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# TERM LIMITS AND ELECTORAL ACCOUNTABILITY

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## ABSTRACT

### Term Limits and Electoral Accountability\*

This Paper analyses the impact of term limits in a political agency model. We find that term limits reduce the value of holding office. This reduction in the re-election incentive can induce politicians to implement policies that are closer to their own private preferences. Such 'truthful' behaviour by incumbents will in turn result in better screening of incumbents whose preferences do not correspond to voters' preferences. We show that these effects can make a two-term limit, which is the empirically most frequent restriction on tenure, ex ante welfare-improving from the perspective of voters. We present evidence from gubernatorial elections that the model's main empirical implication is supported by the data.

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# 1 Introduction

In representative democracies, periodic elections are the main instrument through which voters can hold politicians accountable. A broad lesson from the growing literature on political economy is that electoral accountability should benefit voters through two main channels. First, elections enable voters to selectively retain good incumbents. If politicians have heterogeneous preferences, for example, then politicians with preferences which are close to those of the electorate should face a higher re-election probability. Second, electoral accountability constrains opportunistic behavior by incumbents. If the payoffs from future terms in office are sufficiently large, then the threat of being replaced by a challenger should reduce politicians' willingness to make policy choices which are not in the interests of the electorate.

From this perspective term limits, which constrain politicians to a maximum number of terms in office, are a curious intervention into the political process. A term limit must reduce voters' ability to hold politicians accountable. By cutting short the horizon of incumbent politicians, a term limit reduces voters' ability to punish opportunistic behavior. Furthermore, voters are unable to retain good politicians who face a binding term limit. It would therefore not be surprising if voters were strongly opposed to term limits.

However, the opposite seems to be the case in practice. Opinion polls suggest substantial support for term limits among voters from all sides of the political spectrum. Carey et. al. (2000) document that large majorities of voters supported the introduction of term limits in a series of referenda in the US states during the 1990s. Term limits are not only popular, but also widely used. In the United States several states have limited their governor to a maximum number of terms since the founding of the United States.<sup>1</sup> Currently, the office of the president, most governors and many other politicians in the state executive face term limits. Recently, several states have also introduced term limits for their state legislators.

In this paper we address this apparent puzzle. We argue that term limits can in fact serve the interests of voters – even though elections do indeed have a disciplining effect on politicians. We analyze a model in which politicians can be of one of two

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<sup>1</sup>See Grofman and Sutherland (1996) for a history of term limits in the United States.

types: some are “public-spirited”, with payoffs that coincide with those of the electorate, while others have biased preferences. The key idea behind our results is that the incentives created by electoral accountability may not only reduce opportunistic behavior by biased politicians, but may also distort the behavior of public-spirited politicians. The reason is that the payoffs from future periods in office can make even public-spirited politicians unwilling to take actions that are in the interests of voters today, if doing so reduces their re-election prospects.

In this context limiting politicians to a finite number of terms in office can be an attractive institution. Consider a restriction to at most two terms in office. This reduces the value of staying in office after the first term and, as we show, it changes the political equilibrium in our model sharply. It is immediate that politicians will follow their own preferences in their second term in office, when re-election is not an option. However, the reduced payoff from re-election ensures that politicians will in their first term also be less inclined to implement policies that would enhance their re-election probability but are not in line with their own policy preferences. We refer to this as the “truthfulness effect” of term limits. Furthermore, increased truthfulness reduces the re-election probability of biased incumbents. As past policy choices become a better indicator of the true preferences of the incumbent, it is easier for voters to detect and remove biased politicians. We refer to this as the “selection effect” of term limits.

Our main contribution is to show that the combination of the truthfulness and selection effect can improve voter welfare when a two term limit is introduced. The welfare impact of truthfulness is in general ambiguous: truthfulness by public-spirited politicians must be beneficial, but truthfulness of biased politicians will not. However, the welfare implications of the selection effect induced by more truthful behavior are unambiguously positive. An increase in voters’ ability to weed out politicians who do not share their preferences must increase the voters’ utility. If the costs of more truthful behavior are small (they could even be negative), then the positive selection effect will ensure that a two term limit increases voter welfare.

The main empirical prediction of our model is that the introduction of two term limits should reduce the re-election rates at the end of an incumbents first term in office. The reason is that two-term limits, which reduce an incumbent’s re-election

incentive, increase the probability that he implements a first term policy which results in electoral defeat. We test this prediction on data from gubernatorial elections in the US states between 1950 and 2000 and find substantial support for our model. After controlling for a range of other determinants of a governor's re-election probability we find that the presence of two term limits substantially reduces a governor's re-election prospects at the end of his first term.

An important difference between our approach and the existing literature on term limits, which is surveyed in the next section, is that it can explain why a term limit that takes effect after the incumbent's second - or even later - term in office can increase voter welfare. In contrast, the mechanisms identified in the existing literature on term limits, only justify the use of one-term limits, where electoral accountability is entirely eliminated. However, virtually all term-limit institutions in the United States allow politicians to stay in office for two or more terms, and this predominance has been growing. Of the fifteen US States that limited their governor to one term in office in 1960 all but Virginia now use a two-term limit for their governor. Similarly none of the US states that have introduced term limits for their governor or other state officials during the last two decades have opted for one-term limits.<sup>2</sup>

Our finding that the political equilibrium in the absence of term limits can distort the incentives of both biased and public-spirited politicians is related to the growing literature which shows that reputational concerns can result in very inefficient equilibria. Morris (2001), for example, shows that an informed advisor who shares the preferences of the decision maker can have an incentive to lie about his information if telling the truth would induce the decision maker to think that he is a biased advisor. If the advisor cares sufficiently about his reputation, then no information is transferred to the decision maker in equilibrium. A related idea is developed in Ely and Välimäki (2003), who look at a market in which long-lived players interact with a series of short-lived players. They show that there can be a complete market failure if the long-lived players are too concerned about their future reputations.

Some recent work has applied similar ideas to political economy environments. Maskin and Tirole (2001), building on Canes-Wrone et. al. (2001), compare the relative

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<sup>2</sup>Table 1 in the appendix provides an overview over the term limit legislation for US governors between 1950 and 2000.

efficiency of representative democracy, direct democracy and judicial power in a simple two-period model. They find that strong re-election incentives induce politicians to “pander” to public opinion. In this case representative democracy is strictly inferior to the other two alternative institutions. In contrast, our focus is the interaction between term limits and incumbents’ re-election incentives in a representative democracy. Glazer (2003) shows that both good and bad politicians may have an incentive to take decisions prematurely if good politicians are able to respond faster to a new problem than bad politicians.

The remainder of this paper is structured as follows. Section two reviews the term limits literature. Section three introduces the model. Section four derives the political equilibrium in the absence of term limits. Section five evaluates the impact of term limits. Section six discusses extensions of the model. Section seven presents the empirical evidence and the final section concludes.

## 2 Related literature

The main focus of the literature on term limits has been the impact of term limits for members of the US Congress or state assemblies.<sup>3</sup> Recent theoretical contributions to this literature include Reed and Schansberg (1994), Gilmour and Rothstein (1994) and Franklin and Westin (1998), which simulate the impact of term limits on average seniority, partisan balance and retirement rates. In contrast to our model these papers do not explicitly model either voting or policy choices by politicians and instead contain exogenous re-election rates.

The most influential explanation for term limits in a congressional setting is developed in Dick and Lott (1993) and Buchanan and Congleton (1994). They argue that politicians’ ability to transfer resources to their districts increases in their tenure in office relative to the tenure of other delegates. This seniority bonus makes it costly for voters not to re-elect their incumbent as this reduces the relative seniority of their delegate. This lack of competition from new politicians allows senior incumbents to extract rents. The voters from different districts are therefore in a prisoner dilemma. They would all like to replace their senior representative to limit rent extraction, but

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<sup>3</sup>Lopez (2003) and Tabarrok (1994) contain extensive surveys of the term limits literature.

no district is willing to do so on its own. One solution to this dilemma is a term limit which reduces the average tenure of politicians and makes it less costly to punish bad behavior by incumbents.

This idea is developed further in Chari et. al. (1997), who show in a legislative bargaining model that legislators who are particularly skilled at making socially wasteful transfers to their constituency are more likely to be re-elected, which results in sub-optimally high spending. This mechanism can be broken by a one-term limit, which increases the ex ante welfare of all voters. An obvious limitation of these papers is that they cannot explain the frequent use of term limitations in the executive branch of government. Furthermore, these mechanisms all imply that term limits should be as short as possible.

Outside the congressional literature only a handful of papers have addressed the impact of term limits. An early contribution is Adams and Kenny (1986). In their model, term limits are assumed to be used by voters instead of elections to implement an optimal tenure for politicians. Optimal tenure is in turn a trade-off between the politicians ability, which is assumed to decrease over time, and exogenous turnover costs. In our model, in contrast, elections and term limits will have two distinct purposes.

Tabarrok (1996) informally develops the idea that risk aversion by voters combined with incumbency advantage can explain the support for term limits among voters. The idea is that different ideological groups prefer frequent rotations in power to long spells in office of one group. Term limits which eliminate the incumbency advantage are beneficial by increasing the probability of rotation in office. He also provides some preliminary empirical evidence that US states with stronger political divisions are more likely to have term limits. Glaeser (1997) formalizes these ideas in a simple two-period model with a right-wing and a left-wing party which are supported by equal sized groups of the electorate. A small exogenous incumbency advantage ensures that whichever party wins the first election is also re-elected. A term limit after the first period breaks this incumbency advantage and equalizes the probability with which each party is in office in the second period. If voters are sufficiently risk averse then the term limit increases ex ante utility of both the left and right wing

group. While this approach can explain the use of term limits for the executive branch of government, it also implies that term limits should be as short as possible.

A further argument in favor of term limits is developed in Konrad and Torsvik (1997), who focus on the interaction between a politician and a bureaucrat in a two-period model. The bureaucrat is assumed to have private information about the effectiveness of policies that the welfare maximizing politician tries to elicit. The optimal contract between the politician and the bureaucrat requires that the politician does not use information that is revealed during the first period in the second period contract. While the politician cannot credibly commit to this contract voters can use a one-term limit to remove the politician from office after the first period. This mechanism implements the optimal contract if the incumbent cannot pass his information on to the politician who is in office in the second period.

The two contributions that are closest to our analysis are Akemann and Kanczuk (2002) and Glazer and Wattenberg (1996). Akemann and Kanczuk (2002) investigate the implications of term limits in a political agency model which builds on Rogoff (1990). In this model high ability politicians signal their type to the voter by distorting current policies. The main result of the paper is that the optimal institution is either a one-term limit or no term limit at all. This result is driven by a simple trade-off. The benefits of elections are that voters can identify and re-elect high quality incumbents. The costs of elections are the distortions caused by the signalling of good incumbents before the election. If these costs are higher than the benefits, then one-term limits are optimal while no term limits are optimal when the reverse holds.

Closest in spirit to our analysis is the almost entirely informal discussion in Glazer and Wattenberg (1996). They argue that in a world without term limits the spoils of future periods in office may generate excessive incentives for politicians to secure their re-election. To improve their re-election prospects politicians are assumed to divert time from important legislative work, which is viewed as a public good, to narrow services for their constituencies. They argue that term limits would reduce the value of gaining re-election and induce politicians to concentrate more on legislative work. Our model will capture the effect that elections reduce the value of holding office and will make precise under what circumstances this mechanism can improve the welfare

of voters.

The empirical literature on term limits has mainly addressed two questions. One strand asks whether politicians who face a binding term limit implement or support different policies compared to politicians who face another election. Early contributions such as Lott (1987) and Lott and Bonars (1993) used announced retirements as a proxy for a binding term limit to investigate whether members of the US Congress change their voting behavior during their last term in office. The conclusion from this literature has been that announced retirements are not associated with significant changes in behavior. However, it is not clear that announced retirements are a good guide to the behavior of politicians who face a binding term limit. More recent work by Besley and Case (1995a, 2003) and List and Sturm (2003) examines the behavior of US governors, a significant number of whom have been subject to term limitations. Controlling for both time and state fixed effects they find that governors who face a binding term limit do exhibit statistically and economically significant changes in their behavior.

Another strand in the empirical literature evaluates the broader effects of term limits. Daniel and Lott (1997) evaluate the impact of legislative term limits in California, which were adopted in 1990 and first became binding for members of the legislature in 1996. They find that in the elections to the California state assembly in 1992 and 1994 campaign expenditures fell substantially relative to all elections since 1976. Furthermore the probability that incumbents are defeated in elections increased and other indicators of the competitiveness of elections also increased. Similar evidence is provided by Frances, Kenny and Anderson (2002) who present evidence that the turnover in state assemblies has increased in the states that have implemented term limits for their representatives even before these limits start to become binding. Diermeier, Keane and Merlo (2002) estimate a stochastic dynamic model of optimal career choices of members of the US Congress. They use their estimates to simulate the effect of term limits and find that there would be a substantial increase in voluntary exits from Congress. In their specification re-election probabilities do not depend on the policy choices of the incumbent, which are not modelled. They therefore cannot capture changes in policy choices and re-election probabilities in response to term limits.

### 3 Model

We will develop a simple infinite horizon political agency model. The political agency literature originated with Barro (1973) and two recent contributions are Coate and Morris (1995) and Besley and Burgess (2002). The next subsection introduces the economic environment and the following subsection introduces the equilibrium definition.

#### 3.1 Economic environment

We consider an infinitely repeated game between a single voter and a sequence of elected politicians. In each period, the incumbent makes a policy decision  $x_t \in \{0, 1\}$ . The payoff from the two possible actions on the policy issue depends on a state of nature  $s_t \in \{0, 1\}$ . The voter's per period payoff from the decision is

$$v(x_t, s_t) = x_t s_t + (1 - x_t)(1 - s_t), \quad (1)$$

i.e. the voter receives a payoff of one if  $x_t = s_t$  and zero otherwise. The realizations of the state  $s_t$  are independent draws from a distribution with  $p = \text{Prob}(s_t = 0)$  and we assume that  $p > 1/2$ , i.e. the voter believes *ex ante* that action  $x_t = 0$  is the right choice.

Each incumbent politician may be of one of two types  $\theta \in \{B, G\}$ . Type  $G$  agents will be referred to as "good" and type  $B$  agents as "bad" politicians. Good politicians are public-spirited officials who derive utility from implementing the policy that is in the interest of the voter. Thus the payoff derived by a good politician from choosing  $x_t$  in any period when he is in office is just

$$u_G(x_t, s_t) = v(x_t, s_t). \quad (2)$$

Bad politicians' preferences are similar, but they are biased in favor of choosing  $x_t = 1$ . The payoff of a bad politician from choosing  $x_t$  when he is in office depends on a state of nature  $r_t \in \{0, 1\}$  and is

$$u_B(x_t, r_t) = x_t r_t + (1 - x_t)(1 - r_t). \quad (3)$$

The realizations of the state  $r_t$  are independent draws from a distribution with  $\text{Prob}(r_t = 0) = q$ . We assume that  $q < p$  and  $\text{Prob}(r_t = 1 | s_t = 1) = 1$ . That is, when a good politician would like to choose  $x_t = 1$  then a bad politician agrees. However, bad politicians prefer to choose  $x_t = 1$  strictly more often than do good politicians. Finally, we assume that bad politicians' preferences satisfy the restriction  $p > 1 - (p - q)$ . The right hand side of this inequality is the per period payoff to the voter of a bad politician who sets  $x_t = r_t$  in every period. The inequality places a lower bound on the bias in bad politicians' preferences and ensures that the agency problem is sufficiently severe.

The probability that a randomly chosen politician is good is  $\pi_0$ . Let  $\pi_t$  be the updated belief of the voter about the probability that the incumbent is good at the beginning of period  $t$ , which will also be referred to as the politician's reputation at date  $t$ . Both types of politicians and the voter discount future payoffs relative to current payoffs with a discount factor  $\beta = 1/(1 + \delta) < 1$  where  $\delta$  is the discount rate. When not in office both types of politicians receive a reservation utility which is normalized to zero. Finally, we assume for simplicity that electoral defeat is an absorbing state in the sense that politicians who are voted out of office never return to holding political office.

Timing and information structure of the game are as follows. At the beginning of each period nature reveals the state  $s_t$  and  $r_t$ . The key informational assumption is that both  $r_t$  and  $s_t$  are observed by the incumbent but not by the voter.<sup>4</sup> Section 6 considers the implications of relaxing this extreme form of asymmetric information between the voter and the politicians. After observing the state the politician chooses  $x_t$  which is observed by everybody. At the end of each period there is an election in which the voter decides whether to retain the incumbent ( $e_t = 1$ ) or to choose the challenger ( $e_t = 0$ ), who is of the good type with probability  $\pi_0$ .

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<sup>4</sup>Our results would not be affected if we assumed that good politicians only observe  $s_t$  and bad politicians only observe  $r_t$ . Allowing both types of politicians to observe both states does not a priori preclude the possibility that bad politicians implement the optimal policy for the voter in every period.

### 3.2 Equilibrium definition

We characterize Markov perfect equilibria of this game, i.e. equilibria in strategies that are functions of voter's beliefs about the type of the incumbent and of the current state of the world. A strategy for good incumbents is a function

$$\lambda^G(\pi_t, s_t) = \text{Prob}(x_t = 1 | \pi_t, s_t). \quad (4)$$

Similarly a strategy for bad incumbents is a function

$$\lambda^B(\pi_t, r_t) = \text{Prob}(x_t = 1 | \pi_t, r_t). \quad (5)$$

A strategy for the voter is a rule  $\sigma(x_t, \pi_t)$  that determines whether the incumbent is retained ( $\sigma = 1$ ) or replaced by the challenger ( $\sigma = 0$ ). When the voter is indifferent between the incumbent and the challenger we assume that the voter re-elects the incumbent.

A Markov perfect equilibrium is a strategy for each agent-type that is a best response to others' given beliefs, and a sequence of beliefs  $\{\pi_t\}$  that evolves in a way consistent with Bayes rule. At the end of period  $t$ , after the current action has been chosen, the updated beliefs of the voter about the incumbent are

$$\tilde{\pi}_t = \text{Prob}(\theta = G | x_t, \pi_t). \quad (6)$$

The reputation of the incumbent in office at the beginning of period  $t + 1$  is therefore

$$\pi_{t+1} = \begin{cases} \tilde{\pi}_t & \text{if } e_t = 1 \\ \pi_0 & \text{if } e_t = 0. \end{cases} \quad (7)$$

Note that  $\tilde{\pi}_t$  depends implicitly on the equilibrium strategies  $\lambda^\theta$  through their impact on updated beliefs about the quality of retained incumbents.

The strategies are best responses if they are solutions to the value functions of incumbents and the voter. To formalize this, let  $P(x_t | \theta)$  denote the probability distribution on  $x_t$  induced by the current strategy of type  $\theta$ , and let  $P(x_t) = \pi_t P(x_t | G) + (1 - \pi_t) P(x_t | B)$  be the unconditional distribution on  $x_t$ . The value function for a good incumbent is

$$U_G(\pi_t) = \max_{\lambda^G(\pi_t, s_t)} E \left[ u_G(\lambda^G(\pi_t, s_t), s_t) \right] + \beta \sum_{x_t} P(x_t | G) \sigma(x_t, \pi_t) U(\tilde{\pi}_t). \quad (8)$$

The value function for a bad incumbent is defined analogously. The value function for the voter is

$$V(\pi_t) = E\left[v(\lambda^\theta(\pi_t, s_t), s_t)\right] + \beta \sum_{x_t} P(x_t) \max_{\sigma(x_t, \pi_t)} [\sigma(x_t, \pi_t)V(\tilde{\pi}_t) + (1 - \sigma(x_t, \pi_t))V(\pi_0)] \quad (9)$$

where now the expectation is over both  $s_t$  and  $\theta$ , given the voter's current beliefs  $\pi_t$ .

## 4 Equilibrium with infinitely repeated elections

We now turn to the political equilibria of the game in the infinite horizon. To what extent can elections create incentives for incumbents to make decisions that are in the voter's interests? It turns out that the electoral incentives may be rather limited in this model. Consider first the following equilibrium strategies, which we will refer to as the "timid" equilibrium: Both types of politicians choose  $x_t = 0$  if  $\pi_t = \pi_0$  and play a "truthful" strategy, i.e. good politicians choose  $x_t = s_t$  and bad politicians  $x_t = r_t$ , for any other  $\pi_t$ . The voter re-elects if  $x_t = 0$  and fires the incumbent otherwise.

Given that both types always choose  $x_t = 0$  on the equilibrium path, both the challenger and the incumbent, regardless of type, generate the same continuation payoff for the voter. It is therefore a best response for the voter to re-elect the incumbent after observing  $x_t = 0$ . Given the equilibrium strategies, it is also optimal for the voter to fire incumbents who have selected  $x_t = 1$  if out of equilibrium beliefs are that incumbents who chose  $x_t = 1$  are very likely to be bad. In this case our assumption that  $p > 1 - (p - q)$  ensures that the voter prefers to fire the incumbent. For the strategy of the incumbent to be in turn a best response, it must be the case that types who view  $x_t = 1$  as the right decision (when  $s_t = 1$  or  $r_t = 1$ ) prefer to forgo the current payoff to their preferred action (equal to 1) in order to remain in office. Since in this equilibrium the value of office for a good politician is  $U^G = p/(1 - \beta)$  and for a bad politician is  $U^B = q/(1 - \beta) < U^G$ , this implies that timid behavior is a best response for incumbents whenever  $1 < \beta q/(1 - \beta)$ , or

$$\beta > 1/(1 + q). \quad (10)$$

Our main result in this section is that the timid equilibrium is not just one possible political equilibrium of the game without term limits, but that it is the Markov perfect equilibrium with the highest possible payoff to the voter:

**Proposition 1** *For sufficiently low discount rates, the Markov perfect equilibrium with the highest possible payoff to the voter in the game without term limits is the “timid” equilibrium.*

The formal proof of this proposition is in the appendix. Proposition 1 implies that for sufficiently low discount rates the voter is not only unable to induce the politician to implement the first-best policy, but that the best possible outcome for the voter is one in which the politicians always ignore their private information and implement  $x_t = 0$  in every period. Intuitively, low discount rates make the payoff from future periods in office sufficiently high that incumbents are unwilling to take actions that reduce re-election probability, regardless of how much this would increase utility in the short run.

This idea is made more precise in the following corollary to proposition 1:

**Corollary 1** *For sufficiently low discount rates, re-election rates are equal to one on the equilibrium path of any Markov perfect equilibrium in the game without term limits.*

That the re-election rate is equal to one on the equilibrium path of the timid equilibrium and other pooling equilibria is immediate. In these equilibria the voter is indifferent between the incumbent and the challenger on the equilibrium path and we assume that the voter re-elects in this case. The appendix shows that the same is also true for the other possible equilibria of the game without term limits.

The upper bound on the utility of the voter, which has been established in proposition 1, is the benchmark against which we compare the impact of term limits. The next section analyzes how term limits change the political equilibrium and under what circumstances term limits can serve the interests of voters.

## 5 Term limits

In the last section we showed that for sufficiently low discount rates even public-spirited politicians who care about the welfare of the voter are induced to behave

perversely, taking actions arbitrarily often that are known to be deleterious to voter welfare. Evidently the problem is that the equilibrium behavior of voters makes the continuation payoff following untruthful actions too high, and thus the prospect of re-election too important to politicians, relative to the value of short-run decisions. One way out of this problem is for the voter to announce that an incumbent's probability of re-election *in future* will be lower, which would reduce the anticipated continuation payoff to remaining in office and make truthful short-run behavior more palatable. But, since the electorate cannot easily bind its future behavior in this way, such an announcement is unlikely to be credible. In this context, therefore, a constitutional restriction on the number of terms that an incumbent can stay in office may serve as a commitment device for the electorate that can alter equilibrium behavior and might increase equilibrium welfare of the voter.

## 5.1 Equilibrium

Suppose, therefore, that politicians are constitutionally limited to serve at most two terms in office. With this restriction, there is now a unique Markov perfect equilibrium of the game, in which incumbents' strategies differ dramatically from the timid behavior considered above. Now any incumbent politician has a strictly dominant strategy which involves truthful behavior in each term he is in office, i.e.  $x_t = s_t$  and  $x_t = r_t$  for good and bad incumbents respectively. That truthful behavior is a dominant strategy in an incumbent's second term is immediate, since a second-term incumbent is a "lame duck" with no prospect of re-election. That behavior is also truthful in an incumbent's first term in office follows from the fact that the highest continuation payoff for a first-term incumbent is  $\beta$ , which is strictly lower than the payoff from implementing his preferred policy in his first term in office. To complete the equilibrium characterization, we must next solve for the equilibrium re-election rule of the voter, which we relegate to the proof in the appendix of the following proposition:

**Proposition 2** *There is a unique Markov perfect equilibrium in the presence of a two-term limit which involves "truthful" behavior by politicians in all periods. The voter re-elects the incumbent if the incumbent implements  $x_t = 0$  during his first term in office and fires otherwise.*

Thus, re-election rates are strictly less than one in the presence of two-term limits. In the equilibrium characterized in proposition 2 both good and bad incumbents choose  $x_t = 1$  with strictly positive probability in their first term in office and are as a consequence not re-elected. This stands in sharp contrast to the equilibria in the absence of term limits, as shown in corollary 1. Our model therefore predicts that for sufficiently low discount rates re-election rates at the end of an incumbent's first term should fall as two-term limits are introduced. This is summarized as:

**Corollary 2** *For sufficiently low discount rates, turnover is higher after first terms when term limits are in place than when they are not.*

The intuition behind this result is that in the absence of term limits, a low discount rate makes re-election so valuable that both types always implement policies that ensure re-election. Under two-term limits, in contrast, the payoff from re-election is smaller and first-term policy-making less timid: both good and bad politicians implement  $x_t = 1$  whenever their relevant state of nature is equal to one, even though doing so implies certain electoral defeat. This implication of the model is the basis of our empirical work in section 7, where we examine how the presence of two-term limits affected the re-election chances of US governors in the 1950-2000 period.

Proposition 2 has a further empirical implication. In line with other political agency models, it predicts that there should be a "lame duck" effect, in the sense that policy choices by politicians in their second term should on average differ from the policy choices of incumbents in their first term. The reason is that good politicians, who are more likely to choose  $x_t = 0$  in the equilibrium of proposition 2, are also more likely to be elected to a second term in office. As both types of politicians behave truthfully in both terms in office, politicians in their second term on average choose  $x_t = 1$  less often than first term incumbents. Note that this lame duck effect is entirely due to the selection effect of the election at the end of an incumbents' first term in office and is not driven by a change in the behavior of incumbents who face a binding term limit. While this result underlines the importance of selection effects, it would not be difficult to extend the model so that a binding term limit also changes the behavior of incumbents. In the empirical literature, surveyed in section 2, the contributions of Besley and Case (1995a, 2003) and List and Sturm (2003) provide support for this

implication of the model. They find that US governors who cannot be re-elected chose policies which are significantly different from those of all other governors.

## 5.2 When can term limits help?

We now ask whether expected voter welfare could be higher with a two-term limit on incumbents than in the timid equilibrium of the infinite horizon game, which Proposition 1 establishes as the equilibrium with the highest payoff for the voter when discount rates are small. In that equilibrium, the voter's expected payoff in each period is just  $p$ , so that the expected present discounted value of equilibrium welfare is

$$V^\infty = p/(1 - \beta) \quad (11)$$

Equilibrium voter welfare in the term-limit case depends on the expected payoff obtained from first-term and second-term incumbents, and the probabilities with which the two occur. Since all incumbents behave truthfully in all periods, the expected payoff to the voter from an incumbent who is good with some probability  $\pi$  is

$$v(\pi) = 1 - (1 - \pi)(p - q). \quad (12)$$

A first-term incumbent is good with probability  $\pi_0$ , while a second-term incumbent is good with probability  $\pi_1 = \pi_0 p / P_0 > \pi_0$ , where

$$P_0 = \pi_0 p + (1 - \pi_0)q \quad (13)$$

is the probability that a first-term incumbent chooses  $x_1 = 0$  and is re-elected.

Relative to the timid equilibrium a two-term limit has both a truthfulness and a selection effect. The reduced re-election incentive induces truthful behavior by both types of incumbents in both periods in office. The truthfulness effect of the term limit increases voter welfare if  $v(\pi_0) \geq p$  and decreases it otherwise. Additionally, truthful behavior induces a selection effect: Re-election rates for both good and bad incumbents fall. However, re-election rates of bad incumbents, who are more likely to choose  $x_t = 1$ , fall more than the re-election rate of good incumbents. This implies that the average quality of politicians in their second term in office will be higher than the average quality of first term incumbents. This must increase voter welfare since  $\pi_1 > \pi_0$

and truthful behavior by a good politician yields a higher payoff to the voter than truthful behavior by a bad politician.

On balance, voter welfare might therefore rise or fall with the introduction of a term limit. To sort out these effects, we calculate expected voter welfare with a two-term limit from the value function

$$\begin{aligned} V = & 1 - (1 - \pi_0)(p - q) \\ & + \beta [\pi_0 p(1 + \beta V) + (1 - \pi_0)q(1 - (p - q) + \beta V)] \\ & + \beta(1 - P_0)V \end{aligned} \quad (14)$$

which can be solved for  $V$  to obtain

$$V = \frac{1}{1 - \beta} \left[ 1 - (1 - \pi_0)(p - q) \frac{1 + \beta q}{1 + \beta P_0} \right]. \quad (15)$$

The second term in brackets in this expression is equal to the per-period expected loss from the action of a bad politician, equal to  $p - q$ , multiplied by the discounted average probability that a bad politician is in office. It is straightforward to verify that  $V$  is an increasing function of  $\pi$  and  $q$  and a decreasing function of  $p$ . Moreover,  $V \rightarrow 1/(1 - \beta) > V^\infty$  as  $\pi \rightarrow 1$  or  $q \rightarrow p$ . Thus we have:

**Proposition 3** *For sufficiently low discount rates, expected voter welfare is higher with a two-term limit than without a term limit if the proportion of good politicians is sufficiently high, or the difference in preferences of good and bad politicians is sufficiently small.*

In some jurisdictions, the form of term limits is more stringent than considered here: politicians are constrained to serve no more than one term in office, with no possibility of re-election. Since, in the environment we are considering, it is the prospect of re-election that induces undesirable behavior from incumbents, it may seem more natural to impose such a one-term limit than a two-term limit. In fact, however, it is not possible in this environment for the electorate to prefer a one-term limit to a two-term limit. In both cases, the strategies of both types of incumbents are identical (they are truthful) and, since good politicians are strictly more likely to be re-elected to a second term than bad politicians, a two-term limit induces a positive selection effect that increases the average payoff to the voter. Summarizing this discussion, we have:

**Proposition 4** *In this model, a two-term limit always yields a higher equilibrium payoff for the voter than a one-term limit.*

## 6 Extensions

This section will discuss the implications of a number of extensions of the model. The next subsection considers under what circumstances three-term limits might be optimal. The following subsection considers the incentives of different types of people to become politicians. The next subsection considers the importance of asymmetric information for our results and the final section explores the implications of adding “ego rents” from holding office to the model.

### 6.1 Three-term limits

Our analysis has concentrated on two-term limits, which seems to be the most frequently used restriction on tenure. However, there are also cases of three-term or even longer term limits. Many of the US states that have introduced term limits for their state lawmakers have, for example, limited them to three terms in office. What are the relative benefits of two versus three-term limits?

A politician who is in the second term of a three-term limit faces the same incentives as a politician in the first term of a two-term limit. It is therefore a dominant strategy for both types of politicians to behave truthfully in the second and third term of a three-term limit for any non-negative discount rate. It is also a dominant strategy for a good incumbent to behave truthfully in his first term of a three-term limit if  $1 > \beta + \beta^2 p$ , which is satisfied for sufficiently large discount rates. Similarly for bad incumbents, it is a dominant strategy to behave truthfully in their first term if  $1 > \beta + \beta^2 q$ , which is satisfied whenever the condition for good incumbents holds. It is straightforward to check that the voter’s optimal response to these strategies is to re-elect the incumbent as long as the updated beliefs about the incumbent are larger than  $\pi_0$ .

If politicians are sufficiently impatient that both types behave truthfully in all three terms of the three-term limit, then the voter’s utility must be higher under a three-

term limit than under a two-term limit. In this case the payoff during the first two terms of the three-term limit is the same as under a two-term limit. However, under a three-term limit the voter has the additional possibility to retain politicians who are more likely to be of the good type than a randomly drawn challenger for an additional term which cannot reduce his welfare. The results of this discussion are summarized in the following proposition:

**Proposition 5** *For sufficiently high discount rates expected voter welfare with three-term limits is higher than with two-term limits.*

The same logic can be extended to even longer term limits. An increase in discount rates will make longer term limits a better institution than shorter term limits. A direct implication of this argument is that there is a critical discount rate above which an “infinite” term limit, i.e. no term limit at all, is the optimal institution. If politicians are so impatient that they behave truthfully even in the absence of term limits then finite term limits must be unambiguously welfare reducing for the voter, as they restrict his ability to retain good incumbents.

It is also not difficult to see that two-term limits will be preferred by the voter to longer term limits if discount rates are sufficiently low as to be incompatible with truthful behavior by politicians in all three terms of a three-term limit and also two-term limits are better for the voter than no term limits. The reason is that in this case the equilibrium with three-term limits involves pooling on either  $x_t = 0$  or  $x_t = 1$  during an incumbent’s first term in office and truthful strategies for the second and third term. If the voter prefers the political equilibrium in the second and third term, which is identical to the equilibrium under a two-term limit, to timidity, then he must prefer a two-term limit to a three-term limit.

## 6.2 Endogenous types

So far we have assumed that the probability that a randomly chosen politician is of the good type is exogenously given. Supporters of term limits frequently argue that term limits will encourage different people to run for political office. We can address this claim in our model by comparing the change in the value of holding office for good and bad politicians as term limits are introduced.

The equilibrium payoffs of good and bad incumbents in the timid equilibrium without term limits are  $p/(1 - \beta)$  and  $q/(1 - \beta)$  respectively. If a two-term limit is introduced, then these payoffs change to  $1 + \beta p$  and  $1 + \beta q$  respectively. Since  $p > q$  equilibrium payoffs of good politicians are higher than the payoffs of bad politicians both in the absence and presence of term limits. The payoff of good incumbents in the presence of term limits relative to the payoff in the timid equilibrium simplifies to  $(1/p + \beta)(1 - \beta)$ . The same ratio for bad incumbents is  $(1/q + \beta)(1 - \beta)$  which must be larger as  $p > q$ . The results of this discussion are summarized in the following proposition.

**Proposition 6** *Introduction of a two-term limit causes the equilibrium value of office to fall proportionately more for good than bad politicians, relative to the timid equilibrium of the game without term limits.*

How this change in the relative payoff of holding office for good and bad incumbents affects the proportion of good types that seek political office clearly depends on the distribution of outside options of good and bad types. If these are sufficiently similar then the introduction of term limits would endogenously reduce the average quality of politicians. This mechanism has therefore the potential to overturn our finding that two-term limits can be beneficial if the proportion of good types in the pool of possible politicians remains constant.

### 6.3 More information

We have so far assumed a very simple form of asymmetric information between politicians and the voter: Politicians perfectly observe the realization of the state of nature at the beginning of each period while the voter never learns anything about the state of nature. It is easy to see that some degree of asymmetric information is crucial for our results. Suppose, for example, that the voter could also perfectly observe the realization of the state  $s_t$ . The voter would then be able to enforce first best policy making, i.e. both types of politicians choosing  $x_t = s_t$ , in the game without term limits, if politicians are sufficiently patient. This first-best equilibrium would be sustained by a strategy for the voter to re-elect the incumbent if  $x_t = s_t$  and fire otherwise. It is also

immediate that there would be no role for term limits in this case. A two-term limit would still induce truthful behavior by incumbents, which must be strictly worse for the voter than first-best policy making.

While some asymmetric information is therefore clearly crucial for our results, we will now show that they do not depend on the extreme form of asymmetric information which we have assumed so far. One way to relax this assumption is to assume that with a probability  $\phi$  the state  $s_t$  is also revealed to the voter at the time of the election. This change in assumptions has no impact on the equilibrium under a two-term limit. It is still a dominant strategy for both types of incumbents to behave truthfully in both periods and as a consequence the voter only re-elects the incumbent if the first term action was  $x_t = 0$ .

Now consider the equilibria of the game without term limits. It is not difficult to see that the timid equilibrium and also the other equilibria characterized in the proof of proposition 1 continue to exist. For proposition 1 to continue to apply, we only need to rule out that first-best policy making, i.e. both types of politicians pool on  $x_t = s_t$ , is an equilibrium. This equilibrium will not exist if

$$1 > \phi \frac{\beta}{1 - \beta} (1 - (p - q)). \quad (16)$$

The left hand side of (16) is the gain in payoff to a bad incumbent from choosing  $x_t = 1$  when  $r_t = 1$  and  $s_t = 0$ . The right hand side of (16) is the expected punishment for this deviation from the first-best policy. With probability  $\phi$  the fact that  $s_t = 0$  is revealed and the incumbent loses his continuation payoff of  $(\beta/(1 - \beta))(1 - (p - q))$ . Clearly condition (16) holds if  $\phi$  is sufficiently small. It is also immediate that a good incumbent has no incentive to deviate from the first-best equilibrium. Condition (16) therefore implies that the first-best equilibrium will cease to exist if there is a sufficiently large amount of asymmetric information. If we assume that (16) is satisfied, then the upper bound on the utility of the voter established in proposition 1 continues to hold and our results on the welfare effects of term limits apply as before.

## 6.4 Ego rents

We have so far assumed that the only payoff from holding political office is the utility that a politician derives from implementing the policy that he prefers. An obvious

extension would be to also allow that politicians receive a per period “ego rent”  $R$  from holding office which is independent of their policy choices. The presence of ego rents will reinforce the incentive of politicians to stay in office. It is not difficult to see that ego rents will strengthen our finding in proposition 1 that the timid equilibrium involves the highest possible payoff to voters for sufficiently low discount rates in the absence of term limits.

Ego rents do, however, offer new possibilities in the presence of term limits. With sufficiently high ego rents it is possible that one-term limits are the optimal institution for the voter. The necessary and sufficient conditions for this are  $p < 1 - (1 - \pi_0)(p - q)$  and  $1 < \beta(1 + R)$ . The first condition states that truthful behavior by an untried politician generates a higher per period payoff for the voter than his payoff in the timid equilibrium. This condition is therefore necessary and sufficient for the voter to prefer a one-term limit to the alternative of no term limits at all. The second condition places a lower bound on the size of the ego rents.

It is not difficult to check that the equilibrium under two-term limits must involve pooling on either  $x_t = 0$  or  $x_t = 1$  during a politician’s first term in office and truthful behavior during the second term in office if and only if these two conditions hold. Furthermore, in either case the voter on the equilibrium path re-elects the incumbent to a second term. However, as condition  $p < 1 - (1 - \pi_0)(p - q)$  implies that the voter prefers the truthful behavior during a politicians’ second term in office to pooling on either  $x_t = 0$  or  $x_t = 1$ , he would prefer a one-term limit, which induces truthfulness in every period. That the condition  $1 < \beta(1 + R)$  is also necessary for one-term limits to dominate two-term limits is an immediate implication of proposition 4, as behavior would be truthful in both terms of a two-term limit if this inequality was not satisfied.

The same arguments can be used to also show that one-term limits must dominate three-term or even longer term limits whenever these two conditions are satisfied. The results of this discussion are summarized in the following proposition:

**Proposition 7** *If politicians also receive an “ego rent”  $R$  from holding office, then one-term limits will be the optimal institution for the voter if and only if  $p < 1 - (1 - \pi_0)(p - q)$  and  $1 < \beta(1 + R)$ .*

A direct empirical implication of this result is that in the parameter space charac-

terized in proposition 7 re-election rates at the end of a politicians first term in office should be the same both in the presence of two-term limits and in the absence of term limits. In either case politicians adopt a pooling strategy during their first term in office and the voter re-elects the incumbent. However, our empirical evidence, to which we turn in the next section, strongly rejects this empirical prediction. We are therefore sceptical that this result has empirical relevance.

## 7 Empirical evidence

Our model points out a mechanism which can explain why two-term or longer term limits are a political institution that can increase the welfare of voters. Central to our argument is the notion that term-limited politicians are more apt to pursue actions in office that they consider to be desirable, even when such actions are punished by voters in subsequent elections. While the welfare implication of the model is, of course, not easily amenable to empirical validation, the latter implication for electoral fortunes is much more so: turnover of incumbents should be higher when term limits are in place than when they are not, even in periods when limits do not actual bind on incumbent politicians.

We test this prediction using data on gubernatorial elections in the 1950-2000 period. Our empirical strategy is to estimate reduced-form models of the re-election probability of an incumbent governor at the end of a first term in office. Apart from the presence of term limit legislation, we include a range of other determinants of a governor's re-election probability as control variables.<sup>5</sup>

### 7.1 Description of the data

We have collected data on all governors who were in office in one of the 48 continental American states between 1950 and 2000.<sup>6</sup> In the appendix, we provide detailed references to our data sources. Table 2 provides mean values for all variables. For estimation, we restrict attention to observations in which an incumbent governor was

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<sup>5</sup>The determinants of the re-election of US governors have previously been estimated by Adams and Kenny (1989), Besley and Case (1995b) and Peltzman (1987).

<sup>6</sup>As common in the literature on US states we exclude Alaska and Hawaii.

eligible for re-election at the end of his first term in office and faced either no term limits or a two-term limit. There are 349 such cases in our sample. A subset of 36 governors from this group did not serve for the entire previous term, but succeeded to office during the term because their predecessor died or left office between elections for other reasons. To avoid that our results are driven by such special cases, we excluded them from the sample, leaving 313 observations. In 168 of these, there was no term limit at all in place at the time of the election, and in 145 cases the state had in place a two-term limit for the office of governor.

Our goal is to estimate a model of the re-election probability of incumbent governors as a function of an indicator variable, equal to one if at the time of election state law limited the governor to two terms in office, and equal to zero otherwise. Table 1 provides an overview over the term limit legislation in place in the US states between 1950 and 2000 and documents the steady trend towards two-term limits for governors. In addition to this variable, we consider three other sets of determinants of the re-election success of the governor. The first set of variables is state characteristics, including total state population, the proportion of the population over 65, the proportion of the population between 5 and 17 and the real growth rate of state per capita income in the election year and in the previous year. The second set of variables is characteristics of the governor, including age, party affiliation, and share in the total vote when first elected to office.

Finally, we include two variables that measure the political climate during the current electoral cycle, which are similar to those used in Diermeier et. al. (2002). The first is *sow* ("state of the world"), the share of the major-party vote captured by the Democratic presidential candidate in the preceding election, which we normalize by subtracting 0.5. The second is *sos* ("state of the state"), defined as the difference between the last major-party presidential vote share of the Democratic candidate in the state and at the national level. We expect high values of these variables to enhance the re-election prospects of Democratic governors relative to Republican governors. We therefore include them both directly and interacted with the indicator for the governor's party affiliation.

## 7.2 Results

The last column of table 2 provides p-values for t-tests of the null hypothesis that the mean of our variables is the same for observations with two-term limits and without term limits. The results are suggestive. Just over 70 percent of governors in states without term limit legislation are re-elected at the end of their first term in office, while the same is true for only 60.7 percent of the incumbents in states with two-term limits and this difference is significant at the 10 percent level. This is exactly the pattern of re-election rates that our model predicts.

The only other significant differences in the mean values between the two groups are the proportion of people over 65, the proportion between 5 and 17 and the age of the governor. States without term limits seem to have slightly younger populations and are represented by on average somewhat younger governors. Striking are the insignificant differences in the mean of the variables for the party affiliation of the incumbent governor and his vote share in the last election. The presence of term limit legislation neither seems to influence the mean party balance nor the mean election results in the election that brought the incumbent first into office.

To further investigate this pattern we estimate linear-probability specifications of incumbent re-election.<sup>7</sup> Results are reported in Table 3. The first column presents a parsimonious specification, including a time trend and our indicator for the presence of two-term limits. The term limit effect is significant at the 5 percent level; the point estimate predicts a 13.1 percent fall in the re-election rate as two-term limits are introduced. The magnitude of this effect is therefore close to the pattern suggested by the table of means. The following columns of table 3 successively investigate more demanding specifications.<sup>8</sup>

The model in column 2 adds information on state and governor characteristics. These controls have essentially no impact on the estimated effect of term limits. Most of the control variables are statistically significant and have plausible signs. The gov-

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<sup>7</sup>We have also experimented with probit and logit specifications and the results are very similar to those of the OLS model.

<sup>8</sup>The difference in the number of observations between the specification in the first column and those in the other columns is due to three independent governors in the sample for which *republican* is coded as missing and two missing values in *lastvote* because Louisiana did not hold a general election run-off for the governorship in 1983 and 1987.

ernor's age has an inverted u-shaped relationship with the re-election probability. The governor's vote share in the last election has a positive and significant effect on the re-election probability. Of the state characteristic variables, both the current real growth rate of per capita income and its lagged value enter positively. More surprisingly, an increase in the proportion of the population over 65 or between 5 and 17 reduces the governor's re-election chances.

Column 3 adds measures of the political climate. These variables also have the expected signs, and including them has only a minor effect on the other coefficients. The model in column 4 replaces the time trend with time dummies. The estimated negative effect of a two-term limit on the re-election probability at the end of the governor's first term now increases to 14.7 percent and remains significant at the five percent level. The final column of table 3 adds state fixed effects. This increases the estimated term limit effect to 33.5 percent. Because state and year fixed effects are included in this specification, the term limit effect is identified exclusively from the 13 states that changed from no term limits to two-term limits between 1950 and 2000. As eight of these changes occurred during the 1990s, the larger estimated effect could reflect transition effects of the introduction of term limits. The point estimates in the previous columns may therefore be a better guide to the likely long-run effects of two-term limits on re-election probabilities.

Governors who leave office at the end of their first term in office do so if they decide not to run for another term in office, are defeated in the primary, or are defeated in the general election. Table 3 treats all three modes of exit identically, which may be inappropriate. A decision not to run for re-election or a defeat in a primary may reflect an expectation of likely defeat in the general election, but it may sometimes reflect entirely different considerations as well. To exclude such possibilities, the estimates in table 4 restrict the sample to governors who actually ran in the general election. This change has only a minor impact on our estimates. The term-limit coefficient is comparable in sign and significance in all cases, reinforcing our finding that two-term limits reduce the probability that an incumbent is re-elected at the end of his first term.

## 8 Conclusion

At first sight, term limits seem paradoxical, as they reduce the voter's ability to hold politicians accountable for their policy choices. We have developed a simple political agency model to show that a two-term limit can be in the interest of voters despite the accountability effect of elections. The mechanism that drives our results is that term limits reduce the value of holding office. This induces "truthful" behavior by incumbents, which in turn enables the voter to selectively elect higher quality agents to a second term in office. The combination of these two effects can increase the utility of the voter *ex ante*. The main novel empirical prediction of our model is that two-term limits should reduce re-election rates at the end of an incumbent's first term in office. We find strong support for this prediction in data from gubernatorial elections in the post-war period.

In broader terms, our analysis is a contribution to an emerging "political theory of the second best" that provides new insights into the design of electoral institutions. Agency problems in government are only partially resolved by having open elections. In this context a term limit can be welfare enhancing – even when the direct effect of term limits is unambiguously negative – because it interacts with the other distortions in the political system. In this respect, our work parallels Besley and Smart (2003), who use an agency model to study how a variety of (non-electoral) restraints on government affect political incentives. The common theme is that re-election rules chosen in equilibrium by fully rational voters will not generally be optimal from their own point of view, because voters are unable to pre-commit to use elections as an optimal incentive for their leaders. Thus, in the present context, institutions like term limits that reduce the discretion of voters may have unexpected and salutary effects on efficiency in government.

## 9 Appendix

**Proof of Proposition 1:** The proof proceeds in three steps. The first step shows that the timid equilibrium is the best pooling equilibrium from the perspective of the voter. The second step shows that all equilibria which involve a pooling strategy for the

politicians at some  $\hat{\pi} \neq \pi_0$  are worse than the timid equilibrium for the voter. The final step shows that for sufficiently low discount rates there is no equilibrium which involves separating strategies for all  $\pi$ .

**Step 1** Apart from the timid equilibrium there is only one other pure strategy pooling equilibrium. In this alternative equilibrium both types of incumbents always choose  $x_t = 1$  and the voter re-elects if  $x_t = 1$  and fires otherwise. These strategies are an equilibrium if the no deviation conditions  $1 < (1 - p)\beta/(1 - \beta)$  and  $1 < (1 - q)\beta/(1 - \beta)$  for good and bad incumbents respectively hold. Equilibrium payoff of the voter in this equilibrium is  $(1 - p)/(1 - \beta)$ , which is lower than the payoff in the timid equilibrium, which is  $p/(1 - \beta)$ , as we assume that  $p > 1/2$ .

We will now rule out that there can be any mixed strategy pooling equilibria. To simplify the notation we will use  $\sigma_1$  instead of  $\sigma(x_t = 1, \pi_t)$  and  $\sigma_0$  instead of  $\sigma(x_t = 0, \pi_t)$  if this does not cause confusion. Suppose first that the bad type randomizes between  $x_t = 1$  and  $x_t = 0$  if the state is  $r_t = 1$ . For this to be an equilibrium, it has to be the case that  $1 + \sigma_1\beta U_B = \sigma_0\beta U_B$  where  $U_B = q/(1 - \beta)$ , which implies that

$$(\sigma_0 - \sigma_1) = \delta/q \quad (17)$$

As the timid equilibrium exists whenever  $\delta < q$  equation (17) cannot be satisfied for any  $\sigma_1$  and  $\sigma_0$ , if we assume that the voter re-elects the incumbent if he is indifferent. The argument for the case in which the bad type randomizes in state  $r_t = 0$  and the cases in which the good type randomizes in either state  $s_t = 1$  or  $s_t = 0$  are analogous.

**Step 2** Pooling at some  $\hat{\pi} \neq \pi_0$ . We show that the voter's payoff in any such equilibrium can be no higher than in the timid equilibrium. From step two we know that the only pooling equilibria involve either both types always choosing  $x_t = 0$  or  $x_t = 1$ . In either case this implies that on the equilibrium path  $\tilde{\pi}(x_t, \hat{\pi}) = \hat{\pi}$ . To support pooling at  $\hat{\pi}$ , it must be the case that  $\sigma(\tilde{\pi}, x_t) > 0$  for at least one  $x_t$ : otherwise, both types would play the truthful (and non-pooling) strategies  $\lambda^G(\hat{\pi}_t, s_t) = s_t$  and  $\lambda^B(\hat{\pi}_t, r_t) = r_t$ . Since re-election is a best response for the voter,

$$V(\tilde{\pi}(x, \hat{\pi})) = V(\hat{\pi}) \geq V(\pi_0) \quad (18)$$

Proposition 1 shows that the timid equilibrium has a payoff of  $p/(1 - \beta)$  for the voter and that this is the highest payoff to the voter among all pooling equilibria. Hence we have

$$\frac{p}{1 - \beta} \geq V(\hat{\pi}) \geq V(\pi_0) \quad (19)$$

which completes this step.

**Step 3** Non-pooling strategies for all  $\pi$ . In this case, we first show that in any such equilibrium there exists a value of  $\pi < 1$  above which the incumbent is re-elected with probability one regardless of his policy choice.

Given that  $P_x^\theta > 0$ , where  $P_x^\theta$  is the probability that an agent of type  $\theta$  chooses action  $x$ , Bayes' rule implies updated beliefs at each action can be written

$$\tilde{\pi}_x(\pi) = \frac{\pi}{\pi + (1 - \pi)\kappa_x(\pi)} \quad (20)$$

where  $\kappa_x = P_x^G/P_x^B$  is the likelihood ratio given strategies at  $\pi$ . Thus

$$g(\pi) \equiv \left| \frac{1}{\tilde{\pi}_1} - \frac{1}{\tilde{\pi}_0} \right| = \frac{1 - \pi}{\pi} |\kappa_1(\pi) - \kappa_0(\pi)| \quad (21)$$

Define

$$K^* = \max_{\pi \in [0,1]} |\kappa_1(\pi) - \kappa_0(\pi)| \quad (22)$$

and let  $g^*(\pi) = K^*(1 - \pi)/\pi$ . By construction, (21) implies  $g(\pi) \leq g^*(\pi)$  for all  $\pi \in [0, 1]$ . Since  $0 \leq g(\pi) \leq g^*(\pi)$  and  $g^*(\pi) \rightarrow 0$  as  $\pi \rightarrow 1$ , it follows that  $g(\pi)$  also converges to zero. Thus  $|\tilde{\pi}_1 - \tilde{\pi}_0| \rightarrow 0$  as  $\pi \rightarrow 1$ .

To prove the claim, suppose not, and let  $\pi^* = \sup\{\pi : \sigma(\pi) = 1\}$ . Further, let  $\hat{\pi} = \inf\{\pi : 1 - (1 - \pi)(p - q) > (1 - \beta)V(\pi_0)\}$  define the level of reputation above which truthful behavior by the incumbent is preferred by the voter to the equilibrium behavior of the challenger. (Such a  $\hat{\pi}$  exists since  $Ev(\lambda, \pi) < 1 - (p - q)$  for all  $\lambda$  and all  $\pi < 1$ .) Since  $\tilde{\pi}_1(\pi) \rightarrow \tilde{\pi}_0(\pi)$ , there exists  $\pi > \max\{\pi^*, \hat{\pi}\}$  such that  $\min\{\tilde{\pi}_1, \tilde{\pi}_0\} > \pi^*$ ; that is, the incumbent will be fired at  $\pi$  regardless of which action  $x$  is observed. Consequently, truthful behavior  $\lambda_\theta(s) = s_\theta$  is the unique best response for the incumbent and, since  $\pi > \hat{\pi}$ , truthful behavior by the incumbent is preferred to the equilibrium behavior of the challenger. Hence  $\sigma(\pi) = 1$ , a contradiction, and it follows there exists  $\bar{\pi} < 1$  such that  $\sigma(\pi) = 1$  for all  $\pi \geq \bar{\pi}$ .

Since the voter's beliefs form a martingale it follows that  $\max\{\tilde{\pi}_0(\pi), \tilde{\pi}_1(\pi)\} \geq E\tilde{\pi} = \pi$ . For any  $\pi \geq \bar{\pi}$ , therefore,  $\max\{\sigma(\tilde{\pi}_0(\pi)), \sigma(\tilde{\pi}_1(\pi))\} = 1$ : the incumbent has the option to remain in office in all periods after achieving reputation  $\pi$  by choosing whichever action  $x$  causes reputation to rise. Thus we have, for all  $\pi \geq \bar{\pi}$ ,

$$U_B(\pi) \geq \frac{\min\{q, 1 - q\}}{1 - \beta} \quad (23)$$

since the payoff to the action which induces re-election has expected payoff no less than  $\min\{q, 1 - q\}$ .

Finally, consider the choice of the bad incumbent at any critical reputation  $\pi$  for which one action, say  $x = 0$ , induces a reputation  $\tilde{\pi}_0 \geq \bar{\pi}$ , while the alternative action  $x = 1$  induces a reputation  $\tilde{\pi}_1 < \bar{\pi}$ . To show that such a critical reputation has to exist, suppose not. If the voter re-elects for all  $\pi$  both types of incumbents would play truthful strategies for all  $\pi$ . However, this implies that for any  $\pi^* < \pi_0$  we have  $V(\pi^*) < V(\pi_0)$ , which contradicts the hypothesis. Since for sufficiently low discount rates  $\min\{q, 1 - q\}\beta/(1 - \beta) > 1$ , at such a critical reputation the bad incumbent strictly prefers the action that induces re-election to that which does not. Hence the equilibrium either involves a strategy for which one action reveals type  $G$ , which was shown to be impossible, or a pooling strategy at  $\pi$ , which contradicts the hypothesis in this case.

**Proof of Corollary 1** The main text has already argued that re-election rates are equal to one on the equilibrium path of all pooling equilibria. It remains to be shown that re-election rates are also equal to one on the equilibrium path of equilibria in which the politicians only pool for some  $\pi_t \neq \pi_0$ . This proceeds in four steps. First, consider a  $\bar{\pi}$  such that strategies of the incumbents are non-pooling for all  $\pi > \bar{\pi}$ . In this case step three of the proof of proposition 1 shows that the voter will re-elect the incumbent regardless of his policy choice if  $\bar{\pi}$  is sufficiently close to one. Second, consider a  $\bar{\pi}$  such that strategies are pooling for all  $\pi > \bar{\pi}$ . In this case step 2 of the proof of proposition 1 shows that for any  $\pi$  at which strategies are pooling  $V(\pi) \geq V(\pi_0)$  and the voter therefore also re-elects the incumbent. We have therefore shown that the incumbent will be re-elected in any equilibrium for  $\pi$  sufficiently close to one. Third, note that incumbents always have the option to stay in office forever once they have achieved

a reputation  $\pi > \bar{\pi}$ . This is trivially true if strategies are pooling and step three of the proof of proposition 1 shows that this is also the case if strategies are non-pooling. Furthermore, the strategy which ensures perpetual re-election has an expected per period payoff of at least  $1 - p$  and  $\min\{q, 1 - q\}$  for good and bad incumbents respectively. Fourth, consider the choice of a bad incumbent at a critical reputation  $\pi$  for which the strategy prescribes an action, say  $x_t = 1$ , which induces a reputation  $\tilde{\pi}_1$  for which  $V(\tilde{\pi}_1) < V(\pi_0)$  and while the alternative action  $x_t = 0$  induces a reputation  $\tilde{\pi}_0 > \bar{\pi}$  for which therefore  $V(\tilde{\pi}_0) > V(\pi_0)$ . As for sufficiently low discount rates  $\min\{q, 1 - q\}\beta/(1 - \beta) > 1$ , at such a critical reputation the bad incumbent would strictly prefer the action that induces re-election to that which does not, which contradicts the hypothesis that such a strategy can be part of an equilibrium for sufficiently low discount rates. The same argument can be used to rule out that there could be a similar critical reputation in the equilibrium strategy of good incumbents.

**Proof of Proposition 2** In the main text we have already argued that it is a dominant strategy for both types of incumbents to implement the policy that maximizes their per period utility. We now need to consider the voter's optimal re-election rule. Given the strategies of the politicians, the voter's expected payoff from an incumbent who is in his first term in office is  $\pi_0$ . Let  $\pi_1^x$  denote her updated beliefs about the type of the incumbent on observing  $x$  in the first term. These are given by Bayes rule as:

$$\pi_1^1 = \frac{\pi_0(1 - p)}{\pi_0(1 - p) + (1 - \pi_0)(1 - q)} < \pi_0 \quad (24)$$

$$\pi_1^0 = \frac{\pi_0 p}{\pi_0 p + (1 - \pi_0)q} > \pi_0 \quad (25)$$

Now let  $P_x$  denote the probability that  $x$  is observed in the first term given the equilibrium strategies and  $\sigma_x$  the corresponding re-election probabilities at the end of the first term. In each period, if the incumbent is good with probability  $\pi$ , the payoff expected in the current period by the voter is

$$v(\pi) = 1 - (1 - \pi)(p - q) \quad (26)$$

In choosing re-election rules, the voter's problem is

$$V = v(\pi_0) + \beta \sum_{x=0,1} P_x \max_{\sigma_x} \{\sigma_x(v(\pi_1^x) + \beta V) + (1 - \sigma_x)V\} \quad (27)$$

Differentiation shows  $v(\pi_1^x) > (1 - \beta)V$  implies  $\sigma_x = 1$ , and  $v(\pi_1^x) < (1 - \beta)V$  implies  $\sigma_x = 0$ . By definition,  $V \geq v(\pi_0)/(1 - \beta)$ , so  $\pi_1^1 < \pi_0$  implies  $v(\pi_1^1) < v(\pi_0) \leq (1 - \beta)V$  and  $\sigma_1 = 0$ . To show  $\sigma_0 = 1$ , suppose instead that  $\sigma_0 < 1$  were optimal for the voter. Then  $V = v(\pi_0)/(1 - \beta)$ , and  $\pi_1^0 > \pi_0$  implies  $v(\pi_1^0) > v(\pi_0) = (1 - \beta)V$  which implies  $\sigma_0 = 1$ , a contradiction.

## 10 Data Appendix

The data for our empirical analysis come from a number of sources. Information on the identity of governors and their tenure in office comes from the “Gubernatorial Elections: 1787 - 1997” published by the Congressional Quarterly. This volume also contains information on whether the incumbent governor ran in the primary and general election at the end of his first term in office and the results of these elections. For the years after 1997 this information was obtained from state webpages. Information on the term limit legislation for governors is taken from the “Book of the States” and Kallenbach and Kallenbach (1977). Information on the state population, the proportion of the population over 65, the proportion of the population between 5 and 17 and state personal income per capita are the same as in Besley and Case (2003) and were generously made available by Tim Besley. The original source of these variables is the “Statistical Abstract of the United States” and the “Current Population Survey” published by the Bureau of Labor Statistics. State personal income per capita was deflated with the CPI for all urban consumers with the base year 1982-84 from the Bureau of Labor Statistics. The governor’s party affiliation was taken from the “Book of the States”. The governor’s age is the difference between the election year at the end of his first term in office and his year of birth. Information on the governor’s year of birth was obtained from the biographical data contained in Sobel and Raimo (1978), Raimo (1985), Mullaney (1989, 1994) and from the National Governors Association. Finally, information on the votes cast for the Republican and Democratic candidate in the presidential elections between 1950 and 2000 in each state were taken from the historical tables contained in Scammon et. al. (2001).

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**Table 1 - Term limitations for governors by state (1950 - 2000)**

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States with no term limits:

CT, ID<sup>a</sup>, IL, IA, MA<sup>b</sup>, MN, NH, NY, ND, TX, VT, WA<sup>c</sup>, WI

States limiting governors to one term in office:

VA

States limiting governors to two terms in office:

DE, MD, NJ, NM<sup>d</sup>, OR, SD

State law changed from no term limit to a three term limit:

UT (1994)

State law changed from no term limit to a two term limit:

AZ (1992), AR (1992), CA (1990), CO (1990), KS (1972), ME (1966), MI (1992),  
MT (1992), NE (1966), NV (1970), OH (1958), RI (1994), WY (1992)

State law changed from a one term limit to a two term limit:

AL (1968), FL (1968), GA (1976), IN (1972), KY (1994), LA (1966), MS (1994),  
MO (1965), NC (1977), OK (1966), PA (1967), SC (1980), TN<sup>e</sup> (1978), WV (1970)

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Notes: The year in brackets is the year in which the term limit legislation changed.

(a) One-term limit until 1956. Additionally a two-term limit was passed in 1994, but repealed in 2002.

(b) Term limits were enacted in 1994 but were declared unconstitutional by the Idaho Supreme Court in 1997.

(c) Washington enacted a two-term limit in 1992, which was declared unconstitutional by the Washington Supreme Court in 1998.

(d) From 1970 until 1991 a one-term limit was in force.

(e) Until 1954 Tennessee had a three-term limit.

**Table 2 - Mean values and t-tests (1950 - 2000)**

<b>Variable</b>	<b>no term limits</b>	<b>two-term limits</b>	<b>p-value</b>	<b>Variable definition</b>
<b>reelected</b>	0.702	0.607	0.076	Dummy equal to one if the governor was re-elected
<b>population</b>	4.201	4.107	0.861	Total state population in millions
<b>kids</b>	0.229	0.215	0.0002	Proportion of the population between 5 and 17
<b>aged</b>	0.105	0.115	0.0001	Proportion of the population over 65
<b>growth</b>	0.025	0.018	0.133	Per capita real income growth rate
<b>laggrowth</b>	0.019	0.019	0.800	Lagged per capita real income growth rate
<b>age</b>	50.92	52.66	0.061	Age of the governor
<b>republican</b>	0.509	0.490	0.734	Dummy equal to one if the governor is a Republican
<b>lastvote</b>	0.544	0.547	0.760	Governor's share in the total vote in the last election
<b>sow</b>	-0.023	-0.016	0.311	Share of the Democratic candidate for president in the major party vote in the last election minus 0.5.
<b>sos</b>	-0.014	-0.022	0.281	Difference between the share of the Democratic candidate for president in the major vote in the state and nationally.
<b>Observations</b>	168	145		

Notes: All observations refer to the election year at the end of a governor's first term in office. Observations with one-term limits and three-term limits are excluded. The p-values refer to t-tests of the null hypothesis that the difference between the means in observations without term limits and with two-term limits is zero.

**Table 3 - Re-election probabilities: All governors (1950 - 2000)**

	(1)	(2)	(3)	(4)	(5)
<b>two-term limits</b>	-0.131 (2.30)	-0.132 (2.25)	-0.132 (2.22)	-0.147 (2.05)	-0.335 (2.38)
<b>population</b>		-0.000 (0.03)	-0.000 (0.17)	0.000 (0.02)	-0.000 (1.12)
<b>kids</b>		-1,583 (1.62)	-2,044 (2.05)	-1,662 (0.80)	-2,545 (0.64)
<b>aged</b>		-2,503 (1.69)	-2,765 (1.89)	-2,255 (1.31)	-2,078 (0.46)
<b>growth</b>		1,084 (1.84)	0.977 (1.75)	1,080 (1.80)	0.906 (1.16)
<b>laggrowth</b>		1,816 (2.30)	1,686 (2.20)	1,801 (1.83)	2,526 (2.07)
<b>age</b>		0.070 (2.12)	0.065 (1.95)	0.092 (2.59)	0.094 (2.30)
<b>age-squared</b>		-0.001 (2.38)	-0.001 (2.22)	-0.001 (2.77)	-0.001 (2.46)
<b>republican</b>		0.003 (0.05)	-0.050 (0.84)	-0.103 (1.55)	-0.089 (1.03)
<b>lastvote</b>		1,092 (2.69)	1,261 (2.65)	1,464 (2.90)	1,542 (2.90)
<b>sow</b>			1,483 (2.42)		
<b>sos</b>			0.278 (0.46)	0.276 (0.41)	0.801 (0.79)
<b>sow*republican</b>			-1,985 (2.32)	-2,270 (2.20)	-2,150 (1.79)
<b>sos*republican</b>			-0.892 (0.99)	-0.880 (0.87)	-1,180 (1.05)
<b>time-trend</b>	0.003 (1.70)	0.006 (2.97)	0.005 (2.25)		
<b>time fixed effects</b>	No	No	No	Yes	Yes
<b>state fixed effects</b>	No	No	No	No	Yes
<b>Observations</b>	313	308	308	308	308

Notes: OLS estimates of determinants of re-election probability at the end of a governor's first term in office. The dependent variable is an indicator variable which is equal to one if the governor was re-elected and zero otherwise. In parenthesis under the coefficient estimates are t-statistics clustered on the state.

**Table 4 - Re-election probabilities:  
Only governors running in the general election (1950 - 2000)**

	(1)	(2)	(3)	(4)	(5)
<b>two-term limits</b>	-0.138 (2.53)	-0.140 (2.56)	-0.140 (2.51)	-0.169 (2.53)	-0.254 (1.53)
<b>population</b>		-0.000 (0.52)	-0.000 (0.70)	-0.000 (0.29)	-0.000 (1.39)
<b>kids</b>		-1,366 (1.38)	-1,720 (1.58)	-0.943 (0.44)	0.758 (0.17)
<b>aged</b>		-1,930 (1.47)	-2,115 (1.65)	-1,554 (1.07)	-0.830 (0.19)
<b>growth</b>		0.940 (1.66)	0.865 (1.66)	1,432 (2.17)	1,373 (1.62)
<b>laggrowth</b>		1,611 (2.13)	1,560 (2.05)	1,485 (1.40)	2,352 (1.81)
<b>age</b>		0.045 (1.30)	0.041 (1.12)	0.051 (1.38)	0.049 (1.07)
<b>age-squared</b>		-0.000 (1.36)	-0.000 (1.18)	-0.000 (1.39)	-0.000 (1.09)
<b>republican</b>		0.042 (0.73)	-0.011 (0.20)	-0.045 (0.64)	-0.035 (0.39)
<b>lastvote</b>		1,357 (3.91)	1,548 (3.82)	1,611 (3.33)	1,682 (2.99)
<b>sow</b>			1,238 (1.96)		
<b>sos</b>			0.467 (0.78)	0.470 (0.67)	1,156 (1.02)
<b>sow*republican</b>			-1,721 (2.29)	-2,175 (2.61)	-2,124 (2.02)
<b>sos*republican</b>			-1,020 (1.19)	-1,017 (1.02)	-0.985 (0.87)
<b>time-trend</b>	0.005 (2.60)	0.006 (2.91)	0.005 (2.25)		
<b>time fixed effects</b>	No	No	No	Yes	Yes
<b>state fixed effects</b>	No	No	No	No	Yes
<b>Observations</b>	270	269	269	269	269

Notes: See table 3.