
Lagged personal income	-0.145*** (0.019)	-0.149*** (0.020)	-0.153*** (0.020)	-0.150*** (0.020)
South×year interactions	No	Yes	No	Yes
Method	OLS	OLS	IV	IV
Sample	1949-2014	1949-2014	1949-2014	1949-2014
Joint test of $\delta_2 = \delta_3 = 0$	0.000***	0.007***	0.002**	0.098*
Observations	3165	3165	3165	3165
<i>R</i> -squared	0.371	0.391		

Table 7. Economic growth: benchmark results.

Notes: As for table 3.

	Growth of personal income (1)	Growth of personal income (2)	Growth of personal income (3)	Growth of personal income (4)
κ_{st}	0.048*** (0.010)	0.035*** (0.012)	0.075*** (0.021)	0.046* (0.027)
L_{st}	-0.007*** (0.002)	-0.006** (0.003)	-0.009*** (0.003)	-0.007** (0.003)
$\kappa_{st} * L_{st}$	-0.075*** (0.018)	-0.060*** (0.019)	-0.103*** (0.026)	-0.071** (0.032)
Lagged personal income	-0.158*** (0.018)	-0.164*** (0.019)	-0.166*** (0.019)	-0.140*** (0.033)
South×year interactions	No	Yes	No	Yes
Method	OLS	OLS	IV	IV
Sample	1950-2014	1950-2014	1950-2014	1950-2014
Joint test of $\delta_2 = \delta_3 = 0$	0.031**	0.007***	0.001***	0.055*
Observations	3117	3117	3117	3117
<i>R</i> -squared	0.378	0.399		

Table 8. Economic growth: robustness check - including socioeconomic controls.

Notes: As for table 4. Regressions here include total population size, the percentage of the population aged over 65 and the percentage of the population aged between 5 and 17 as additional control variables. Data availability slightly reduces the sample size compared with table 7.

	Growth personal income (1)	of Growth personal income (2)	of Growth personal income (3)	of Growth personal income (4)	of Share of non- farm income (5)
κ_{st}	0.041*** (0.012)	0.044*** (0.013)	0.121*** (0.030)	0.111*** (0.042)	0.065** (0.026)
L_{st}	-0.006** (0.002)	-0.006*** (0.002)	-0.029*** (0.011)	-0.023** (0.009)	-0.004 (0.009)
$\kappa_{st} * L_{st}$	-0.063*** (0.018)	-0.065*** (0.019)	-0.318*** (0.089)	-0.213*** (0.075)	-0.046 (0.038)
Democratic governor	0.001 (0.001)	0.001 (0.001)	0.007* (0.004)	0.008 ** (0.004)	0.000 (0.002)
Democratic control	0.000 (0.002)	0.000 (0.002)	0.002 (0.008)	0.004 (0.007)	-0.007* (0.003)
Republican control	-0.002 (0.002)	-0.002 (0.002)	0.001 (0.007)	0.010 (0.007)	0.003 (0.004)
Democratic vote share		0.004 (0.011)			
Lagged personal income	-0.141*** (0.018)	-0.141*** (0.018)	-0.253*** (0.039)	-1.010*** (0.062)	
Method	OLS	OLS	5-Year averages	Arellano-Bond	OLS
Sample	1950-2014	1950-2014	1950-2014	1950-2014	1950-2014
Joint test of $\delta_2 = \delta_3 = 0$	0.003***	0.003***	0.003***	0.014**	0.476
Observations	3117	3117	624	576	3117
R-squared	0.391	0.391	0.672		0.762

Table 9. Economic growth: robustness check - including political controls.

Notes: As for table 5. South \times year interactions are included in all regressions.

	Growth personal income (1)	of Growth personal income (2)	of Growth personal income (3)	of Growth personal income (4)	of Growth personal income (5)	of Growth personal income (6)	of Growth personal income (7)	of Growth personal income (8)
κ_{st}	0.059*** (0.020)	0.059*** (0.019)	0.059*** (0.020)	0.053*** (0.015)	0.061*** (0.017)	0.058*** (0.019)	0.049*** (0.015)	0.032** (0.013)
L_{st}	-0.004 (0.003)	-0.005** (0.002)	-0.004 (0.002)	-0.004* (0.002)	-0.005 (0.002)	-0.004* (0.002)	-0.004* (0.002)	-0.003 (0.002)
$\kappa_{st} * L_{st}$	-0.076** (0.030)	-0.078*** (0.027)	-0.074*** (0.027)	-0.073*** (0.024)	-0.092*** (0.029)	-0.079*** (0.028)	-0.067** (0.024)	-0.049** (0.021)
Lagged personal income	-0.134*** (0.034)	-0.129*** (0.032)	-0.133*** (0.033)	-0.117*** (0.028)	-0.137*** (0.032)	-0.130*** (0.033)	-0.114*** (0.034)	-0.116*** (0.032)
primarytype	0.002 (0.003)							
nonbind		-0.003 (0.003)						
bind			-0.006* (0.003)					
supmaj				-0.001 (0.002)				
veto					-0.006* (0.003)			
split						0.001 (0.001)		
lameduck							-0.001 (0.001)	
initiatives								0.002 (0.002)
Method	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Sample	1949-2001	1949-2001	1949-2001	1949-2001	1949-2001	1949-2001	1949-2001	1949-2001
Joint test of $\delta_2 = \delta_3 = 0$	0.052*	0.022**	0.032**	0.015**	0.011**	0.023**	0.027**	0.078*
Observations	2298	2544	2544	2400	2016	2544	2448	1920
R-squared	0.485	0.496	0.497	0.498	0.503	0.496	0.496	0.814

Table 10. Growth: robustness check - including institutional controls.

Notes: As for table 6.

	L_{st}	Tax revenue as a % of state income	Infrastructure spending as a % of state government expenditure	Right-to- work laws	Growth personal income	of Growth personal income
	(1)	(2)	(3)	(4)	(5)	(6)
IV_{st}	-0.269*** (0.100)					
Watergate _t *Distance _s						-0.010** (0.004)
κ_{st}	-0.139 (0.289)	-5.090*** (1.279)	8.777 * (4.514)	0.827 * (0.434)	0.014 (0.027)	0.108 *** (0.040)
L_{st}		1.894 ** (0.842)	-3.866 (2.709)	-0.348* (0.011)	0.020 (0.013)	-0.047* (0.028)
$\kappa_{st} * L_{st}$		11.28 ** (5.068)	-16.72 (15.69)	-2.411* (1.260)	0.077 (0.081)	-0.290* (0.154)
Lagged personal income					-0.134*** (0.024)	-0.134*** (0.024)
Method	OLS	IV	IV	IV	IV	IV
Sample	1949-2014	1950-2014	1950-2014	1949-2014	1949-2014	1950-2014
Joint test of $\delta_2 = \delta_3 = 0$		0.078*	0.170	0.157	0.007***	0.089*
F-test (1st-stage)		6.701	6.701	6.574	6.681	3.70
Observations	3165	3117	3117	3165	3165	3165

Table 11. Instrumental variables estimation. Notes: Column (1) reports results of the first stage regression where L_{st} is regressed on the $IV_{st} = (0.95)^{year-1975} * \text{Watergate}_t * \text{Distance}_s$ as described in the text. Columns (2)-(5) contain estimation results where L_{st} is instrumented by IV_{st} . The F-test (1st-stage) reports the F-statistic for the first stage regression. β (1st-stage) is the coefficient estimate for IV_{st} in the first stage regression. South \times year interactions are included in all regressions.

	Tax revenue as a % of state income	Tax revenue as a % of state income	Infrastructure spending as a % of state government expenditure	Infrastructure spending as a % of state government expenditure	Growth of personal income	Growth of personal income
	(1)	(2)	(3)	(4)	(5)	(6)
κ_{st}	-1.700* (0.807)	-0.284 (1.284)	10.26 (10.23)	-1.255 (3.525)	0.139** (0.052)	0.003 (0.021)
South \times year interactions	No	No	No	No	No	No
Method	OLS	OLS	OLS	OLS	OLS	OLS
Sample	1950-1974 Watergate	1975-2014 Watergate	1950-1974 Watergate	1975-2014 Watergate	1949-1974 Watergate	1975-2014 Watergate
Observations	375	597	375	597	390	597
<i>R</i> -squared	0.892	0.763	0.602	0.769	0.517	0.430

Table 12. Exogenous regime change results

Notes: Reported results correspond to the 15 ('Watergate') states that changed regimes in 1975 (see table 1). Other notes as for table 3.

State	PC	Regime	State	PC	Regime	State	PC	Regime	State	PC	Regime
AL	-0.129	LF	IA	-0.039	LF	NE	-0.147	LF	RI	-0.106	Limits
AZ	-0.038	<i>Limits</i>	KS	-0.114	Limits	NV	-0.091	<i>Limits</i>	SC	-0.097	Limits
AR	-0.080	<i>Limits</i>	KY	-0.043	<i>Limits</i>	NH	-0.021	<i>Limits</i>	SD	-0.177	Limits
CA	-0.069	<i>Limits</i>	LA	-0.004	<i>Limits</i>	NJ	-0.069	<i>Limits</i>	TN	-0.207	Limits
CO	-0.016	<i>Limits</i>	ME	-0.106	Limits	NM	-0.005	<i>Limits</i>	TX	-0.115	LF
CT	-0.016	<i>Limits</i>	MD	-0.062	<i>Limits</i>	NY	-0.106	Limits	UT	-0.206	LF
DE	-0.052	<i>Limits</i>	MA	-0.105	Limits	NC	-0.008	<i>Limits</i>	VT	-0.098	Limits
FL	-0.062	<i>Limits</i>	MI	-0.012	<i>Limits</i>	ND	-0.136	LF	VA	-0.022	LF
GA	-0.064	<i>Limits</i>	MN	-0.045	<i>Limits</i>	OH	-0.113	Limits	WA	-0.046	<i>Limits</i>
ID	-0.107	Limits	MS	-0.110	LF	OK	-0.142	Limits	WV	-0.028	<i>Limits</i>
IL	-0.051	<i>Limits</i>	MO	-0.025	<i>Limits</i>	OR	-0.066	<i>Limits</i>	WI	-0.018	<i>Limits</i>
IN	-0.109	LF	MT	-0.001	<i>Limits</i>	PA	-0.049	LF	WY	-0.214	Limits

Table 13. Policy in Practice

Notes: PC denotes measures of political competition (κ) for 2014. ‘Regime’ denotes whether Limits or Laissez-Faire (LF) applies. Bold and italicized lettering denotes that the regime-type is suboptimal given the estimate of the critical degree of political competition of $\kappa = -0.095$.

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