Term Limits, Seniority, and Government Spending: Theory and Evidence from the U.S. States*

Yasushi Asako† Tetsuya Matsubayashi‡ Michiko Ueda§

December 12, 2011

Abstract

What is a fiscal consequence of legislative term limits? We develop a legislative bargaining model that predicts a u-shaped relationship between the level of seniority within a legislature and government spending. The size of government spending decreases as the level of seniority increases from low to moderate, while it increases as the level of seniority increases from moderate to high. The model also predicts that the equilibrium level of seniority is moderate. Building on these predictions, we hypothesize that the adoption of term limits resulting in a small reduction of seniority has little impact on government expenditures because the level of seniority remains to be moderate. In contrast, the adoption of term limits that dramatically reduces the level of seniority will increase the size of government spending because the level of seniority changes from moderate to low. We test these hypotheses drawn from the model using the panel data of the American states between 1980 and 2004.

*We wish to thank Hirokazu Ishise for his valuable comments. Views expressed in this paper are those of the authors and do not necessarily reflect the official views of the Bank of Japan.

†Bank of Japan (yasushi.asako@boj.or.jp).

‡University of North Texas (tmatsubayashi@unt.edu).

§Syracuse University (michiko.uedaballmer@gmail.com).

1 Introduction

As of January 2012, fifteen states in the United States have imposed term limits on their legislators. The adoption of term limits is one of the major institutional changes in state legislatures in the last few decades. Many scholars have studied how the introduction of term limits changed various aspects of legislative activities and elections, including the level of electoral competition (Daniel and Lott, 1997; Masket et al., 2007; Moncrief et al., 2004), the political and demographic profiles of legislators (Carey et al., 1998; Meinke and Hasecke, 2011; Moncrief et al., 2007), the law-making process and legislative achievement (Farmer et al., 2007; Kousser, 2005), and the relationship between the executive and legislative branches (Miller et al., 2011). Some of these studies report important differences in the electoral and legislative processes before and after the adoption of legislative term limits.

While we have accumulated good knowledge of political consequences of term limits, less is known about their impact on public policies. More specifically, we do not have clear understanding of whether and how the adoption of legislative term limits affects state government spending. Some supporters of term limits claim that the introduction of term limits should end pork barrel politics and ultimately decrease the total size of government expenditures. This is because term limits would replace long-serving incumbents who are fiscally liberal or more experienced in pork-barrel politics with freshmen who are considered to be fiscally conservative or more “clean”(e.g., Payne, 1992).[1] However, recent empirical analysis, with data from the U.S. states between 1977 and 2001, reports that the size of total government spending *increases* after legislative term limits are implemented (Erler, 2007). Other studies demonstrate that government spending also increases after the introduction of executive term limits (Besley and Case, 1995; Alt et al., 2011).

In contrast to these past studies that posit the effect of term limits on government spending to be always positive, this paper demonstrates that the impact of term limits can be

[1]Most notably, Payne (1992) argues that senior legislators who remain in office for a long time are exposed to the culture of excessive spending and as a consequence become fiscally more liberal. Term limits are expected to replace those fiscally liberal senior legislators with citizen-legislators who are fiscally conservative. Accordingly, term limits shift the aggregate preference of fiscal policy in the conservative direction, thus decreasing the size of government spending. Yet empirical evidence for the culture of spending is mixed. For example, Aka et al (1996) reports no statistically significant relationship between the length of service in Congress and a propensity to support federal spending. Reed et al. (1998) shows that individual members of Congress have become more fiscally liberal over time, yet the magnitude of this effect is negligible. In contrast, Garrand, Myers, and Renegar (2011) report that senior members of Congress more likely to support greater spending than their junior colleagues.

negative or positive, depending on how much the overall level of seniority in the legislature changes after the implementation of term limits. This is drawn from our prediction that the relationship between the level of seniority in the legislature and the size of government spending is u-shaped, as demonstrated both theoretically and empirically below.

We first develop a simple model of legislative bargaining over pork-barrel projects (Baron and Ferejohn, 1989).[2] We consider a legislature that is composed of senior and junior legislators. We assume that senior legislators are (1) more efficient in the way they bring distributions to the districts than junior legislators, and (2) capable of imposing discipline on junior legislators. The first assumption implies that senior legislators tend to deliver more benefits to their districts than do junior legislators, and the second assumption means that senior legislators possess power to cut the amount of distributions that junior legislators bring back to their districts.

Building on these assumptions, our model predicts a u-shaped relationship between the level of seniority in the legislature and the amount of government spending. The size of government spending decreases as the level of seniority increases from low to moderate because senior members can discipline the junior to reduce the amount of distributions spent for junior members, while a legislature mostly with junior members (i.e. a low level of seniority) lacks such disciplining behavior in the bargaining process. On the other hand, the size of government spending increases as the level of seniority increases from moderate to high because senior members do not discipline among themselves, allowing themselves to spend as much as possible.

The u-shaped relationship between seniority and government expenditures derived from the model offers an important implication for the fiscal consequence of term limits. Our analysis of the electoral choice of voters indicates that the equilibrium level of seniority in the legislature without term limits is moderate, which minimizes the size of government spending. Accordingly, the adoption of term limits that dramatically reduces the level of seniority will increase the size of government spending because the level of seniority changes

[2] Our model differs from similar models such as Dick and Lott (1993), Glaeser (1997), Herron and Shotts (2006), and McKelvey and Riezman (1992). Herron and Shotts (2006) analyzes the effect of term limits on government spending, but their model does not explicitly consider the role of seniority within the legislature. McKelvey and Riezman (1992) analyze the role of seniority in legislative bargaining, yet their model generates no prediction on fiscal consequences. Dick and Lott (1993) and Glaser (1997) analyze the consequences of term limits for social welfare in the presence of the seniority system in the legislature, but their models offer no clear implication for government spending.

from moderate to low. In contrast, the adoption of term limits resulting in a small reduction of seniority has little impact on government expenditures because the level of seniority remains moderate.

We test the predictions drawn from the model by using panel data of the American states between 1980 and 2004. The analysis uses the total size of government spending per capita as a measure of the fiscal consequence. We first estimate the effect of the level of seniority on the size of government expenditures, which shows that the relationship is indeed quadratic and u-shaped. We then estimate the impact of term limits on government spending, showing that government spending increases only when the adoption of term limits dramatically reduces the level of seniority in the legislature. We find that the adoption of term limits resulting in a minor reduction of seniority decrease government expenditures, yet the substantive effect is small. In contrast to the past studies that show that government spending always expands as a result of term limits (Erler, 2007; Besley and Case, 1995; Alt et al., 2011), we formally and empirically show that the relationship between term limits and the size of government spending crucially depends on the level of seniority in the legislature, and thus is more complicated than previously supposed.

2 The Model

This section presents a model of legislative bargaining among legislators with different levels of seniority. We first analyze the relationship between seniority and pork-barrel spending and then discuss how the adoption of term limits affects this relationship.

2.1 Settings

Our model considers a single legislative session where (1) voters choose a legislator of their district before the session begins, (2) elected legislators negotiate the allocation of pork-barrel projects, and (3) pork-barrel projects approved by the legislature are implemented. In each district, there are $n > 0$ voters. Voters choose either an incumbent or a challenger. We call reelected incumbents *senior* and denote them as S, and new legislators *junior* and denote them as J.

Suppose that the legislature consists of three legislators. Each legislator is elected by district i with $i \in \{1,2,3\}$. Denote s as the number of senior legislators in the legislature. Elected legislators negotiate the allocation of pork-barrel projects to their districts. Pork projects in our model are continuous units with several possible projects in the district. The amount of distribution for each pork project allocated to district i is defined as d_i, which equals the benefit district i receives from this project. Only district i is eligible for receiving the benefit from the project. If m pork projects are allocated, the total amount of distributions and the benefits district i receives are equal to md_i. If only the proportion $1-p$ of m pork projects are implemented, they are equal to $(1-p)md_i$. Without loss of generality, we suppose $m = 1$.[3] That is, we focus on the proportion of projects implemented $(1-p)$ and ignore how many projects $((1-p)m)$ are implemented.

The cost of projects, $c(d_i)$, is spread evenly over all districts, each of which pays $c(d_i)/3$. We assume $c(d_i) = \lambda d_i^2 + k$, where each district bears the fixed cost, $k > 0$, to implement pork-barrel projects. If the projects are not implemented, the fixed cost is zero. The variable cost function is quadratic, which means that there are additional costs to spend d_i. The value of λ represents the size of variable costs to implement the pork project. We assume that $\lambda = 1$ if district i elects a senior legislator, while $\lambda > 1$ if district i elects a junior legislator. This assumption means that senior legislators can supply pork-barrel benefits with lower costs, as compared to junior legislators (Dick and Lott, 1993; Levitt and Poterba, 1999). This assumption is plausible because senior legislators enjoy more staffs and research budgets and are more knowledgeable about their districts, which allows them to be more efficient in the way they spend distributive benefits on their districts. Both voters and legislators prefer a higher payoff for their district.

The allocation of projects is chosen via a simple ultimatum legislative-bargaining model developed by Baron and Ferejohn (1989). One of three legislators is chosen as an agenda setter. An agenda setter proposes which district receives pork-barrel benefits. If the majority of legislators (i.e., two legislators) approve the proposal, pork projects are implemented. We suppose that legislators in the majority maximize the total payoffs they receive. That is, they consider the amount of costs paid by their own district and the other district of the legislator in the majority.[4] That is,

[3] When $m > 1$, we simply multiply the equations for the size of spending and payoffs shown below by m. This does not affect our propositions and main results.

[4] The majority is equivalent to a party or a faction in the legislature. It is plausible to assume that a party or a faction maximizes its total payoff, not an individual one.

$$d_i = \arg\max d_i - \frac{2}{3}(\lambda d_i^2 + k). \tag{1}$$

If the legislature does not approve the proposal, no pork project is implemented. Hence, $d_i = 0$ for all i.

The probability of being an agenda setter is determined by the seniority of legislators. Senior legislators tend to be a leader of the party, legislature, or committees because their lengthy career allows them to accumulate legislative skills and receive better committee assignments, as discussed by McKelvey and Riezman (1992). Accordingly, to simplify our discussion, we assume that junior legislators can never become an agenda setter in the presence of at least one senior legislator in the legislature.[5] Each senior legislator has the same probability of being an agenda setter ($1/s$). If all legislators are junior, one of them will be an agenda setter with probability $1/3$.

We assume that a senior agenda setter is capable of disciplining a junior legislator who belongs to the majority, as Glaser (1997) discussed. Put differently, a senior agenda setter can choose the proportion of pork projects, $1 - p$, that will be implemented in a district electing a junior legislator. A junior legislator is allowed to deliver only $1 - p$ of pork projects to the district. Depending on the size of p, a junior legislator decides whether or not to approve the proposal made by a senior agenda setter. Note that a senior agenda setter cannot discipline other senior legislators, and a junior agenda setter cannot discipline neither junior nor senior legislators.

Finally, we set the following assumptions.

Assumption 1 $\frac{27 - 9\lambda}{32\lambda} > k > \frac{3}{16}$ *and* $\lambda < \frac{9}{5}$.

If $\frac{27 - 9\lambda}{32\lambda} > k$, a district that elected a legislator in the majority receives a nonnegative payoff regardless of the number of senior legislators in the legislature and the type of a legis-

[5]The result does not change so much if senior legislators have a sufficiently higher probability to be an agenda setter than junior legislators. However, if the probability of being an agenda setter differs little between senior and junior legislators, an equilibrium discussed in Subsection 2.3 may change, and all districts elect junior legislators in equilibrium. The reason is that the probability that senior legislators belong to the majority becomes very low since an agenda setter does not prefer to include senior legislators which cannot be disciplined and will spend more distributions than a junior legislator. Thus, voters do not prefer to choose senior legislators. This situation in which senior legislators tend to be not included in the majority (e.g. a government party or a main faction) seems unrealistic, and it is reasonable to suppose that senior agenda setter is much more likely to be the leader of the congress, party or faction (i.e. an agenda setter). Additionally, comparative statics about a total amount of distributions D_i discussed in Subsection 2.2.4 does not change so much even though the probabilities to be an agenda setter do not differ so much among senior and junior legislators.

lator this district elects. If not, a legislator does not approve a proposal even though this legislator can implement projects for the district. Further, if $k > \frac{3}{16}$, pork projects are socially inefficient because the aggregate payoff of all districts becomes negative. We focus on such inefficient projects because pork-barrel policies are typically analyzed as the tragedy of commons or the prisoner's dilemma and those projects tend to be locally efficient but socially inefficient (e.g., Weingast et al., 1981). In order to have $\frac{27-9\lambda}{32\lambda} > \frac{3}{16}$, λ should be lower than 9/5.

2.2 Seniority and Government Spending

This subsection analyzes how the level of seniority within the legislature affects the total size of government spending for pork-barrel projects. In our setting, there are four possible levels of seniority, $s = 0, 1, 2, 3$. We refer to the case with $s = 0$ as *low seniority*, the one with $s = 1$ or 2 as *moderate seniority*, and the one with $s = 3$ as *high seniority*.

2.2.1 Low Seniority ($s = 0$)

All legislators are junior when $s = 0$. One of the junior legislators is chosen as an agenda setter. Because this junior agenda setter cannot discipline other legislators, this legislator proposes to implement all possible pork projects (i.e., $p = 0$) for 2 districts (including the agenda setter's district). From (1), the amount of distributions and the cost of all possible pork projects in one district are equal to $d_i = \frac{3}{4\lambda}$ and $c(d_i) = \frac{9}{16\lambda} + k$, respectively. Districts where all of pork projects are implemented receive the benefits and pay the costs. The payoff is $\frac{3}{8\lambda} - \frac{2}{3}k$. This payoff is positive when $\frac{9}{16\lambda} > k$, which is true because $\frac{9}{16\lambda} > \frac{27-9\lambda}{32\lambda} > k$ from Assumption 1. Because the payoff is positive, a legislator in the majority has an incentive to approve the proposal if the legislator can implement the full pork projects for one's district. On the other hand, the remaining district where no pork project is allocated receives no benefit but pays the costs spent for the other two districts. The payoff is $-\frac{3}{8\lambda} - \frac{2}{3}k < 0$. The legislator whose district receives pork benefits approves this proposal, while the other junior legislator does not approve it. Accordingly, this proposal is approved in the legislature. The aggregate payoff of all districts is $2\left[\frac{3}{16\lambda} - k\right]$. From Assumption 1, $k > \frac{3}{16} > \frac{3}{16\lambda}$, which indicates that the aggregate payoff is negative.

Denote V_s^t as the expected payoff before an agenda setter is chosen. In V_s^t, t represents the type of legislator (i.e., S or J) elected in district i, and s is the number of senior legislators in the legislature. When $s = 0$ and $t = J$, the expected payoff is

$$V_0^J = \frac{1}{8\lambda} - \frac{2}{3}k.$$

This expected payoff is negative since $k > \frac{3}{16} > \frac{3}{16\lambda}$ from Assumption 1. Yet, after an agenda setter is chosen, the legislators in the majority prefers to approve the proposal since the ex-post payoff from pork projects is positive.

Finally, denote $D_s = \sum_{i=1}^{3} d_i$ as the total size of spending for pork projects when there are s legislators in the legislature. When $s = 0$, it is

$$D_0 = \frac{3}{2\lambda}. \tag{2}$$

2.2.2 High Seniority ($s = 3$)

If all legislators are senior ($s = 3$), one of them is chosen as an agenda setter. This agenda setter cannot discipline other senior legislators. The agenda setter proposes to implement all possible pork projects for 2 districts, one of which is the agenda setter's district. Thus, the almost identical situation emerges as discussed in the previous subsection, except that $\lambda = 1$. The amount of distribution is $d_i = \frac{3}{4}$, and the cost of pork projects is $c(d_i) = \frac{9}{16} + k$. Both of them are larger than those in the case where the legislature with low seniority since $\lambda > 1$. This means that senior legislators are better equipped at rent-seeking from other districts and they spend more money on their districts than junior legislators. The payoff of the district with pork projects is $\frac{3}{8} - \frac{2}{3}k$, and the aggregate payoff from pork projects is $2\left[\frac{3}{16} - k\right]$. From Assumption 1, $\frac{9}{16} > \frac{27-9\lambda}{32\lambda} > k > \frac{3}{16}$, so the payoff of the district with pork projects is positive, and this project is socially inefficient. Accordingly, this proposal is approved by the legislature. From Assumption 1, the expected payoff below is negative:

$$V_3^S = \frac{1}{8} - \frac{2}{3}k.$$

The total size of spending for pork projects is

$$D_3 = \frac{3}{2}.$$

2.2.3 Moderate Seniority ($s = 1$ or 2)

Suppose that at least one senior and junior legislators are elected. A junior legislator is never chosen as an agenda setter, and a senior legislator becomes an agenda setter with probability $1/s$. To maximize the payoff, a senior agenda setter chooses a junior legislator rather than a senior legislator to build the majority. This is because senior legislators spend more on their own districts with a higher cost than a junior legislator, and a senior agenda setter can discipline junior legislators. Thus, the costs paid by a senior agenda setter is lower with a junior member than with a senior member. If $s = 1$, a senior legislator becomes an agenda setter with certainty, and one of the remaining junior legislators is included in the majority with probability 1/2. If $s = 2$, a senior legislator becomes an agenda setter with probability 1/2, and the remaining junior legislator is included in the majority with certainty.

Since all possible pork projects are implemented in the district electing a senior agenda setter, all districts must pay at least $-\frac{3}{16} - \frac{k}{3}$ in total if the proposal is approved. At the same time, the district electing a junior legislator who is in the majority and disciplined receive the proportion $1 - p$ of pork projects. Thus, this district obtains $(1-p)\left[\frac{3}{4\lambda} - \frac{3}{16\lambda} - \frac{k}{3}\right] = (1-p)\left[\frac{9}{16\lambda} - \frac{k}{3}\right]$. A senior agenda setter motivates this junior legislator in the majority to approve the proposal by ensuring at least zero payoff. The junior legislator in the majority rejects the proposal if the payoff is lower than zero. To maximize the payoff, this senior agenda setter sets p such that the payoff of a junior legislator in the majority becomes exactly zero. That is, p should satisfy $(1-p)\left[\frac{9}{16\lambda} - \frac{k}{3}\right] - \frac{3}{16} - \frac{1}{3}k = 0$. From some calculations, it is

$$p^* = \frac{27 - 9\lambda - 32\lambda k}{27 - 16\lambda k}. \tag{3}$$

Since $\frac{27 - 9\lambda}{32\lambda} > k$ from Assumption 1, p^* is positive. The denominator is higher than the numerator, so $0 < p^* < 1$. From some calculations, p^* decreases as the variable costs (i.e., λ) and fixed costs (i.e., k) of pork projects increase. As a result, a senior agenda setter's payoff is $\frac{9}{16} - (1-p^*)\frac{3}{16\lambda} - \frac{k}{3}(2-p^*)$. This is positive since $\lambda > 0$ and $p^* < 1$. The payoff of a senior or junior legislator who does not belong to the majority is $-(1-p^*)\frac{3}{16\lambda} - \frac{3}{16} - \frac{k}{3}(2-p^*)$.

Taken together, when $s = 1$, before an agenda setter is chosen, the expected payoffs of senior and junior legislators are

$$V_1^S = \frac{9}{16} - (1-p^*)\frac{3}{16\lambda} - \frac{k}{3}(2-p^*).$$

$$V_1^J = -\frac{1}{2}\left[\frac{3}{16} + (1-p^*)\frac{3}{16\lambda} + \frac{k}{3}(2-p^*)\right].$$

When $s = 2$, the payoffs are

$$V_2^S = \frac{3}{16} - (1-p^*)\frac{3}{16\lambda} - \frac{k}{3}(2-p^*).$$

$$V_2^J = 0.$$

The total size of spending for pork projects is

$$D_1 = D_2 = \frac{3}{4} + (1-p^*)\frac{3}{4\lambda}. \tag{4}$$

2.2.4 Comparison of the Total Size of Spending

We compare the total size of spending for pork projects across legislatures with the different levels of seniority. First, $D_3 = \frac{3}{2} > D_0 = \frac{3}{2\lambda}$ since $\lambda > 1$. Second, $D_3 = \frac{3}{2} > D_1 = D_2 = \frac{3}{4} + (1-p^*)\frac{3}{4\lambda}$ since $\lambda > 1$ and $0 < p^* < 1$.

From some calculations, $D_0 = \frac{3}{2\lambda} > D_1 = D_2 = \frac{3}{4} + (1-p^*)\frac{3}{4\lambda}$ if $p^* > \lambda - 1$. From (3), this condition means $\frac{27 - 9\lambda - 32\lambda k}{27 - 16\lambda k} > \lambda - 1$. This condition can be rewritten as

$$\frac{27 - 18\lambda}{\lambda(24 - 8\lambda)} > k. \tag{5}$$

The left-hand side decreases as λ increases when Assumption 1 holds ($1 < \lambda < 9/5$) and k increases. In other words, the size of spending under moderate seniority ($s = 1$ or 2) is lower than that under low seniority ($s = 0$) if the variable costs (i.e., λ) and fixed costs (i.e., k) of pork projects in a district electing a junior legislator are sufficiently low.

The value of k plays some role in the total size of spending. It has no influence on the size of spending under low seniority. On the other hand, as k increases, the costs of pork projects increase. To motivate a junior legislator to approve the proposal made by a senior agenda setter, this senior agenda setter has to allow implementing the higher proportion of pork projects in a junior legislator's district. Accordingly, p^* decreases, and the size of spending with moderate seniority increases as k increases.

If λ increases, the size of spending under low seniority decreases from (2). On the other hand, $D_1 = D_2 = \frac{3}{4} + (1 - p^*)\frac{3}{4\lambda}$ increases as λ increases. Even though higher λ decreases the amount of distribution (i.e., d_i) in a district electing a junior legislator in the majority, it also decreases the benefits of this district (i.e., $\frac{9}{16\lambda} - \frac{k}{3}$). Thus, to induce a junior legislator to approve the proposal of a senior agenda setter, this senior agenda setter needs to allow implementing higher proportion of pork projects in a junior legislator's district, that is, p^* decreases, so the size of spending under moderate seniority increases as λ increases.

Proposition 1 *Suppose Assumption 1. The size of spending under low seniority is higher than the size of spending under moderate seniority when the variable costs (i.e., λ) and fixed costs (i.e., k) of a pork project in a district with a junior legislator are sufficiently low such that (6) is satisfied.*

When (6) is satisfied, $D_3 > D_0 > D_1 = D_2$. Thus, the relationship between the size of government spending and the level of seniority is u-shaped, as shown by Figure 1 where k is fixed at 0.2. The size of spending under high seniority is always $D_3 = 1.5$. If the legislature is composed of one or two senior legislators and λ is sufficiently low (= 1.1), $D_1 = D_2 \risingdotseq 1.14 < D_0 = 1.36$, and the relationship becomes u-shaped. If the legislature is composed of one or two senior legislators and λ is sufficiently high (= 1.5), $D_1 = D_2 = 1.16 > D_0 = 1$, the size of spending increases as the level of seniority increases.

[Figure 1 Here]

In the subsequent section, we empirically show that the relationship between the level of seniority within a legislature and government spending is curvilinear and u-shaped. This means that actual value of λ and/or k are sufficiently small. It is not surprising that the actual advantage of senior legislator to find a more efficient way to implement pork projects is not too much higher, as compared to a junior legislator.

2.3 Election

This subsection analyzes the electoral choices of voters and derives the level of seniority in the legislature endogenously. Voters in each district have two choices: reelect a senior legislator or elect a new (i.e., junior) legislator. Voters care only about the expected payoff, V_s^t.

If we assess each voter's strategy on the basis of Nash equilibrium, there will exist too many equilibria since the electoral outcome does not change when there is no pivotal voter. Thus, we employ a coalition-proof Nash equilibrium introduced by Bernheim et al. (1987).[6] Under this equilibrium, simply to say, we can suppose that voters in one district make a coalition and choose the winner as if they were a single player. We analyze only a pure-strategy equilibrium.

When there are two or more junior legislators ($s = 0$ or 1), there is the possibility that this junior legislator is not included in the majority and just pay the costs. To avoid such situation, voters in a district electing a junior legislator has an incentive to deviate by choosing a senior legislator. On the other hand, when there are two or more senior legislators ($s = 2$ or 3), there is the possibility that this senior legislator is not included in the majority. Moreover, when all legislators are senior ($s = 3$), they enjoy no comparative advantage in legislative bargaining. Thus, voters in a district electing a senior legislator has an incentive to deviate by choosing a junior legislator who is included in the majority with certainty. When there is one junior legislator ($s = 2$), senior legislators still can enjoy some advantages. As a result, the unique (pure-strategy) coalition-proof Nash equilibrium is moderate seniority with $s = 2$. The details of the proof is presented in the appendix.

Proposition 2 *Suppose Assumption 1. In a coalition-proof Nash equilibrium, the level of seniority is moderate with* $s = 2$.

While some studies including MacKelvey and Riezman (1992) indicate that voters prefer electing legislators who are more senior under a seniority system, our model predicts that not all districts elect senior legislators. In the empirical parts, we show that the actual level of seniority in a legislature is not high and rather moderate, which results in the minimum size of spending.

[6]A coalition-proof equilibrium allows the players communicating prior to play the game and reaching an agreement to coordinate their actions in a mutually beneficial way. A coalition-proof Nash equilibrium requires that the agreement is not subject to a improving deviation which is self-enforcing by any coalition of players. A deviation is self-enforcing if there is no further self-enforcing and improving deviation available to a proper subcoalition of players. In our model, all voters' payoffs in the same district are identical, so they can make a coalition to improve their payoffs. The following results do not change if we employ a strong Nash equilibrium introduced by Aumann (1959) which does not require self-enforcing.

2.4 Term Limits, Seniority, and Government Spending

Building on the anticipated relationship between the level of seniority and government spending, this subsection analyzes the fiscal consequences of term limits. The adoption of term limits, by definition, reduces the level of seniority within a legislature. After term limits are adopted in our model, senior legislators are ineligible for reelection and the legislature is composed of all junior legislator ($s = 0$). Thus, the level of seniority shifts from $s = 1, 2, 3$ to $s = 0$.[7]

We focus on the change in the level of seniority from $s = 2$ to $s = 0$ because our analysis of voters' electoral choices indicates that voters prefer moderate seniority ($s = 2$) in the absence of term limits. If (6) is satisfied and the relationship between the level of seniority and the total size of spending for pork-barrel projects is u-shaped, the adoption of term limits will *increase* the size of spending. This is because term limits removes a senior legislator who, as an agenda setter, disciplines a junior legislator and cuts some pork projects allocated for this junior legislator's district.

An important implication can be drawn from the discussion above. Our model considers only four discrete levels of seniority ($s = 0, 1, 2, 3$) in a single legislative session. In reality, however, the legislature is composed of legislators with the various levels of seniority. This means that the adoption of term limits generates continuous changes in the level of seniority. Our model implies that as the level of seniority greatly decreases from the equilibrium level after term limits are adopted, the size of government spending increases because the level of seniority changes from moderate to low. In contrast, the adoption of term limits resulting a small reduction of seniority has little impact on government expenditures because the level of seniority remains moderate.

For the empirical part, we develop the following hypothesis:

[7] Our model treats term limits as an exogenous system. However, term limits were adopted by voters through citizen initiative and referendum, so term limits should be an endogenous choice of voters. If we treat term limits as an endogenous one, we face one puzzle: Why do voters who consistently re-elect their representative also vote overwhelmingly for term limits? This puzzle is important, but answering this puzzle is out of our purpose. Indeed, many past studies ignore this puzzle and treat term limits as an exogenous system to answer other questions. To our best knowledge, Dick and Lott (1993) and Glaser (1997) show possible answers of this puzzle using a formal model. Especially, Glaser (1997) supposes not only pork-barrel projects but also ideological policy based on the Downs model, and he shows that term limits are adopted by voters "who prefer cycling between left and right wing candidates to a once-and-for-all election that imposes a candidate of a single ideology." In his model, there are two types of voters, ideological and opportunistic. Our model only analyzes opportunistic voters who care about only a pork project, but implicitly assume existence of ideological voters. If so, the above puzzle is solved in the same way as Glaser (1997).

H The adoption of term limits that leads to a larger reduction in the level of seniority increases the size of government spending.

3 Empirical Analysis

For an empirical test, we develop panel data of 46 U.S. states between 1980 and 2004. States and years are chosen on the basis of data availability, as discussed below. The total number of observations included in our analysis is 1150. We omit Alaska, Hawaii, Nebraska, and Vermont because the data of seniority within legislatures are unavailable.

3.1 Seniority and Spending

We first validated the proposition that the relationship between the level of seniority and the size of government spending using the following model:

$$[Spending]_{it} = \beta_1 [Seniority]_{it} + \beta_2 [Seniority]^2_{it} + \lambda \mathbf{w}_{it} + \rho_i + \phi_t + \epsilon_{it}, \tag{6}$$

where $[Spending]_{it}$ denotes the size of total government expenditures per capita in state i in year t. $[Seniority]_{it}$ is a measure of seniority within a legislature, while $[Seniority]^2_{it}$ is its squared term. $\mathbf{w}_{it}$ includes all time-varying political and socioeconomic variables that may have an impact on the measures of seniority and $[Spending]_{it}$. ρ_i denotes the state-fixed effect that captures all time-invariant characteristics of state i. Accordingly, our estimation exploits temporal variations within each state. ϕ_t denotes the year-fixed effect that captures any time-specific shock at the national level. Finally, ϵ_{it} is a state-year specific error term.

The outcome variable, $[Spending]_{it}$, is measured by total government expenditures per capita in dollars. We assume that the size of spending for pork barrel projects is strongly correlated with the size of total government spending because the allocation of distributive benefits is determined independently from other necessary expenditures. The government expenditures per capita are reported in constant 1982 dollars. Data come from State Government Finances compiled by the U.S. Census Bureau.

The main independent variable, $[Seniority]_{it}$, equals the average length of tenures of state senators and state house members. We calculate the values for the $[Seniority]_{it}$ variable separately for each chamber. For each legislative session, we first count how many times each legislator has won for the office that the one is currently serving using the candidate-level database of State Legislative Election Returns, 1967-2003.[8] We drop the data before 1977 because we cannot precisely count the number of times that legislators have won prior to 1967. We assume that legislators who appear in the dataset after 1977 have not run for the state house or state senate before 1967. We then compute the average number of times that they are elected for all legislators in each chamber. The distributions of the level of seniority are shown in Figure 2. The mean level of seniority within the state senates is 2.7, while the mean level of seniority within the House is 3.5. The correlation between the levels of seniority between the two chambers is 0.60.

[Figure 2 Here]

Figure 3 reports the temporal variation in the level of seniority in the state senate (shown by dashed lines) and the state house (shown by the solid lines) of 46 states from 1980 to 2004. Note that vertical lines in the figure denote the beginning year at which term limits became effective, meaning that incumbents who served a certain number of terms could no longer run for reelection. Figure 3 shows that the levels of seniority varies across time and states.

[Figure 3 Here]

Equation (6) includes $\mathbf{w}_{it}$ that represents other time-varying political and socioeconomic characteristics of states for control. Political characteristics are captured by the percent of Democratic legislators in the state house and the state senate, the Democratic governor or not, and divided government or not. The data come from Klarner (2011). In addition, we take into account the presence of executive term limit. The indicator variable equals one if term limits on governors are effective and zero otherwise. The data are obtained from List and Sturm (2006). Socioeconomic characteristics are captured by the unemployment rate, personal income per capita, the gross state product per capita, the size of total population, and the proportions of population under 15 years old and over 65 years old. All monetary variables are reported in constant 1982 dollars. We take a natural log of personal income per capita, GSP per capita, and population size. All of the data come from the Statistical Abstract of the United States. Summary statistics are presented in Table 1.

[Table 1 Here]

[8] The data are available at the ICPSR data archive.

Table 2 reports the results. Table entities are fixed effects regression estimates and standard errors are in parentheses. Standard errors are estimated by Driscoll and Kraay's (1998) covariance matrix estimator to take into account the potential heterogeneity and autocorrelation within each state and contemporaneous correlations across states. Column (1) shows the result when the seniority variables for the state senate are included in the model, while column (2) shows the result when the seniority variables for the state house are included. Column (3) reports the result when the seniority variables for both of the chambers are included.

[Table 2 Here]

The estimated results in columns (1) and (2) are consistent with the prediction of the model. The coefficients associated with the linear term (i.e., state senate seniority and house seniority) are estimated to be negative, while the coefficients associated with the quadratic term (i.e., state senate seniority squared and house seniority squared) are estimated to be positive. These coefficients are statistically significant at the 0.01 level. Column (3) reports the same patters as in (1) and (2), though the sizes of coefficients associated with the house seniority variables become smaller.[9]

Using the estimated results in column (3), we plot the relationship between the level of seniority in each chamber and the government expenditures per capita. Figure 4 shows the predicted level of spending by the level of seniority with the 95% confidence intervals using the dashed line. The vertical line denotes the mean level of seniority. As predicted, Figure 4 demonstrates that the relationship is exactly u-shaped. The size of spending decreases, as the level of seniority approaches moderate.

[Figure 4 Here]

Importantly, Figure 4 shows that the level of spending is minimized when the level of seniority approaches to the mean of the scale, as predicted by Proposition 2. As discussed previously, the mean level of seniority within the state senates is 2.7, while the mean level of seniority within the House is 3.5. According to Figure 2, the levels of seniority are not high but not low, and the spending is minimized when the levels of seniority are at the middle of the scales.

[9] These results hold even when we take a natural log of the government expenditures pe capita and when we use the ratio of government expenditures to the Gross State Product as an alternative measure.

3.2 Term Limits, Seniority, and Spending

We next examine how the adoption of term limits affects the size of government spending. Our model indicates that the adoption of term limits increases government spending if it changes the level of seniority from moderate to low. This implies that term limits that cause a large reduction in the level of seniority will increase the size of spending after the implementation because term limits are likely to decrease the level of seniority to low, as hypothesized in subsection 2.4.

Our prediction is built on the important assumption that the adoption of term limits decreases the level of seniority. Figure 3 validates this assumption. In Figure 3, the vertical solid line denotes the year in which term limits for the state house became effective, while the vertical dashed line denotes the year in which term limits for the state senate became effective. The graphs show that the level of seniority drops dramatically in most of those states adopting term limits. The degree of decrease in the level of seniority by term limits varies across states.

We test the effect of term limits on government spending by exploiting the variation in the reduction of seniority by term limits across states. More specifically, we categorize states that adopted term limits into two groups with a large and small reduction in the level of seniority. We expect that term limits that caused a major reduction in the level of seniority will increase total expenditures because the level of seniority is expected to approach low. In contrast, term limits that caused a minor reduction in the level of seniority will have little impact on total expenditures because the level of seniority is expected to remain moderate. The large and small reductions in the level of seniority are measured by comparing the level of seniority before and after the adoption of term limits. More specifically, for each state with term limits, we compute the average levels of seniority before and after the adoption of term limits. To compute the average seniority before the adoption of term limits, we include years only after 1990. For Maine where term limits were adopted in 1996, for example, we compute the average seniority between 1990 and 1995 and between 1996 and 2004 and then take a difference in the averages.

The changes in the average seniority before and after the adoption of term limits are reported in Table 3. All states show a reduction in the level of seniority after term limits are adopted, yet the degree of the reduction varies across states. Further, the sizes of reduction in the level of seniority are similar between the state house and the state senate. Using the size of changes in the level of seniority, we separate states into two groups. If the level of seniority decreased by more than one term in both chambers after term limits were adopted, we define that the state had a large change in the level of seniority by term limits. CA, AR, MI, OH, and MO are included in this group. Note that OH is included in this group because the change in the level of seniority in the house is large. We define the remaining states as "states with a small change by term limits." We predict that the former group shows an increase in the size of government spending after term limits are adopted.

[Table 3 Here]

For estimation, we create the two indicator variables. The first indicator variable equals one after term limits that generate a large reduction in the level of seniority became effective in state i and zero otherwise. The second indicator variable equals one after term limits that generate a small reduction in the level of seniority became effective in state i and zero otherwise. The remaining states and years are coded zero. Data of term limits are obtained from the website of National Conference of State Legislature [10] We add these indicator variables to equation (6) and reestimate the model.

The estimated results are reported in column (1) of Table 4. The coefficient associated with a large change in the level of seniority by term limits is positive and statistically significant. The coefficient indicates that the size of government expenditures per capita increases by $126 after states adopted term limits that caused a large change in the level of seniority. In contrast, the coefficient associated with a small change in seniority by term limits is negative and significant. The size of government expenditures per capita decreases by $37 after states adopted term limits that caused a small change in the level of seniority.

[Table 4 Here]

Next, we categorize states that adopted term limits using a difference in the maximum years of service. Of 15 states with term limits for the House, three states (AR, CA, and MI) set the limit at 6 years, while the remaining 12 states set the limit at 8 years. We expect that states that adopt more strict term limits (=6 years) decrease the level of seniority to low, resulting in an increase in the size of government spending after the adoption. Note

[10] The website is found at `http://www.ncsl.org/Default.aspx?TabId=14844`.

that term limits for the Senate show no variation in the maximum years of service in our data. For estimation, we create three indicator variables for 6-year term limits and 8-year term limits for the House, and term limits for the Senate. They equal one after term limits became effective in state i and zero otherwise. Other states and years are coded zero. We include these three indicator variables in equation (6) and reestimate the model.

The estimated results using these indicator variables are reported in column (2) of Table 4. The coefficient associated with six year limit for the House is positive and statistically significant. The coefficient indicates that the size of government expenditures per capita increases by $146 after states adopted six-year term limits. In contrast, the coefficient associated with eight-year term limits is negative but significant even at the 0.10 level.

Note that term limits for the state senate are estimated to be positive but statistically insignificant. This is partly because the type of term limits imposed on the Senate (i.e., 8-year term limits) did not change the level of seniority dramatically. As a consequence, the adoption of term limits for the senate has no strong impact on the government expenditures. Further, interestingly, our analysis shows that the gubernatorial term limits seem to have a negative impact on government expenditures, which is a sharp contrast to the previous findings by Besley and Case (1995) and Alt et al. (2011). Our evidence is not directly comparable with their findings because we focus on years that are uncovered by the empirical analysis of Besley and Case (1995) and Alt et al. (2011).

Taken together, the above analysis presents evidence that more restrictive term limits reducing the level of seniority to the large extent (i.e., a large change in the level of seniority by term limits in column (1) and 6-year term limits in column (2)) increase the level of spending, while less restrictive term limits reducing the level of seniority to the small extent (i.e., a small change in the level of seniority by term limits in column (1) and 8-year term limits in column (2)) seem to decrease the level of spending. Our model indicates the level of seniority before the adoption of term limits is about moderate. More restrictive term limits are likely to change the level of seniority from moderate to low, which in turn leads the increase in the total size of spending. On the other hand, less restrictive term limits are likely to change the level of seniority from slightly high moderate to moderate, which in turn leads the decrease in the total size of spending.

Our results are consistent with the prior research. Our model now explains why the adoption of term limits increases government spending, as shown by Erler (2007). Further, our model and empirical analysis generates an implication to discuss when the adoption of term limits is likely t decreases spending by removing senior legislators.

4 Conclusion

This paper theoretically and empirically examines the relationship between legislative term limits, seniority, and government spending. We first develop a model that shows a u-shaped relationship between the level of seniority within a legislature and government spending. The size of government spending decreases as the level of seniority increases from low to moderate, while the size of government spending increases as the level of seniority increases from moderate to high. This expected u-shaped relationship predicts that the adoption of term limits resulting in the moderate level of seniority has little impact on government expenditures because the equilibrium level of seniority is predicted to be moderate. In contrast, the adoption of term limits that dramatically reduces the level of seniority will increase the size of government spending because the level of seniority changes from moderate to low.

We test these predictions drawn from the model by using the panel data of the American states between 1980 and 2004. As predicted, our analysis shows that the relationship between the level of seniority within the Senate and the House and government expenditures is u-shaped. Further, our analysis also reports that term limits that reduce the level of seniority to the greater extent increase the size of government spending.

This paper offers evidence that is consistent with Erler's (2007) findings, yet our model now explains why the adoption of term limits increases government spending, in contrast to the popular wisdom that it decreases spending by removing senior legislators who tend to spend more for pork projects. Importantly, in contrast to the past studies that show that government spending always expands as a result of term limits (Erler, 2007; Besley and Case, 1995; Alt et al., 2011), we formally and empirically show that the relationship between term limits and the size of government spending crucially depends on the level of seniority in the legislature, and thus is more complicated than previously supposed.

References

Aka, A., Reed, W. R., Schansberg, D. E., and Zhu, Z. 1996. Is There a Culture of Spending in Congress? Economics and Politics Politics, 8, 191–211.

Alt, J., Bueno de Mesquita, E., and Rose, S. 2011. Disentangling Accountability and Competence in Elections: Evidence from U.S. Term Limits. The Journal of Politics, 73, 171–186.

Aumann, R. 1959. Acceptable Points in General Cooperative n-Person Games. In *Contributions to the Theory of Games IV* (pp. 321–353). Princeton, N.J.

Baron, D. P. and Ferejohn, J. A. 1989. Bargaining in Legislatures. American Political Science Review, 83, 1181–1206.

Bernheim, B. D., Peleg, B., and Whinston, M. D. 1987. Coalition-Proof Nash Equilibria I: Concepts. Journal of Economic Theory, 42, 1–12.

Besley, T. and Case, A. 1995. Does Electoral Accountability Affect Economic Policy Choices? Evidence from Gubernatorial Term Limits. Quarterly Journal of Economics, 110, 769–798.

Carey, J. M., Niemi, R. G., and Powell, L. W. 1998. No Title. The Effect of Term Limits on State Legislatures, 23, 271–300.

Daniel, K. and Lott, J. R. 1997. Term limits and electoral competitiveness : Evidence from California ' s state legislative races *. Public Choice, 90, 165– 184.

Dick, A. R. and Lott, J. R. 1993. Reconciling voters' behavior with legislative term limits. Journal of Public Economics, 50, 1–14.

Driscoll, J. C. and Kraay, A. C. 1998. Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data. Review of Economics and Statistics, 80, 549–560.

Erler, H. A. 2007. Legislative term limits and state spending. Public Choice, 133, 479–494.

Farmer, R., Mooney, C. Z., Powell, R. J., and Green, J. C. 2007. Legislating Without Experience. Lexington Books, Boulder, CO.

Garand, J. C., Myers, R., and Renegar Renee 2011. Seniority and Support for Government Spending in the House: Is There a Culture of Spending?

Glaeser, E. L. 1997. Self-imposed term limits. Public Administration Review, 93, 389–394.

Herron, M. C. and Shotts, K. W. 2006. Term Limits and Pork. Legislative Studies Quarterly, 31, 383–403.

Klarner, C. 2011. State Partisan Balance 1959 to 2007.

Kousser, T. 2005. Term Limits and the Dismantling of State Legislative Professionalism. Cambridge Univ Press, New York.

Levitt, S. D. and Poterba, J. M. 1999. Distributive Politics and State Economic Performance. Public Choice, 99, 185–216.

List, J. A. and Sturm, D. M. 2006. How elections matter: theory and evidence from environmental policy. Quarterly Journal of Economics, 121, 1249–1281.

Masket, S. E., Lewis, J. B., and Angeles, L. 2007. A Return to Normalcy ? Revisiting the Effects of Term Limits on Competitiveness and Spending in California Assembly Elections. State Politics and Policy Quarterly, 7, 20–38.

McKelvey, R. D. and Riezman, R. 1992. Seniority in Legislatures. American Political Science Review, 86, 951–65.

Meinke, S. R. and Hasecke, E. B. 2011. Term Limits , Professionalization , and Partisan Control in U . S . State Legislatures. Journal of Politics, 65, 898–908.

Miller, S. M., Nicholson-Crotty, J., and Nicholson-Crotty, S. 2011. Reexamining the Institutional Effects of Term Limits in U.S. State Legislatures. Legislative Studies Quarterly, 36, 71–97.

Moncrief, G. F., Niemi, R. G., and Powell, L. W. 2004. Time, Term Limits, and Turnover: Trends in Membership Stability in U.S. State Legislatures. Legislative2, 29, 357–381.

Moncrief, G. F., Powell, L. W., and Storey, T. 2007. Composition of Legislatures. In *Institutional Change in American Politics* (pp. 22–37). Ann Arbor, MI.

Payne, J. L. 1992. The culture of spending: Why Congress lives beyond our means. ICS Press, San Francisco.

Reed, W. R., Schansberg, D. J., Wilbanks, J., and Zhu, Z. 1998. The relationship between Congressional spending and tenure with an application to term limits. Public Choice, 94, 85–104.

Weingast, B. R., Shepsle, K. A., and Johnson, C. 1981. The Political Economy of Benefits and Costs: A Neoclassical Approach to Distributive Politics. Journal of Political Economy, 89, 642–664.

Appendix: Proof of Proposition 2

First, suppose $s = 0$. Voters' expected payoff is V_0^J. If voters in one of the districts deviate by choosing a senior legislator, the number of senior legislators increases by one and the expected payoff changes to V_1^S. Thus, if $V_1^S > V_0^J$, voters have an incentive to deviate. From some calculations, if $p^* > \frac{15-27\lambda}{9+16\lambda k}$, $V_1^S > V_0^J$. Since $15-27\lambda < 0$, it is always satisfied. Thus, $s = 0$ is not an equilibrium.

Second, suppose $s = 1$. Voters' expected payoff is V_1^J when they choose a junior legislator. If voters in one of two districts deviate by choosing a senior legislator, the number of senior legislators increases to two and the expected payoff changes to V_2^S. If $V_2^S > V_1^J$, voters have an incentive to deviate. From some calculations, $V_2^S > V_1^J$ if

$$\frac{27\lambda - 9(1-p^*)}{32\lambda - 16\lambda p^*} > k.$$

The left-hand side is higher than $\frac{27-9\lambda}{32\lambda}$, so the above condition is always satisfied from Assumption 1. Thus, $s = 1$ is not an equilibrium.

Third, suppose $s = 2$. Since $V_2^S > V_1^J$, voters who elect a senior legislator have no incentive to deviate by choosing a junior legislator. Consider voters in a district electing a junior legislator. Their expected payoff is V_2^J. If these voters choose a senior legislator, their expected payoff becomes V_3^S which is negative as we discussed. Since $V_2^J = 0 > V_3^S$, voters will not deviate.

Finally, suppose $s = 3$. Since $V_2^J > V_3^S$, voters in a district electing a senior legislator have an incentive to deviate by choosing a junior legislator. Thus, $s = 3$ is not an equilibrium. As a result, there exists unique (pure-strategy) coalition-proof Nash equilibrium in which seniority is moderate with $s = 2$.[11]

[11] The voters of two or more districts do not make any coalition in this equilibrium since there does not exist any improving deviation available.

Table 1: Summary Statistics

	Mean	SD	Min	Max
Total expenditures per capita	1678.450	436.818	821.008	3326.640
Senate seniority	2.731	0.871	1.118	6.918
House seniority	3.561	0.954	1.575	6.643
Term limits for the House	0.059	0.236	0.000	1.000
Term limits for the Senate	0.052	0.222	0.000	1.000
Six year limit for the House	0.020	0.140	0.000	1.000
Eight year limit for the House	0.039	0.194	0.000	1.000
Consecutive term limits	0.036	0.186	0.000	1.000
Lifetime ban	0.023	0.151	0.000	1.000
Gubernatorial term limits	0.906	0.292	0.000	1.000
Divided government	0.563	0.496	0.000	1.000
Percent Democratic legislators in the House	56.607	17.982	8.571	100.000
Percent Democratic legislators in the Senate	56.132	17.527	12.857	96.190
Democratic governor	0.503	0.496	0.000	1.000
Percent Unemployed	5.993	2.041	2.300	17.400
Personal income per capita (log)	9.554	0.184	9.058	10.087
GSP per capita (log)	2.802	0.197	2.310	3.510
Population size (log)	8.177	0.965	6.118	10.488
Percent under 15 years old	26.280	2.437	21.212	38.533
Percent over 15 years old	12.345	1.814	7.032	18.197
Number of Observations		1150		

Note: Data are based on 46 U.S. states between 1980 and 2004.

Table 2: Seniority and Government Spending

	(1)	(2)	(3)
Senate seniority	−121.873**		−102.521**
	(29.454)		(32.852)
Senate seniority squared	21.110**		19.196**
	(5.791)		(6.064)
House seniority		−77.153**	−41.390*
		(19.463)	(21.704)
House seniority squared		9.665**	4.237*
		(2.794)	(2.433)
Gubernatorial term limits	−10.124	−7.849	−14.761
	(18.147)	(21.770)	(19.402)
Divided government	24.676**	23.972**	25.230**
	(6.749)	(6.377)	(6.613)
Percent Democratic legislators in the House	−0.852*	−0.778	−0.821
	(0.498)	(0.477)	(0.499)
Percent Democratic legislators in the Senate	0.187	0.366	0.195
	(0.784)	(0.798)	(0.771)
Democratic governor	13.109	10.419	12.841
	(7.809)	(9.565)	(8.284)
Percent Unemployed	16.919**	19.114**	16.993**
	(5.056)	(4.502)	(4.961)
Personal income per capita (log)	28.537	118.941	73.435
	(153.189)	(158.182)	(143.485)
GSP per capita (log)	556.963**	550.662**	536.003**
	(116.528)	(107.868)	(110.410)
Population size (log)	−434.204**	−463.132**	−428.721**
	(32.674)	(33.930)	(32.354)
Percent under 15 years old	−14.236**	−12.275**	−14.858**
	(5.763)	(5.795)	(5.743)
Percent over 15 years old	7.557	4.671	7.713
	(16.829)	(16.441)	(16.804)
Constant	4221.901**	3555.046**	3868.610**
	(1429.155)	(1453.951)	(1359.860)
R^2			

Note: Table entities are fixed effects regression estimates and standard errors in parentheses. Standard errors are estimated by Driscoll and Kraay's (1998) covariance matrix estimator. Estimates are based on data from 46 states between 1980 and 2004. The dependent variable is the size of total government expenditures per capita in dollars. State and year fixed effects are included in the models. The number of observations is 1150. ∗∗ $p < .05$, ∗ $p < .10$ (two-tailed tests).

Table 3: States with Term Limits

	House			Senate		
	Year	Change	Limit	Year	Change	Limit
Maine	1996	-0.71	8	1996	-0.22	8
California	1996	-1.59	6	1998	-1.02	8
Colorado	1998	-0.96	8	1998	-0.80	8
Arkansas	1998	-2.52	6	2000	-1.93	8
Michigan	1998	-2.33	6	2002	-1.27	8
Florida	2000	-1.03	8	2000	-0.42	8
Ohio	2000	-2.65	8	2000	-0.91	8
South Dakota	2000	-1.00	8	2000	-0.67	8
Montana	2000	-1.28	8	2000	-0.93	8
Arizona	2000	-0.96	8	2000	-0.72	8
Missouri	2002	-2.06	8	2002	-1.84	8

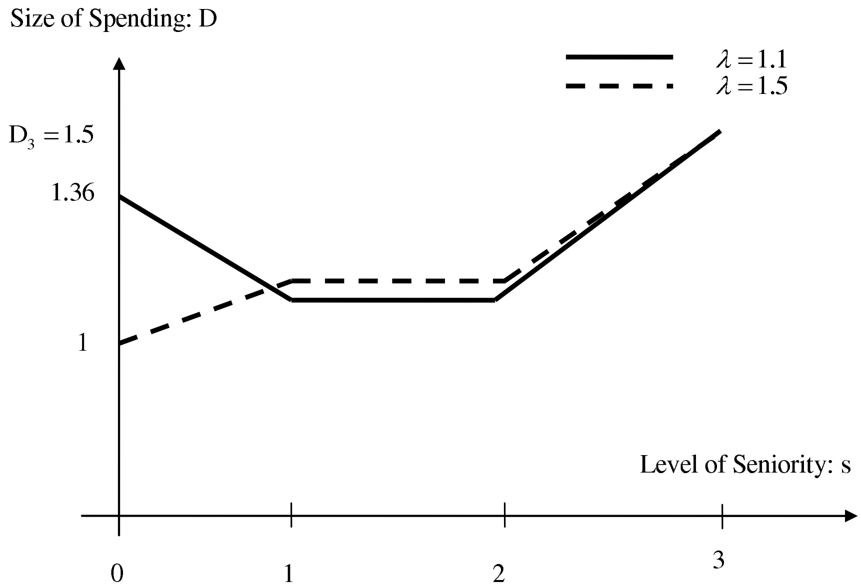
Note: “Year” denotes the first year when term limits became effective. “Change” denotes a change in the average level of seniority before and after the adoption of term limits. “Limit” denotes the maximum years of service. “Lifetime?” denotes whether the measures of term limits prohibit legislators from running for office after they have served up to the limit. Term limits became effective in Oklahoma in 2004, Louisiana in 2007, and in Nevada in 2010, yet this information is not reflected in our analysis because our analysis focuses on years from 1980 to 2004.

Table 4: Alternative Measures of Term Limits and Government Spending

	(1)	(2)
Large change by term limits	126.025**	
	(40.615)	
Small change by term limits	−37.303**	
	(17.927)	
Six year limit for the House		146.214**
		(68.859)
Eight year limit for the House		−73.830
		(53.484)
Term limits for the Senate		41.511
		(46.950)
Senate seniority	−95.482**	−95.720**
	(32.934)	(33.354)
Senate seniority squared	17.378**	17.778**
	(5.894)	(6.014)
House seniority	−9.772	−16.539
	(27.295)	(25.666)
House seniority squared	2.127	2.471
	(2.670)	(2.470)
Gubernatorial term limits	−24.161	−38.626*
	(17.388)	(19.780)
Divided government	22.156**	20.607**
	(7.439)	(7.365)
Percent Democratic legislators in the House	−0.750	−0.751
	(0.501)	(0.537)
Percent Democratic legislators in the Senate	0.426	0.275
	(0.735)	(0.795)
Democratic governor	9.670	8.370
	(8.315)	(8.230)
Percent Unemployed	19.528**	19.665**
	(4.697)	(4.618)
Personal income per capita (log)	127.933	101.357
	(153.137)	(131.875)
GSP per capita (log)	518.065**	532.171**
	(119.111)	(113.326)
Population size (log)	−385.531**	−398.790**
	(37.202)	(36.919)
Percent under 15 years old	−17.959**	−18.338**
	(5.793)	(6.045)
Percent over 15 years old	8.293	9.876
	(16.995)	(16.995)
Constant	2992.492*	3349.418**
	(1491.914)	(1265.030)
R^2		

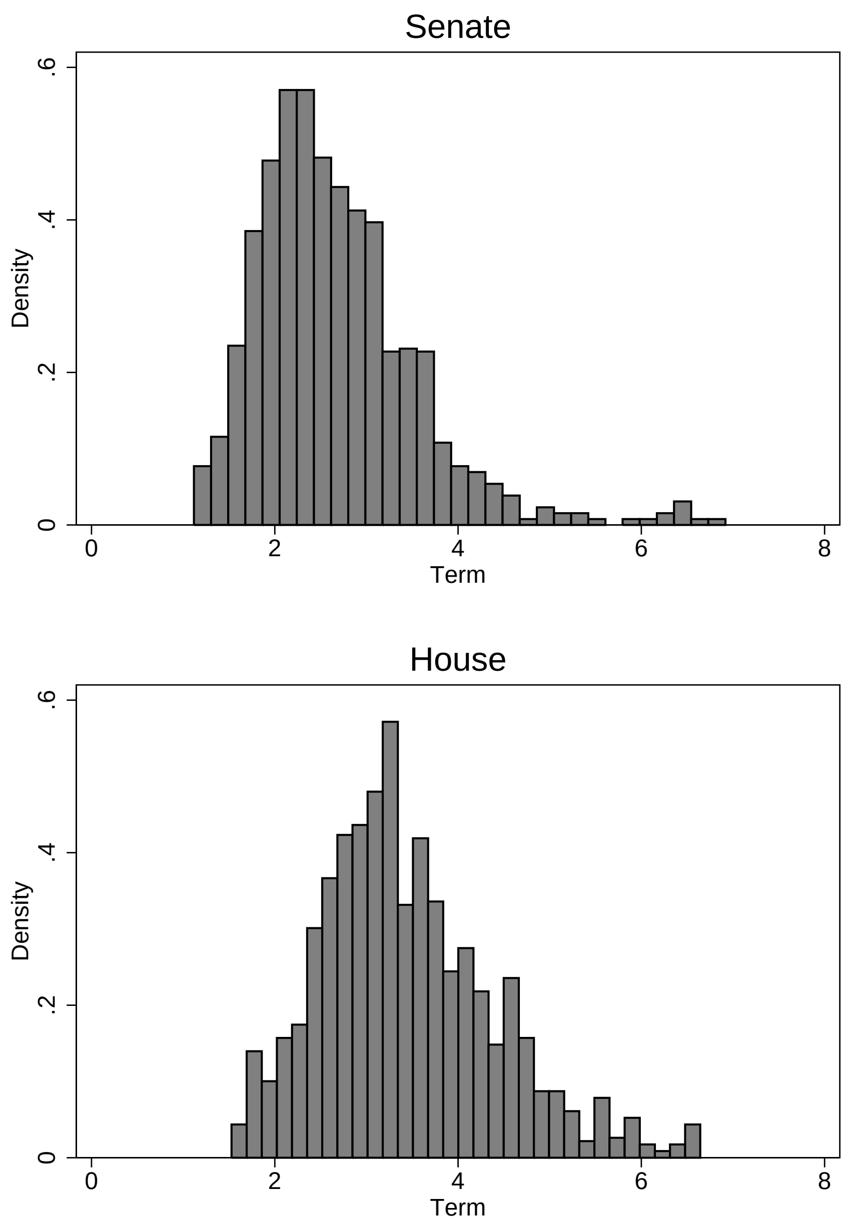
Note: Table entities are fixed effects regression estimates and standard errors in parentheses. Standard errors are estimated by Driscoll and Kraay's (1998) covariance matrix estimator. Estimates are based on data from 46 states between 1980 and 2004. The dependent variable is the size of total government expenditures per capita in dollars. State and year fixed effects are included in the models. The number of observations is 1150. ∗∗ p < .05, ∗ p < .10 (two-tailed tests).

Figure 1: Size of Spending with $k = 0.2$



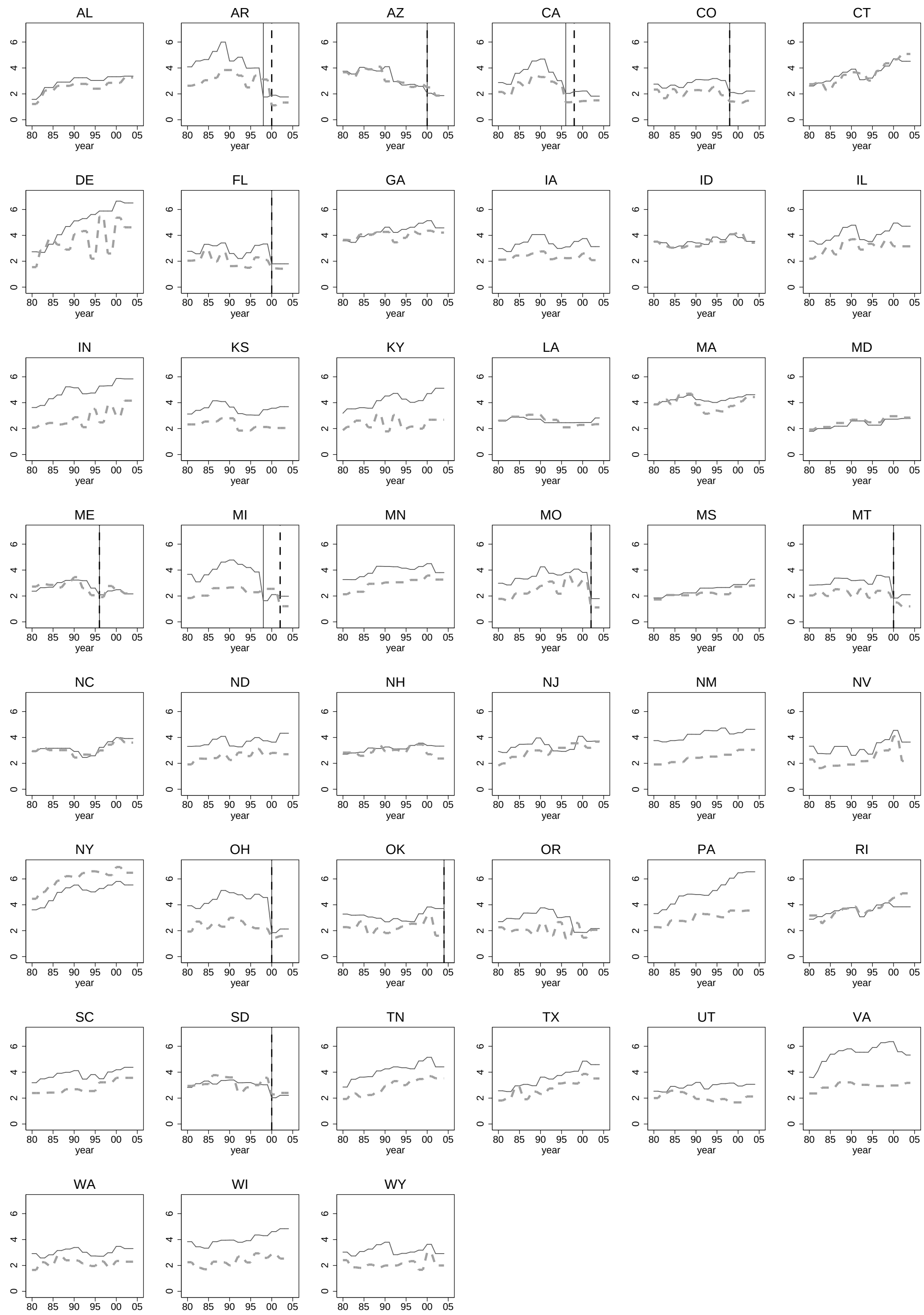
Note: As Proposition 1 indicates, when λ is sufficiently low, $D_1 = D_2$ is lower than D_0. On the other hand, when λ is sufficiently high, $D_1 = D_2$ is higher than D_0.

Figure 2: Distributions of Average Seniority in the Senate and House



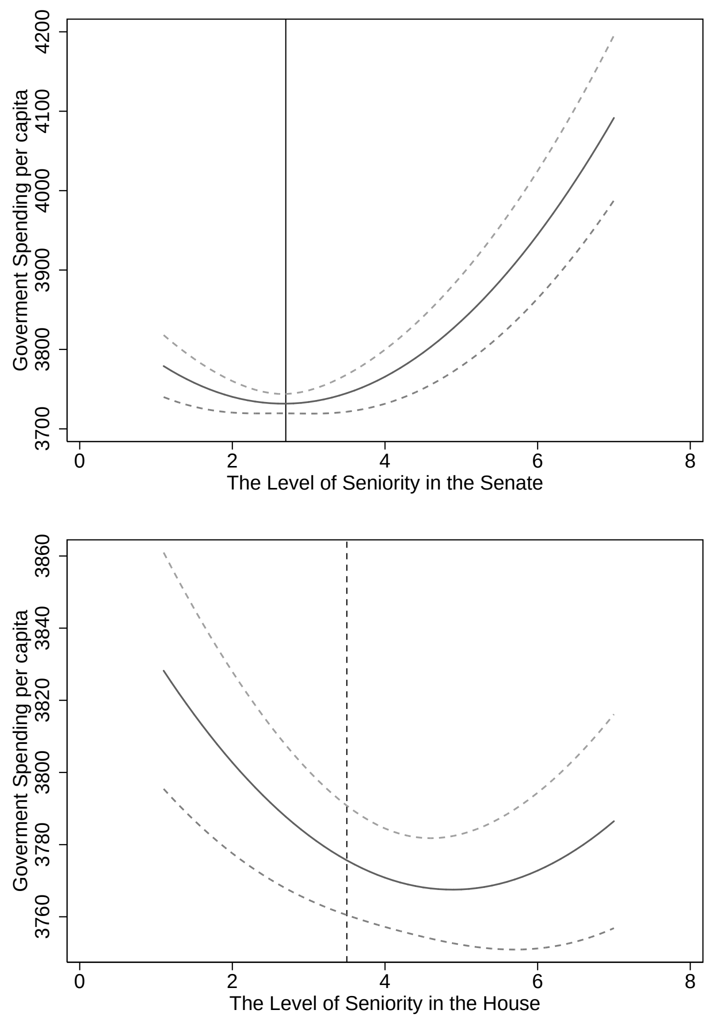
Note: Average seniority in the Senate and House is based on the average length of tenures of state senators and state house members.

Figure 3: The Level of Average Seniority in the Senate (dashed line) and the House (solid line)



Note: Average seniority in the Senate and House is based on the average length of tenures of state senators and state house members.

Figure 4: Estimated U-shaped Relationships between the Level of Seniority and Government Spending



Note: The graphs are based on the estimated results reported in Table 2. Average seniority in the Senate and House is based on the average length of tenures of state senators and state house members.