Voter Behavior and Seniority Advantage in Pork Barrel Politics

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April 2011

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August 2013

-Abstract-

This paper explores electoral accountability in a legislative system that favors seniority using laboratory experiments. Voters face a trade-off between pork barrel transfers and policy representation. The experiment tests term limits as a mechanism to reduce the cost of searching for a candidate who better represents voters on policy, as well as reducing the resulting asymmetric distribution of income. I use subjects' preferences on abortion to capture incumbents' policy choices where subjects vote to determine whether a donation is allocated to either a pro-choice or pro-life non-profit group to create tension between visceral and monetary influences on voter behavior.

JEL classification codes: C91, C92, D72, D89, P16

Keywords: voting, legislature, term limits, experiments

* I gratefully acknowledge financial support from the National Science Foundation (027354) and John and Hallie Quinn. I thank David J. Cooper and R. Mark Isaac and other members of the Experimental Social Science Group at Florida State (XS/FS) as well as Randall G. Holcombe, Eric Dodge, Daniel Houser, Bart J. Wilson, David Rojo Arjona and Jared P. Barton for their helpful comments. I thank Joseph Calhoun, Joab Corey, Lora Holcombe and Katie Showman for their generous help in recruiting.

Structuring a contract that aligns principal and agent interests is challenging. In theory, voters can do this by holding recurring elections and rewarding agents with long-term employment; however, when tenure becomes an allocation mechanism for political benefits, the principal may be inclined to lower her performance standard. That is, the principal and agent's interests may no longer align and the constitutionally established method of inducing acceptable effort is no longer effective (Barro 1973; Ferejohn 1986). Evidence suggests that shirking increases as the principal-agent bond between voter and legislator weakens (Kalt and Zupan 1990).

Seniority in the U.S. Congress potentially weakens this bond. First, seniority advantage transfers power to the agent through their enhanced ability to acquire constituent benefits i.e. pork. This conceivably allows incumbents to shirk on policy and creates a collective action problem where voters sacrifice representation on policy issues by reelecting incumbents because of the implicit cost of foregone federal spending associated with electing an inexperienced challenger (Buchanan and Congleton 1994; Bernhardt et al. 2004; Chari et al. 1997; Chen and Niou 2005; Dick and Lott 1993). Second, the competition for pork and the frequent reelection of incumbents redistributes income to districts with senior legislators (Friedman and Wittman 1995; McKelvey and Riezman 1992; Muthoo and Shepsle 2010). Proponents of term limits argue that capping seniority will improve electoral accountability by reducing the cost of electing a challenger thereby improving representation in the legislature. Creating more turnover in the legislature will also reduce the redistributive effects of pork-barrel legislation (Daniel and Lott 1997; Dick and Lott 1993; Moncrief, Niemi and Powell 2004).

This project uses controlled experiments to determine whether subjects perceive that term limits reduce the implicit cost of replacing a senior incumbent thereby avoiding the seniority trap.

Subjects are divided into districts and act as legislators and voters. Legislators set taxes that fund pork barrel transfers, which are awarded according to seniority, and vote on policy. Abortion was chosen as the policy issue for its potential to compete with the monetary incentives subjects faced. Certainly most people have an opinion on the issue, regardless of their political activity. More importantly, I employ what Zajonc (1980) refers to as "hot cognitions" by introducing affect into the voters' decision process whereby evaluating the incumbent does not require costly cognitive effort. Voters could express their preference or suppress it in favor of collecting the monetary reward, but, as Zajonc argues, affect is inescapable. Lowenstein (1996) suggests that visceral responses are possibly greater than those involving monetary payoffs, contrary to mainstream thought in economics and political science.

Policy was implemented through the novel use of donations to pro-life and pro-choice non-profit groups, where incumbents voted to determine the recipient. Whereas other experiments have used non-partisan charities in a voting context, the use of competing non-profit advocacy organizations to elicit behavioral responses based on preexisting preferences is original. Incumbents knew the majority preference of the districts, but voters could only infer the incumbents' preferences through their policy votes. Voters determined whether the incumbent was reelected or an unproven challenger took office in the upcoming round. The underlying theory predicts that voters concerned with monetary payoffs reelect incumbents regardless of policy choices in order to maintain an advantage in pork barrel spending. Term limits were imposed with the expectation of increasing electoral accountability by decreasing the cost of

replacing an incumbent and insuring some upward mobility in the legislature. The cap on seniority was also predicted to diminish the asymmetric income effects of pork barrel legislation.

I find that senior incumbents do not capitalize on their advantage when voting on policy and voters hold incumbents accountable when they lack a seniority advantage. When terms are not limited, the predicted reelection rate of senior incumbents who vote *against* district majorities (shirk) is as high as that predicted for senior incumbents who vote *with* the district majority. On the other hand, junior incumbents who shirk are reelected at a significantly lower rate than both senior incumbents in general and junior incumbents who vote with the district majority. An important result of the paper is that shirking decreases an individual voter's likelihood of voting for the incumbent, but reelection rates are unaffected. Moreover, term limits do significantly affect the individual decision to vote for a shirking incumbent, but this effect does not manifest itself in reelection rates either. This highlights the importance of the electoral process in aggregating individual decisions. Finally, it is likely that term limits do impact the voter payoff distribution.

Seniority and Term Limits: Literature

In the distributive theory of government, seniority advantage stems from experience, committee leadership, and agenda-setting power (Lopez 2003; Muthoo and Shepsle 2010; Weingast and Marshall 1988). Alvarez and Saving (1997) find strong evidence that committee membership on "prestige" and "constituency" committees significantly increases spending in home districts.[1] As Calamita (1991) wrote, "…[C]omittee and subcommittee chairmen are often powerful enough to single-handedly land their district or state significant amounts of federal jobs and money."[2]

McKelvey and Riezman (1992) effectively frame seniority as a strategic advantage in reelection. Seniority provides incumbents with an asset that no challenger can trump (see also Holcombe 1989 and Muthoo and Shepsle 2010). Models in this vein use the concept of Markov subgame perfect equilibrium to showcase endogenously instituted seniority and zero incumbent turnover. Likewise, legislative bargaining models featuring ideology imply that senior incumbents use their advantage to buy votes and impose their ideology while never losing reelection (Baron and Ferejohn 1989; Jackson and Moselle 2002; McKelvey and Riezman 1992). Theoretical and experimental work using spatial models with valence advantaged candidates has shown that advantaged incumbents move closer to their preferred policy as the advantage increases (Ansolabehere and Snyder 2000; Aragones and Palfrey 2002, 2004, 2005; Feld and Grofman 1991; Groseclose 2001; Stokes 1963; Wittman 1983). These studies corroborate the evidence that winning incumbents are less congruent with their constituencies than losing challengers (Achen 1978). Incumbents from non-marginal districts also tend to win despite typically being farther away from the median than the challenger (Sullivan and Uslaner 1978).

[1] The prestige committees include Appropriations, Budget, Rules and Ways and Means. The constituency committees include Agriculture, Armed Services, Interior, Merchant Marine, Public Works, Science, Small Business, and Veterans' Affairs.

[2] Calamita uses the example of Senator Robert Byrd who was able to transfer facilities of the FBI, CIA, Bureau of Alcohol, Tobacco and Firearms, Bureau of Public Debt, and IRS from Washington D.C. to West Virginia.

Simultaneously high reelection rates and low approval ratings of Congress are suggestive of this principal-agent problem and the high cost of electoral accountability (Elhauge, Lott, and Manning 1997; Erikson and Wright 2005). Reelection rates in the 2012 elections were 91% in the House and the Senate, while Gallup polls showed that 82% of respondents disapproved of Congress (Saad 2012). Approving of one's legislator while disapproving of the legislature is not necessarily inconsistent, but these results hint at dissatisfaction with a system that encourages strategic reelection of incumbents who do not represent the electorate on policy. The concern about the so-called "seniority trap" is that voters become entrenched in a prisoner's dilemma when choosing between seniority and policy representation. Term limits allow states to unilaterally remove shirking incumbents from office without concern for losing future transfer streams (Buchanan and Congleton 1994; Chari et al. 1997; Dick and Lott 1993; Elhauge, Lott and Manning 1997). The fact that the 23 states that passed congressional term limits between 1990 and 1995 used trigger clauses calling for a certain number of states to likewise impose limits before implementing them underscores the underlying collective action problem. The reality that 27 states did not pass term limit amendments is an indication of the free riding involved.

There is also evidence that term limits have synergistic selection and moderation effects. Bernhardt et al. (2004) claim term limits lead to tighter reelection standards. Likewise, Besley (2006) finds that governors in their final term are significantly more congruent to the electorate, suggesting a selection effect where only those who perform according to electorate standards make it to their last term. On the other hand, the threat of term limits may incentivize incumbents to moderate their positions (Chen and Niou 2005).

Of course, we must acknowledge the last-period problem studied by Besley (2006), Besley and Case (1995, 2003) and Crowley and Reece (2013) in the context of economic policy. However, in a different light we see the benefit of incumbents revealing their types in a world where preferences are private knowledge (Smart and Sturm 2004; Sutter and Poitras 2008). If the cost of electing a challenger is low and "non-congruent" incumbents are more willing to reveal their types, term limits will serve to improve representation.

Seniority and Term Limits: Model

A simple three-period problem is sufficient to highlight the incentives encountered with and without term limits. A familiar reader will note that it is in the spirit of Bernhardt et al. (2004); however, I calculatedly simplified it to underscore the main variables of interest that will be featured in the experiment because a simplified version translates well into a design that can be easily described to subjects. Furthermore, while a spatial model is suitable for mentally constructing the problem I am studying, an experiment allows for a richer design such as using subjects' own preferences on policy rather than inducing them according to a spatial model.

Suppose there is an odd number of districts, D, and each has N_d voters and a single incumbent, L_d, $d = \{1, .., D\}$. For simplicity, each district has an equal number of voters. Incumbents are distinguished within the legislature by the measure e_{dt}, which is equal to the number of times the incumbent from district d in period t has been consecutively reelected. This leads to the first critical assumption.

Assumption 1: The incumbent from each district is determined to be either senior or junior based on e_{dt}. That is,

$$s_{dt} = \begin{Bmatrix} senior\ if\ e_{dt} \geq e_m \\ junior\ otherwise \end{Bmatrix},$$

where e_m is the median tenure among all incumbents. [3] This rule for seniority is similar to the equilibrium in Muthoo and Shepsle (2010) who find an endogenous equilibrium cutoff for seniority status at the median level of tenure.

The representative voter is risk-neutral and has a single period payoff function based on government transfers and policy choice:

$$U_{idt} = c_{idt}(s_{dt}) - \alpha|y_{id} - \hat{y}_{dt}|. \quad (1)$$

The term $c_{idt}(s_{dt})$ indicates the consumption good that is a function of the incumbent's seniority status. The term α is the relative weight that she places on the policy issue and is assumed to be greater than zero. The voter's preferred policy is y_{id}; the policy supported by the incumbent is $\hat{y}_{dt}$. Both α and y_{id} are assumed to be constant over time.

Assumption 2: The policy issue is a binary set. That is $y_{id} = \{0,1\}$.

Assumption 3: Voters with senior incumbents enjoy positive transfers which are financed by voters in junior districts. That is, $c_{id}(senior) = T\ and\ c_{id}(junior) = 0$.

These assumptions allow for simplicity while highlighting the important elements to be featured in the experiment.

The representative incumbent is a risk neutral utility maximizer whose single period preferences are based on perquisites of office as well as policy:

$$U_{dt} = W - \beta|y_d - \hat{y}_{dt}|. \quad (2)$$

The term W is the incumbent's material utility. The term β is the disutility from outwardly supporting a policy he does not favor, where y_d is his preferred policy choice. The incumbent's preference is private and is only revealed through his choice on policy. The incumbent knows the majority's preference regarding policy. The next simplifying assumptions describe the nature of electoral challengers.

[3] This assumption precludes the possibility of voters competing to have a more senior incumbent among the junior set, which admittedly may have important implications on the model's conclusions. Dick and Lott (1993) elaborate on this competition, but do not model it specifically.

Assumption 4: Incumbents who lose reelection earn a salary of w. It is assumed that $W > w$ to reflect the incentives and material advantages incumbents have over challengers as well as the perquisites of holding office.

Incumbents vote on policy in the first stage of each period. In the second stage, voters determine his fate retrospectively.

The weight, α, in the voter utility function is crucial to describing possible outcomes. The voter strategy space of interest (i.e. non-dominated strategies), v, includes two strategies: I = *always vote for the incumbent* and A = *vote for the incumbent if he agrees on policy*. First I will show that when the representative voter is less than certain about turnover among other incumbents, there is a range for α in which she chooses a senior incumbent regardless of his policy choice. On the other hand, she will choose the challenger over a junior incumbent who votes against her policy preference. Details can be found in the appendix.

Further assumptions are needed to proceed. First, an elected challenger is assumed to have the same policy preference as the district majority. Second, he enters office without seniority. This means that the voter does not receive a transfer in the first term with a newly elected candidate. The voter holds belief q_{id} that there will be upward mobility in seniority within the legislature resulting from incumbent turnover. I assume there is a given set of incumbents in office in the first period with varying amounts tenure. Finally, there is a common discount factor γ.

A voter with a senior incumbent who shirks will vote to reelect him if the following condition (C1) holds:

$$\alpha < \left(1 - \left(\frac{\gamma+\gamma^2}{1+\gamma+\gamma^2}\right) q_{id}\right) T. \tag{3}$$

Similarly, a voter with a junior incumbent who shirks uses strategy I if and only if the following condition (C2) holds:

$$\alpha < \frac{q_{id}}{1+\gamma+\gamma^2} T \quad . \tag{4}$$

Comparing C1 to C2 shows that as long as $q_{id} < 1$, C2 is more restrictive; otherwise they are equal. This leads to the first result.

Theoretical Result 1: As long as the representative voter is less than certain $(q_{id} < 1)$ *that changes in seniority are likely to occur, there exists a range of* α *where she will prefer a senior incumbent regardless of policy choice when terms are not limited, but will choose the challenger over a junior incumbent who shirks.*

Figure 1 shows α as a real valued number bounded below by zero. If α is below C2, the voter prefers a senior incumbent regardless of his policy choice. If it lies above C1 then she always prefers a challenger over a senior incumbent who votes against her policy preference. Above C2 the voter prefers to elect the challenger if the current incumbent is junior and shirks.

Consequently, if α is between C2 and C1 the voter will re-elect *any* senior incumbent, but will only elect junior incumbents who vote for her preferred policy.

Figure 1: Range of α showing Conditions 1 and 2

Now we are poised to introduce term limits. I will show that there exists a range of α where her choice depends on the presence of term limits. That is, she will vote for the senior incumbent regardless of his policy choice when terms are not limited, but when terms are limited she will vote for the challenger rather than the shirking senior incumbent. We begin looking at the case of a shirking senior incumbent. I assume that term limits are imposed in the third period meaning that voters can keep the incumbent for the first two periods but are forced to elect a newly "minted" legislator without seniority in the third period. Voters are aware of the term limit from the beginning of the game. The voter chooses *I* over *A* if and only if the following (C3) holds:

$$\alpha < (1 - \gamma q_{id})T. \tag{5}$$

When the incumbent is junior and shirks, the voter chooses *I* if and only if the following condition (C4) holds:

$$\alpha < (1 - \gamma)q_{id}T. \tag{6}$$

A comparison of C3 and C4 shows that the latter is more restrictive, which implies that as long as $q_{id} < 1$ the shirking senior incumbent wins reelection under term limits but not a junior one.

Theoretical Result 2: As long as the representative voter is less than certain $(q_{id} < 1)$ *that changes in seniority are likely to occur, there exists a range of* α *where she will prefer to hold onto a senior incumbent regardless of policy choice when terms are limited, but will choose the challenger over a junior incumbent who shirks.*

The next result motivates the paper. Comparing C1 to C4 shows that the latter is more restrictive. Thus, by changing the electoral system by simply adding term limits changes the reelection standards of the representative voter.

Theoretical Result 3: There exists a range of α *where the representative voter will prefer to hold onto a senior incumbent regardless of policy choice when terms are not limited, but will choose the challenger over a senior incumbent who shirks when terms are limited.*

Figure 2: Range of α showing Conditions 1, 2 and 4

Figure 2 shows that α in the range above C1 means the voter will not reelect any incumbent who shirks on policy. If α is between C1 and C2, the voter allows senior incumbents to shirk when terms are not limited. An α in the range between C1 and C4 implies that voters will allow senior incumbents to shirk when terms are not limited but will choose the challenger over a shirking senior incumbent if term limits cap seniority.[4]

This brings us to the following proposition. For the sake of brevity, the general proof as well as the details of the incumbent's choice is found in the appendix. Regarding the incumbent as a rational agent, he can perceive that seniority insures him against unfavorable outcomes, making shirking an easy choice for a senior incumbent whose preferences do not align with the voters'.

Proposition 1: If $\alpha \in \left[(1-\gamma)qT, \left(1-\left(\frac{\gamma+\gamma^2}{1+\gamma+\gamma^2}\right)q\right)T\right]$ and $\beta \in \left[\frac{\gamma(W-w)}{(1+\gamma)}, \frac{(\gamma+\gamma^2)(W-w)}{(1+\gamma+\gamma^2)}\right]$ there is zero incumbent turnover among senior incumbents when terms are not limited. Senior incumbents who oppose voters on policy shirk and win reelection, but junior incumbents must vote with the district majority in order to be reelected. Considering the same range of α, when terms are limited, shirking incumbents are never reelected and incumbent turnover is high. Incumbents who oppose voters on policy, both senior and junior, shirk and subsequently lose reelection.

Proof: Please see the appendix. ■

Until now q_{id} has been assumed to be less than one and any implications from a change in election rules have been ignored. However, the election rules are vital to a voter's belief about change in seniority in any period. Allowing a voter's belief to vary based on the election institution is important; however, allowing for this only strengthens the results above.

Finally, the amount of turnover in the legislature will have an impact on the voter welfare across districts.

[4] Despite the fact that the relationships between C2 and C1 and C4 and C1 in Figure 2 always hold, it is not the case that C4 is always greater than C2. For sufficiently large q_{id} i.e. $\left(q_{id} > \left(\frac{1+\gamma+\gamma^2}{1+\gamma+\gamma^2+\gamma^3}\right)\right)$ C4 is less than C2. This would indicate a range (between C4 and C2) where voters tolerate shirking by either junior or senior incumbents when terms are not limited, but who do not tolerate any shirking when terms are limited.

Corollary 1: There is an enduring asymmetric distribution of income from junior districts to senior ones when there is zero incumbent turnover. Term limits reduce the asymmetric redistribution by forcing incumbents out of office and reducing the opportunity cost of electing a challenger.

The model highlights the incentives important to the research question. The value of the model is that it demonstrates how term limits change the incentives of voters. The next section lays out the experimental design and procedures.

Experimental Design and Procedures

Shirking can take many forms, but the focus here is ideological consumption. Rather than use a game featuring a spatial model with induced preferences, I elected to use subjects' preferences on an actual issue to create tension between the monetary incentives and visceral influences that affect the voter calculus. The upshot of using subjects' preferences rather than inducing them in the laboratory is that the experiment better captures the inherently contrasting benefits related to redistribution and policy representation. The reader should note that the hypotheses are derived from the theoretical treatment of the research question; yet, the tradeoff of implementing this novel design is that it does not allow for exact point estimations of aggregate results.

This section introduces the experimental design. Attention will be given to its implementation and, in particular, the non-standard method of recruiting subjects.

Survey and Recruiting

I created the possibility of shirking by exploiting the disparity between candidate and voter policy preferences in the lab. Subjects completed a short survey days prior to the experiment either online or in person (see appendix). Subjects read summaries of two non-profit groups focused on abortion and then asked how well they identified with either group relative to a seven point scale. Self-identified "pro-choice" individuals made up a large proportion of the respondents (53%) as well as students whose preferences were indiscernible or were explicitly neutral (23%). Thus five of the eight total sessions used self-identified pro-choice subjects as voters. I recruited specific numbers of subjects from each self-identified group (pro-choice or pro-life) for each session. For instance, five sessions featured three districts with three voters each. Sessions featuring pro-choice voters required twelve pro-choice subjects: nine to play as voters and three to play as candidates. I randomly determined these roles upon arrival to the laboratory. Three pro-life subjects were recruited to fill the roles of candidates who opposed voters on policy. I randomly determined their groups and seniority ranks at the beginning of each phase of the experiment. Sessions with pro-life voters likewise had twelve pro-life subjects and three pro-choice subjects.[5]

[5] Sessions with five districts used twenty subjects of one group where twelve were voters and five were legislators. Five subjects from the opposing group were used as legislators for a total of twenty-five subjects.

Experiment Procedures and Hypotheses

The first three sessions used a setup with ten candidates and five districts with three voters each ($L = 10, D = 5$, and $N_d = 3$); to demonstrate the robustness of results, the five additional sessions used a set up with six candidates and three districts with three voters each ($L = 6, D = 3$, and $N_d = 3$). Table 1 lays out these details as well as the parameter settings.

Table 1: Experiment settings

	3 District Setup	5 District Setup
Number of Sessions	5	3
Number of Subjects	75 (45 voters, 30 candidates)	75 (45 voters, 30 candidates)
Voters per District (N_d)	3	3
Total Voters per session	9	15
Total Candidates per session	6	10
Total subjects per session	15	25
E	\$0.50 per round	\$0.45 per round
W	\$0.60 per round	\$0.60 per round
σ_d	1/2 if senior	1/3 if senior
$\sigma_d \frac{\Pi}{N_d}$	\$0.75 per round	\$0.75 per round
Donation	\$2.00 per round	\$2.00 per round
Pro-choice voter sessions	3	2
Sessions with treatment order: C-NOTL-TL	3	2

Only half of the candidates in any session were in office in a single round (one per district) and are referred to as *incumbents,* whereas the other half are referred to as *challengers*. When an incumbent lost reelection, one of the challengers was picked at random to replace him; the losing incumbent then became a challenger and could potentially replace a losing incumbent thereafter. Candidates remained unidentifiable throughout the experiment. The top two incumbents in terms of tenure were considered senior in the 3 District setup; whereas, the top

three incumbents were considered senior in the 5 District setup. Incumbents received a wage, $W = \$0.60$ each round in office. Challengers earned money decoding text strings for \$0.025 for every correct code. They were not strictly limited in the number of codes they could submit in any round, but their time spent decoding was dependent on the time it took for the incumbents and voters to reach decisions. This created incentive for incumbents to stay in office as well as kept challengers engaged throughout the experiment.[6] Payoffs were summed across all rounds.

Voters received an endowment, E, each round, which differed between the 3 and 5 District setups in order to equalize the benefit of seniority across the two (\$0.75). The key variables include the tax on voters' endowments, t, the amount of pork to be distributed, Π, and the voters' shares of pork determined by incumbent seniority, σ_d . The tax was equal to E if it passed the legislature; otherwise, it was zero. Thus, voter payoffs were as follows:

$$U_{id} = E - t + \sigma_d \frac{\Pi}{N_d}, \tag{7}$$

where $\Pi = D * N_d * t$ since taxes were equal across all voters. The variable σ_d determined the share of tax revenues a senior district received in any round. It was 0 for the voters of the junior incumbent. Thus, voters in a senior district received \$0.75 in any round the tax passed whereas the others received nothing. [7]

Each session featured three phases:

Control. In Stage 1 of the Control phase incumbents voted on taxing the electorate. Each voter's entire endowment was allocated to a public account that was divided according to the explanation above if a majority of incumbents passed the tax. The shares were divided evenly among voters within the districts receiving a positive transfer. If the tax did not pass, the subjects kept their endowments and no pork was transferred.[8]

Voters decided whether to reelect the incumbent in Stage 2. They were aware of the allocation mechanism based on seniority as well as the relative seniority of all incumbents. They also saw their incumbent's choice as well as their own payoff. The incumbent stayed in office if a majority of the district's voters approved and the experiment advanced to the next round proceeding in the same manner. Randomly selected and unidentifiable challengers replaced any incumbent who failed to win reelection. Losing incumbents then became challengers.[9]

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[6] Skilled subjects averaged between 12 and 14 codes per round, leaving them with \$0.30-0.35 per round.

[7] A linear payoff function was implemented to sharpen incentives such that districts either desired a full tax or none at all. Thus the tax was a purely redistributive one. The structure of the shares implies that a majority of the active legislators always wanted to tax voters. Other setups might allow for a majority to prefer not to pass pork legislation or call for allowing legislative bargaining. Fixing the shares accordingly such that there is always an advantaged majority is also consistent with legislative bargaining literature where a minimum winning coalition decides how to split the pie (Baron and Ferejohn 1989, McKelvey and Riezman 1992, Frechette, Kagel and Lehrer 2003, Frechette, Kagel and Morelli 2009, Muthoo and Shepsle 2011).

[8] This was a major simplification but it made the incumbents' decisions more salient to voter that also allowed voters to understand that the asymmetric nature of the transfer. The reader may wonder if this was a necessary component of the game. I felt it was for two reasons: 1) it reinforced the fact that voter payoffs were dependent on the actions of incumbents and 2) allowed senior incumbents the opportunity to actively buy the support of voters to allow for policy shirking.

[9] This mimicked the idea that a challenger's true preferences are not known to voters and can only be revealed over time (Chen and Niou 2005).

No Term Limit Treatment (NOTL). In Stage 1 of NOTL, taxes and shares of pork were decided in the same manner as in the control phase, but the incumbents also voted on policy. They voted each round to determine which non-profit group would receive a donation of $2.00. Donations aggregated over an entire session and were separate from subject earnings. This created the non-monetary aspect to the incumbents' choice set that voters may not approve. Incumbents and voters knew the preference of the district's majority. The surveys provided preference intensity for ex-post analysis but these were not disclosed to the incumbents.

Stage 2 was the same here as in the other treatments, but voters also saw the incumbent's policy vote and the donation outcome.

Term Limit Treatment (TL). Stages 1 and 2 proceeded the same way as in NOTL with the addition of two-round term limits that capped legislative tenure. I staggered term limits such that the senior incumbents left office after two rounds if not already replaced by voters whereas the junior incumbents did not face the term limit until the third round if not already replaced by voters. This varied the timing of incumbents leaving office so junior incumbents had a chance to become senior. It was possible a priori that voters rendered this ineffective, but there was never a case where term limits removed every incumbent in the same round.

The control phase lasted five rounds whereas NOTL and TL each lasted ten rounds. A within-subject design is appropriate because I did not induce subjects' preferences on policy; therefore, the goal was to see whether changes in behavior occurred after the term limit rule changed.

Each phase began by regrouping voters into new districts with randomly chosen and unidentifiable incumbents; however, districts always began a phase with an incumbent who opposed the district majority on policy. Voters did not know a particular candidate's preference and could only infer it from his/her choices in the experiment; nor did they know the distribution of candidate preferences within the experiment.[10] Furthermore, incumbents changed districts at the beginning of every phase as did the voters in each district. Candidates were fixed in their role across all phases but remained unidentifiable to voters throughout the experiment. Incumbents were randomly determined to be either "senior" or "junior" to begin each phase; thereafter, relative tenure measured by consecutive reelections and overall incumbent turnover determined seniority status in subsequent rounds. This implies that an incumbent's seniority status remained the same if no other incumbents left office. A junior incumbent could become senior if there was turnover among senior incumbents. There were an equal number of pro-choice and pro-life candidates in each experiment. Both incumbents and voters knew the majority preference of their district. The instructions can be found in the appendix.

This leads to the hypotheses to be tested. Other than the first hypothesis regarding taxation, they are derived from the aforedescribed proposition and corollary, but choosing to use subjects' own preferences on abortion disallows precise manipulation of preferences and therefore precludes point predictions regarding rates of shriking and reelection. In other words,

[10] The reader may wonder about learning given the setup where subject candidates play as both challengers and incumbents. First, consider the fact that the study is concerned with voters' behavior rather than the candidates'. If they did learn and responded to voter preferences in spite of the protection of seniority, while interesting, does not affect the voters' response to shirking under two different electoral institutions.

what we are interested in are the comparative statics between treatments for the most part. Hypotheses 2-4 refer to cases where the incumbent opposes the district majority on policy:

Hypothesis 1: The tax always passes in all treatments given the artificial minimum winning coalition.

Hypothesis 2: Senior incumbents vote for their preferred policy whether terms are limited or not (NOTL and TL). When terms are not limited they are protected by seniority; otherwise, term limits remove the incentive to vote with the district majority if preferences do not align.

Hypothesis 3: Junior incumbents vote with the district majority when terms are not limited (NOTL) in order to stay in office; however, they vote their own preference when terms are limited (TL).

Hypothesis 4: Voters reelect shirking senior incumbents when terms are not limited (NOTL) but not shirking junior incumbents. Voters reelect only non-shirking incumbents – senior and junior - when terms are limited (TL).

Hypothesis 5: Voter payoffs will favor those who begin with seniority when terms are not limited (Control and NOTL). Term limits will lead to a more egalitarian distribution of payoffs across all districts.

Results

A total of eight sessions took place at Florida State University's campus. The average payment was roughly $20 for one-and-a-half hours in the lab. The order of treatments varied to account for order effects (See Table 1). Analysis controls for these factors.[11]

Passing the Tax

Result 1: Incumbents did not always pass the tax.

The tax passed 81% of the time (n=300 s.d. = 0.40) in the control phase. This is not particular to the control phase. The fact that the senior incumbents gave up monetary benefits for their voters is at odds with standard theory. Candidates knew their roles would be fixed throughout the experiment, which rules out the motive of setting a precedent of zero taxes in the case they became a voter at some point in the future. The tax passed 65% of the time in NOTL

[11] In the fifth session there was a shortage of two pro-choice subjects, so I elected to use two pro-life subjects as voters. This was the only incidence where session composition was not as explained in the design section. In NOTL these two subjects were randomly grouped together, so this group has been dropped from all analysis.

Preference intensity did not significantly differ from session to session, but this possibility was controlled for in the regression analysis. Pro-life subjects had an average strength of 1.83 whereas self-identified pro-choice subjects had an average strength of 1.98 (t-test: t-stat 1.03 p-value 0.30). Thus the average subject was at the midpoint of identifying themselves as either pro-choice or pro-life.

(n=600 s.d. = 0.48) and 71% of the time (n=600 s.d. = 0.45) in TL. It seems surprising that the tax did not always pass after introducing the policy issue because this provided incumbents the opportunity to buy votes and vote for their preferred policy. Moreover, if an incumbent wanted to serve the interest of voters on the policy issue, surely they would also serve their financial interests.

Voting Against the District Majority

Result 2: Senior incumbents who oppose voters on policy do not always shirk in either treatment (NOTL or TL). However, senior incumbents shirked more frequently than junior incumbents without limited terms (NOTL). Junior incumbents shirked more frequently with term limits (TL) than without. Thus, we see results consistent with Hypotheses 2 and 3. Senior incumbents were no more likely to shirk in their last term when terms were limited.

Here we focus on the incumbents who opposed district voters on policy. These did not always vote against the majority in either NOTL or TL. Table 2 contains sample means of incumbent shirking. These are estimated using simple linear regressions with clustered standard errors at the subject level to account for repeated observations from individual subjects. The binary dependent variable is equal to one if the incumbent voted against the district majority. We see that 42% of policy votes by senior incumbents went against the district majority in NOTL. The proportion is 32% in TL. Therefore, we can say that senior incumbents in NOTL were significantly more likely to vote against the majority than junior incumbents. We can also say that both senior and junior incumbents in TL were more likely to shirk than junior incumbents in NOTL, which is consistent with the hypotheses.

Table 2: Incumbent shirking

Voting against the district majority (sample means)				
	NOTL		TL	
	Senior	Junior	Senior	Junior
Mean	0.42[a]	0.10	0.32[a]	0.27[a]
95% CI	[0.22, 0.61]	[0.02, 0.18]	[0.22, 0.43]	[0.15, 0.40]
s.e.	0.10	0.04	0.05	0.06
n	190	110	190	110

a: significantly greater than junior incumbents in NOTL at 95% level (t-stats: 2.97, 3.43, 2.35).

Two results merit notice. First, senior incumbents were no more likely to vote against district majorities under term limits. Likewise, term limited incumbents were no more likely to shirk in their last term than in their first term. TL incumbents in their last term shirked 34% percent of the time versus 31% of the time for those incumbents in their first term (t-stat 0.51 p-

value 0.61). Voting against district majorities occurred much less frequently than predicted in both treatments.

The payoff difference between incumbents and challengers may have been so large that the former did not want to risk losing reelection. This makes sense in NOTL if subjects believed their chance of entering office again was extremely low, but the small pool of candidates meant that this chance was high in TL. In TL an incumbent who lost reelection had an ex ante probability between 40-60% of entering office again after one round depending on how many incumbents left office due to term limits. This is an upper bound because actual reelection outcomes may have disrupted how term limits were initially staggered. The data show that the ex-post probability was a 27% of returning after one round and a 40% chance of returning after two rounds. A losing incumbent waited for 4.32 rounds (out of 10) on average in NOTL before returning. In TL a losing or term limited incumbent waited 3.25 rounds on average before returning. The difference is significant using a standard t-test (t-stat 2.73 p-value 0.01).[12]

These results are consistent with the classic articles on electoral control by Barro (1973) and Ferejohn (1986) that show voters can expect better performance from their representatives the higher the relative value of staying in office.[13]

Reelection

Result 3: District level data imply electoral accountability was high only when the incumbent was junior and the cost of not reelecting the incumbent was low. Senior incumbents who shirked won reelection at the same rate whether terms were limited or not, suggesting term limits were ineffective (see Hypothesis 4).

Result 4: Voter level data indicate that when terms were not limited (NOTL) an individual was significantly less likely to vote for a shirking senior incumbent than senior or junior incumbents who voted with the district majority. They were also significantly less likely to vote for a shirking senior incumbent when terms were limited (TL) than when they were not; suggesting voters recognized the reduced cost of replacing an incumbent when seniority was capped. This evidence is consistent with Hypothesis 4. Stronger policy preferences also predict a significantly higher inclination to vote against a shirking incumbent, which supports the underlying model.

[12] Similar results to those presented in this section obtain using a pooled logit estimation clustering the standard errors at the individual level. Results also suggest that including subjects' strength of preference measured by their survey response is a significant predictor of shirking behavior.

[13] Anecdotal evidence from the post-experiment surveys suggests that some subjects perceived that the incumbents faced the difficult decision of choosing between monetary benefits or their preferred policy. One subject wrote that, "It was interesting to see how money affects people's choices. [Incumbents] had to decide between money and what they believe in." Another noted, "I chose what the majority of my group wanted me to chose [sic] so I would personally make more money."

The insignificant difference in reelection rates of shirking senior incumbents between treatments underscores the importance of aggregating choices and implies shirking behavior influenced the average voter but not the pivotal voter.

Table 3: Predicted probability of reelection and supporting incumbent

Panel A: (District level N = 453)						
Reelection						
	Control		NOTL		TL	
	Senior	Junior	Senior	Junior	Senior	Junior
Predicted Probability	0.96[a]	0.71	0.95[a]	0.72	0.98[a]	0.63
95% CI	[0.90, 0.99]	[0.57, 0.83]	[0.90, 98]	[0.57, 0.83]	[0.93, 0.99]	[0.50, 0.74]
s.e.	0.02	0.07	0.02	0.07	0.02	0.06
Reelection of incumbents voting against the district majority						
			NOTL		TL	
			Senior	Junior	Senior	Junior
Predicted Probability			0.91[b]	0.46[c]	0.95[b]	0.40[c]
95% CI			[0.80, 0.97]	[0.18, 0.77]	[0.82, 0.99]	[0.19, 0.64]
s.e.			0.05	0.16	0.05	0.12
Reelection of incumbents voting with the district majority						
			NOTL		TL	
			Senior	Junior	Senior	Junior
Predicted Probability			0.96	0.80	0.98[d]	0.72
95% CI			[0.89, 0.99]	[0.60, 0.93]	[0.92, 1]	[0.53, 0.87]
s.e.			0.03	0.08	0.03	0.09

a: significantly different than junior incumbents at 95% level in respective treatment (t-stats: 3.43, 3.16, 5.53). b: significantly different than shirking junior incumbent at 95% level in respective treatment (t-stats: 3.16, 4.39).; c: significantly different than non-shirking junior incumbents at 95% level.; d: significantly different than non-shirking junior incumbent in TL at 95% level (t-stat: 2.92).

Table 3 cont.: Predicted probability of reelection and supporting incumbent

Panel B: (Individual level N=1,407)				
Voting for incumbents who vote against the district majority				
	NOTL		TL	
	Senior	Junior	Senior	Junior
Predicted Probability	0.76[e,f]	0.46	0.50	0.47
95% CI	[0.65, 0.84]	[0.32, 0.60]	[0.27, 0.74]	[0.28, 0.67]
s.e.	0.05	0.07	0.12	0.10
Voting for incumbents who vote with the district majority				
	NOTL		TL	
	Senior	Junior	Senior	Junior
Predicted Probability	0.90[g]	0.87[g]	0.92[g]	0.63
95% CI	[0.84, 0.94]	[0.76, 0.94]	[0.87, 0.95]	[0.52, 0.73]
s.e.	0.03	0.07	0.02	0.05

e: significantly different than support for shirking junior incumbent in NOTL at 5% level (t-stat: 3.50).; f: significantly different than support for shirking senior incumbent in TL at 5% level (t-stat: 2.00).; g: significantly different than the support for shirking incumbent of corresponding seniority in the same treatment at 5% level (t-stats: 2.40, 4.14, 3.45).

Let us turn to accountability. Table 3 displays predicted probabilities of reelection and voter support for the incumbent. These are derived from one-thousand simulated election outcomes and vote choices based on results from the panel random effects logit regressions (King, Tomz and Wittenberg 2000).[14] Panel A shows predicted reelection rates at the district level and Panel B features the predicted probabilities of voting for the incumbent using voter level data. At the district level the binary variable indicating an incumbent win was regressed on treatment variables interacted with the incumbents' seniority and policy votes. These also include controls for the incumbents' tax votes, round in the experiment, experimental session and the average strength of voter preference in the district. This latter variable was taken from subjects' survey responses and ranged from [1,3]. The voter level analysis was done by regressing the binary variable indicating a vote for the incumbent on the same controls except the individual voters' strength of preference was used rather than the district average. The regression results are found in the appendix.

Reelection rates clearly favored senior incumbents indicating that subjects understood the implications of seniority. More importantly, the differences are much more pronounced when conditioned on the incumbent voting against the district majority. Senior incumbents who voted against the majority are predicted to be reelected with a 91% likelihood compared to 46% for the junior incumbents in NOTL. Likewise, senior incumbents who shirked in TL were much more

[14] The Monte Carlo simulations using the estimated parameters are motivated by providing results of substantive interest to the reader as well as accounting for the inherent uncertainty of any calculation (e.g. predicted values, first differences) derived from estimated parameters when $N < \infty$.

likely to be reelected than junior ones (95% versus 40%). These differences are significant at the 5% level.

Also notice that the differences within treatments between senior incumbents who shirked and those who did not are not significant. However, the analogous differences for junior incumbents are highly significant. A junior incumbent who voted against the district majority when terms were not limited was predicted to be reelected with a 46% chance compared to the 80% chance for junior incumbents who voted with the district majority. When terms were limited the chances were 40% and 72% respectively. Voters clearly responded to the seniority when it came to choosing between pork and policy representation.

Perhaps the most important result is that senior incumbents who shirked were just as likely to be reelected whether terms were limited or not. Therefore it appears that voters did not respond significantly different to shirking because of term limits; however, it is important that we contrast district and individual level results.

Figure 3 shows the distribution of subjects' votes for the incumbent in both NOTL and TL. The horizontal axes measure proportion of votes for the incumbent by voter, and the vertical axis indicates the percentage of voters. For example, we can see that almost 60% of voters in TL voted for the incumbent 70% of the time or less. The corresponding result in NOTL was only approximately 40% of voters. Thus the skewed NOTL distribution indicates a larger percentage of voters repeatedly voting for the incumbent and a greater willingness in TL to vote for a challenger.

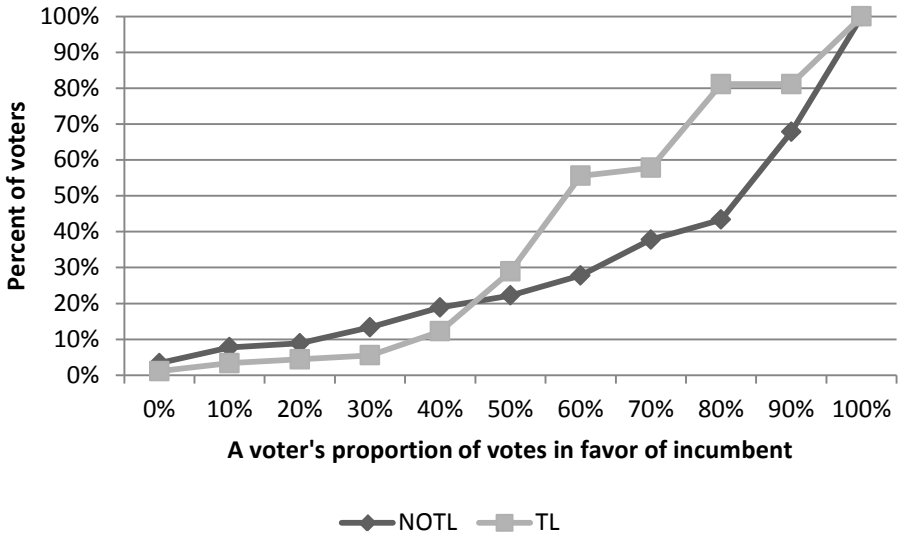


Figure 3: Distribution of Voters by proportion of votes for the incumbent

Comparing the election outcomes to the individual voter decision will indicate whether the individual response matches what the aggregate results are suggesting. According to Panel B, voters were predicted to be much more likely to vote for an incumbent who voted with the

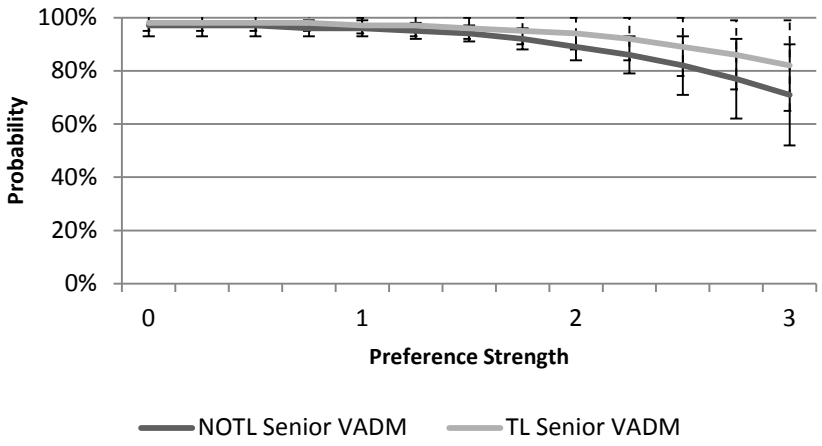
district majority. For example, a voter in NOTL was predicted to vote for a shirking senior incumbent with only 76% likelihood. The predicted probability of voting for a senior incumbent who did not shirk in NOTL was 90%. These differences are all significant at the 5% level. Predicted reelection rates indicated no differences when the incumbent was senior.

The most interesting result considers the effect of term limits on the predicted probability of voting for a senior incumbent who shirked. Although there was not a difference in the predicted probability of reelection, voters were significantly less likely to vote for a shirking senior incumbent when terms were limited (76% probability v. 50% probability, t-stat 2.00). Therefore, the behavior at the individual level is consistent with theory implying that the average voter perceived that term limits reduced the cost of firing a senior incumbent even though the aggregate reelection rates did not indicate this.

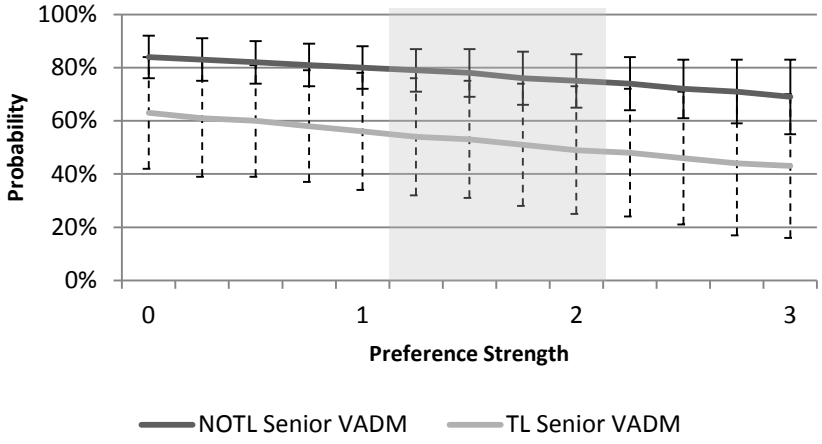
Overall, the average voter responded to shirking, whether senior or junior, but they did so to a greater extent when the incumbent was junior and the cost of doing so was low. These results highlight the importance of group choice and aggregating individual decisions. Comparing estimated vote shares in these cases confirms that despite the estimated reaction of voters overall, the average vote share by district does not fall below two, which is needed to affect the election outcome. This implies that had the randomly determined groups of voters been different, election outcomes could have displayed a treatment effect, holding voter choices constant. This is consistent with other findings that suggest voters respond to roll-call votes that align with extreme party positions, but it does not impact reelection rates (Canes-Wrone, Brady and Cogan 2002).

Let us examine the likelihood of any voter being pivotal. There is no chance of "making a tie" in a three person district, so the estimation is quite simple. Using a binomial distribution probability mass function we can estimate the probability any district voter breaks a tie under certain parameter values related to how the vote is split between the two other voters. Remember that voters simply knew what policy the majority of voters preferred. They did not know this majority included every voter in the district. If support for the incumbent is split 50-50 the probability of being pivotal is 38%.[15] Using the estimate from Table 3 that suggests support for a senior shirking incumbent is split roughly 76-24 indicates that the probability of being pivotal falls to 13%. In this case, a voter could expect his vote to not make a difference roughly 87% of the time, so it seems quite plausible that the discrepancy between the district level result and individual behavior can be attributed to collective action and the grouping process.

[15] $\binom{3}{1} 0.5^1.5^2 = 0.375$



Panel A: Predicted Probability of Reelection



Panel B: Predicted probability of voting for the incumbent

Figure 4: Predicted probabilities as policy preference strengthens

Finally, one of the important predictors of voting against the incumbent is the strength of a voter's preference according to the scale in the survey. By this measure, a stronger policy preference means a voter is more likely to vote against a shirking incumbent. Figure 4 maps out predicted probabilities of reelection (Panel A) and predicted probabilities of voting for the incumbent (Panel B) as voters' policy preference strength increases from zero to three for two cases: senior incumbents in NOTL and TL who vote against the district majority (VADM). The bars indicate 95% confidence intervals. These results are constructed analogously to the predicted probabilities above by varying the key variable *strength of preference*. The predicted probability of reelection certainly falls as the strength of preference increases, but there is not a difference between the two cases. The shaded portion of Panel B indicates where the differences are significant at the 5% level (despite overlapping confidence intervals). Note that the differences in the non-shaded areas are significant at the 10% level.

Voter Payoff Distribution

Result 5: Payoff distributions favored voters who began with seniority in all treatments. The asymmetry was mitigated in NOTL and TL by incumbent turnover.

The payoff distribution in the control phase clearly favored the districts that began with seniority, but there was not complete redistribution to those voters as would be implied by zero incumbent turnover. This is partially attributable to a few senior incumbents losing reelection, but it is also due to the tax not passing every round. Table 4 contrasts the proportions going to those districts that began with senior incumbents and junior incumbents for each treatment. It also shows the average payoff per round for those respective voters.

Table 4: Voter payoffs

	Control		NOTL		TL	
	Senior	Junior	Senior	Junior	Senior	Junior
Proportion	81%	19%	56%	44%	53%	47%
Average per round	$0.66	$0.15	$0.52	$0.40	$0.50	$0.44
95% CI	[0.62, 0.70]	[0.08, 0.22]	[0.43, 0.61]	[0.27, 0.53]	[0.41, 0.59]	[0.33, 0.55]
n	57	33	57	33	57	33
Hypothetical Results						
Proportions, elections fixed	85%	15%	62%	38%	59%	41%
Average per round	$0.67	$0.12	$0.55	$0.34	$0.54	$0.37
Proportions, taxes fixed	88%	12%	79%	21%	-	-
Average per round	$0.70	$0.09	$0.66	$0.18	-	-

Senior and junior indicate voters who began the phase with a senior or junior incumbent.

The distribution from NOTL is skewed but less so. This is a product of some senior incumbents losing reelection after shirking as well as the tax passing significantly less often than in the control phase (t-test: 56% versus 81%; t-stat 5.00 p-value 0.00).

The payoff distribution under term limits is much more equal than compared to the control, but it is not significantly different from NOTL. However, two things should set these treatments apart. First, the tax passed significantly more often in TL than in NOTL (t-test: 72% versus 65%; t-stat 2.61 p-value 0.01). Second, the general reelection rate was much greater in NOTL than TL (t-test: 85% versus 75%; t-stat 2.69 p-value 0.00).

Two sets of hypothetical statistics are calculated to try identifying what factor is driving the results. The first set calculates the payoff distribution and average round payoff using the observed election results while assuming the tax passed every round. These hypothetical results are not significantly different than those observed using simple t-tests. The second set of hypothetical results uses the observed taxation results while assuming zero turnover in the legislature. Results for TL are not calculated because too many assumptions are required regarding changes in seniority. Comparing these hypothetical results to those observed indicates significant differences and suggests that incumbent turnover is driving the observed payoff distributions. If there had been zero turnover in NOTL then the payoff distribution would have been significantly more skewed than that observed in TL.

Discussion

Proponents of term limits argue that capping seniority would encourage voters to hold politicians accountable for their policy choices. The results presented here are mixed regarding this claim. Changing the status quo is generally challenging in a collective setting, especially when voters vary in their ability to recognize the impact of capping seniority as well as their preference intensities. Perhaps other mechanisms would be more successful.

One might consider the dearth of shirking observed to be a simple product of the pay difference between an incumbent and a challenger, nevertheless it is interesting to note incumbents' unwillingness to buy votes by passing the redistributive tax. A potentially interesting future line of research would consider subjects' perceptions of ethics related to the role of incumbent in this context.

The research design avoids any confounds related to inefficiency stemming from pork-barrel legislation, but this point should be a matter of future research. The role of legislators might be re-examined if voters see them as providers of transfers rather than law makers. This may translate into a new institutional structure where leadership and committee seats are determined by some convention other than seniority.

Conclusions

This project tests the theory that a system that favors seniority encourages voters to compete for transfers via the legislature and disregard policy. It employs a novel use of visceral and monetary incentives in the lab where seniority advantage affects payoffs but overall utility is affected by the policy choices of incumbents. These policy choices are made by voting to donate money to either a pro-life or pro-choice non-profit group. Work by Zajonc (1980) and Lowenstein (1996) suggests that visceral responses are greater than those seen involving

monetary payoffs, contrary to mainstream thought in economics and political science, but that does not seem to be the case here.

Term limits were proposed as a way to reduce seniority advantage and reduce the cost of replacing an incumbent, encouraging voters to give weight to policy choices and replace incumbents who vote against their policy preferences. They were also anticipated to improve the disparity in voter payoffs.

My results provide mixed support for the hypotheses tested. Term limits do not decrease the reelection rates of shirking senior incumbents. Senior incumbents manage to get reelected nearly every round even when they vote against voters' policy preferences. Shirking junior incumbents were predictably reelected much less frequently.

On the other hand, results at the individual level are in line with theory as the typical voter was significantly less likely to vote for shirking senior incumbent when terms were limited than when they were not. The discrepancy between district and individual level results is attributed to the preference aggregation problem. Although voters responded to shirking on average, pivotal voters within the districts were not moved enough to affect reelection rates. Had the groups been different by chance, an aggregate effect could have emerged.

Finally, it is likely that term limits significantly reduced the distributional effects on voter payoffs. It is clear that incumbent turnover, whether as a result of voter choice or term limits, mitigated the distributional effects of seniority.

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Appendix A

A.1 Proof of Proposition 1

Recall the voter strategy space v includes two strategies: I = always vote for the incumbent and A = vote for the incumbent if he agrees on policy. The state of the world is determined by the seniority of the incumbent and the enforcement of term limits.

Table A1: Voter strategies and Payoffs

Case 1: No Term Limits Incumbent in period 1 is senior and votes against the policy preference	
Strategy	Payoff over three periods
I	$(1 + \gamma + \gamma^2)(T - \alpha)$
A	$(\gamma + \gamma^2)q_{id}T$
Case 2: No Term Limits Incumbent in period 1 is junior and votes against the policy preference	
Strategy	Payoff over three periods
I	$(1 + \gamma + \gamma^2)(q_{id}T - \alpha)$
A	$(\gamma + \gamma^2)q_{id}T$
Case 3: Term Limits Incumbent in period 1 is senior and votes against policy preference	
Strategy	Payoff over three periods
I	$(1 + \gamma)(T - \alpha)$
A	$(\gamma + \gamma^2)q_{id}T$
Case 4: Term Limits Incumbent in period 1 is junior and votes against policy preference	
Strategy	Payoff over three periods
I	$(1 + \gamma)(q_{id}T - \alpha)$
A	$(\gamma + \gamma^2)q_{id}T$

Table A1 lists the representative voter's payoffs beginning from period one of the three period game when the incumbent votes against her policy preference in the first period. Each case is a particular state of the world. It is a dominant strategy for a voter to reelect an incumbent who votes for her preferred policy, thus in the table it is assumed the incumbent votes against the voter's preference in period one. In cases 3 and 4 term limits are imposed in the third period meaning that voters can keep the incumbent for periods one and two but are forced to elect a newly "minted" legislator without seniority in the third period.

Case 1: The voter plays strategy I if and only if Condition 1(C1) holds:

$$\alpha < \left(1 - \left(\frac{\gamma + \gamma^2}{1 + \gamma + \gamma^2}\right) q_{id}\right) T$$

Case 2: The voter uses strategy *I* if and only if Condition 2 (C2) holds:

$$\alpha < \frac{q_{id}}{1+\gamma+\gamma^2}T$$

Case 3: The voter chooses *I* over *A* if and only if Condition 3 (C3) holds:

$$\alpha < (1-\gamma q_{id})T$$

Case 4: The voter chooses *I* and *A* if and only if Condition 4 (C4) holds:

$$\alpha < (1-\gamma)q_{id}T$$

The necessary conditions for voters are given above, so it suffices to show the necessary conditions concerning legislators. Senior incumbents do not have an incentive to deviate from voting for their own preferred policy when terms are not limited. Using a similar construction showing the legislator's payoffs we can show that junior legislators will not vote for their preferred policy when terms are not limited if $\beta < \frac{(\gamma+\gamma^2)(W-w)}{(1+\gamma+\gamma^2)}$.

Senior and junior incumbents must place sufficiently high weight on policy for there to be incentive to shirk when terms are limited, but less than that specified in the previous condition. That is, $\beta > \frac{\gamma(W-w)}{(1+\gamma)}$, which is less than the previous result.

■

A.2 Allowing q_{id} to vary with election rule

To give an example of what this implies, suppose that when terms are not limited voters have little confidence that a change in seniority will take place i.e. $q_{id} = 0$. This expands the range between C1 and C2 such that the former is now equal to T (the tax transfer voters in senior districts receive) and C2 is zero. The voter will prefer a challenger to a shirking senior incumbent only if she places an extremely large weight on policy in her utility function. Because incumbents are first movers and anticipate voter reaction, the dominant strategy for them is to vote for their preferred policy even when it is contrary to the voter's preference.

Now suppose term limits are imposed and the belief that seniority in the legislature will change increases to one. The new point for C4 is $(1-\gamma)T$ such that if α is above this point she now prefers not to reelect a shirking incumbent even if he is senior. Below this point the voter will re-elect a senior incumbent who shirks, but not a junior one. Evidently, if $0 < q_{id} < 1$, the range between C4 and T gets larger with the imposition of term limits. This implies there is a greater likelihood the voter chooses to re-elect a shirking senior incumbent when terms are not limited but votes to elect the challenger under term limits.

Appendix B

B.1 Regression results used to calculate predicted probabilities

Table B1: Probability of Reelection and Probability of Voting for Incumbent Random Effects Logit Regressions. Reelection is the district level outcome variable. Vote for Incumbent is the individual level choice.

	Coefficients and Standard Errors	
Independent Variables	**1** **Reelection**	**2** **Vote for Incumbent**
Junior	-2.25* (1.09)	-1.44* (0.45)
Vote With District Majority (VWDM)	1.14 (0.89)	1.05* (0.30)
Junior * VWDM	-0.91 (0.74)	1.19* (0.43)
Term Limits (TL)	1.71 (1.27)	-1.54* (0.45)
TL * Junior	-2.95* (0.76)	-1.48* (0.44)
TL * VWDM	3.03* (1.30)	1.59* (0.37)
TL * Junior * VWDM	-1.48* (0.73)	-0.56* (0.26)
Tax Vote	-0.66 (0.44)	-0.01 (0.16)
Strength of Preference	-1.56* (0.46)	-0.35* (0.15)
Observations	453	1,407
Likelihood Ratio	-136.37	-668.20
Wald Chi^2	52.23	145.31

Round and session controls also included in the regression. (*) significant at 5% level.

Summary:

The baseline in each regression is a senior incumbent who votes *against* the district majority in NOTL. Note that in the following summary the variable from the table above is indicated parentheses.

District level outcome:

The district level reelection results indicate a shirking junior incumbent in NOTL (Junior) is significantly less likely to be reelected relative to a senior shirking incumbent; likewise for a shirking junior incumbent in TL (TL * Junior).

A senior incumbent voting *with* the district majority in TL (TL*VWDM) is significantly more likely to be reelected than the baseline; however, a shirking senior incumbent in TL (Term Limits) is neither more nor less likely to be reelected.

As the average strength of preference for the district increases, the likelihood of the baseline winning reelection decreases (Strength of Preference).

Individual vote:

An individual was on average significantly less likely to vote for a shirking junior incumbent (Junior) and more likely to vote for non-shirking senior and junior incumbents (VWDM and Junior*VWDM) in NOTL than a shirking senior incumbent.

An individual was on average significantly less likely to vote for shirking senior and junior incumbents in TL than a shirking senior incumbent in NOTL (Term Limits and TL*Junior). Likewise, the average voter was more likely to vote for a non-shirking senior incumbent in TL than the shirking senior incumbent in NOTL (TL*VWDM).

An individual's strength of preference was indicative of a decreasing likelihood of voting for a shirking senior incumbent in NOTL.

Appendix C

C.1 Sample Instructions

Thank you for coming on time and participating in today's experiment. This is an experiment on decision-making and you will have the opportunity to earn money according to the choices you make. You are free to withdraw from the experiment without additional compensation and without incurring the ill will of the experimenters at any time. If you do so, you may keep the$10 show-up fee. Please do not talk during the experiment and do not use any device such as a cell phone, mp3 player or texting device. If you have a question, please raise your hand and I will be by to answer your question privately.

ROUND ONE

You have completed a short survey that included questions involving your preferences regarding certain political issues. While your responses will not directly affect your payoff, they will be used in today's experiment.

The experiment consists of three rounds. The first round will last five periods. The second and third rounds will last ten periods each.

In today's experiment, each of you will be assigned roles. You have been randomly selected to be either a Type A player or a Type B player. There will be five groups of players in the experiment, and each group will have three Type A players and one Type B player. There are a total of 15 Type A players and 10 Type B players in the experiment. This means that at any point in time, half of the Type B players will be in a group and half of them will not. You will be informed of your role shortly, but first we will discuss the differences between types and how the groups work.

Type A players receive an endowment of 45 cents each period, which they will either keep or contribute to a public account that will be divided among the groups. Each period the Type B players from each group vote to decide how the Type A players will use their endowments. The outcome is determined by a simple majority rule. That is, if at least three Type B players vote for keeping the endowment, the Type A players keep their endowments that period. If at least three Type B players vote for contributing to the public account, the Type A players will contribute their endowments to the public account and may receive a portion of the overall sum. Type A players will see the outcome of the vote as well as the vote cast by the Type B player from their group. This will happen every period.

Type B players are either Active or Inactive. Whether a Type B player is Active or Inactive can change from period to period. Active Type B players belong to groups, vote and receive a salary of 60 cents each period for their participation in their groups. Inactive Type B players do not belong to any group, do not vote and do not earn a salary. They are waiting for the opportunity to replace an Active Type B player. While they are waiting they will have a chance to earn some money in another activity decoding words for 2.5 cents for every correct code. I will explain how that works shortly.

After Active Type B players vote to determine how Type A players will use their endowments, the Type A players will see the outcome and vote within their group whether to keep the Type B

player for the next period or replace them. If at least two Type A players from the group vote to keep the Type B player, he or she will stay for at least one more period. If at least two of the Type A players vote to replace the Type B player, that Active Type B player becomes Inactive and is replaced by a randomly chosen Inactive Type B player. Type A players will vote every period.

The table below summarizes the different roles and group make up.

Role	**Number in each Group**	**Activity**	**Pay**
Type A	3	Vote on Type B players	Keep 45 cents or Split the Public Account
Active Type B	1	Vote on Type A endowments	60 cents
Inactive Type B	0	Decode text strings	2.5 cents for every correct code

Now I will explain how the public account is split up. The amount a group receives from the public account is based on the tenure rank of its Type B player. That is, the Active Type B players will be ranked based on the number of consecutive periods they have been Active and this determines the amount their group gets from the public account. The Active Type B player that is ranked first has the highest number of consecutive periods as an Active Type B player, the second ranked has the second highest number of consecutive periods as an Active Type B player, and so on.

Tenure rank can change based on the groups' decisions to keep or replace their Active Type B players. For example, if you are in a group whose Active Type B player is ranked 3rd, he or she has the third highest amount of consecutive periods of activity. If the 2nd ranked Active Type B player is replaced, then all the Active Type B players ranked lower than 2nd will move up in the ranking. That is, the 3rd ranking Active Type B player will become the 2nd ranked Active Type B player, the 4th ranking Active Type B player will become the 3rd ranked, and so on. The Active Type B player ranked first will not be affected. If an Inactive Type B player becomes Active, they will begin at the bottom of the ranking. If more than one Type B player is activated at the same time, and thus have the same tenure, their ranks will be determined randomly.

The Type A players will know the ranks of each group's Active Type B player. This will be indicated on the screen next to "Group X Rank: #". The Active Type B players will know their own rank.

The three groups whose Active Type B players are ranked 1st, 2nd, and 3rd will receive 1/3 of the public account. This 1/3 will then be divided evenly among all the Type A players within those groups. The two groups whose current Type B players are ranked 4th and 5th will contribute to the

public account, but will not receive a share when it is split up. To begin each round, the tenure rank will be randomly assigned to the Active Type B players. Thereafter, the tenure rank is determined by the number of periods as an Active Type B player.

If the Type A players keep their endowments, the public account contains nothing. If each Type A player contributes their 45 cents to the public account, there is 15 x 45 = 675 cents in the public account to be split up. (There are a total of 15 Type A players and each has 45 cents.) If your group receives 1/3 of the public account, it will receive 225 cents (675 x 1/3) to split among the Type A players, or 75 cents for each Type A player (225 x 1/3). When voting to determine how the Type A players will use their endowments, the Active Type B players as well as the Type A players will know how much their group will receive if the endowments are put into the public account.

To begin, the first round of five periods will function as I have explained. Half of the Type B players are Active and half are Inactive. The rank of Active Type B players has been randomly determined to begin the round.

The next screen will show you your role. If you are a Type A player you will also see your group number for this round. Remember you will be a Type A player for the entire experiment, but you will be in a new group each round. If you are a Type B player you will see whether you are Active or Inactive. Remember, you will be a Type B player for the entire experiment. When voting begins, the top of the screen will remind you of the Round and Period numbers and your role. If you are a Type A player you will see your Group number and your earnings for the entire experiment. If you are a Type B player you will see whether you are active or inactive, your tenure rank if you are active and your earnings for the entire experiment.

Decoding

I will quickly explain what the Inactive Type B players are doing while the others are voting. If you are Inactive you will see a screen like the one shown at the front of the room. You will be decoding lines of text and can earn 2.5 cents for every line of text you decode correctly. Notice the first box contains instructions and the second box contains the decoding key. You will use this to find the numbers that correspond to the letters given to you as shown. You will enter each number and hit “OK”. Notice the box in the lower left corner keeps track of the number of correct and incorrect codes, along with your earnings from decoding. These earnings will be added to any earnings you receive while playing as an Active Type B player. There is no limit on how many codes you can be paid for, but your time is limited by the amount of time it takes for the Active Type B players and Type A players to vote. After the Active Type B players vote there will be a short pause informing you that the Type B players have voted and where you will see your current status. After that you will continue decoding while the Type A players make their decisions.

If there are no questions we will begin the first round of the experiment. Please click the OK button at the bottom of your screen.

ROUND TWO

Type A players will now be assigned a new group and will remain in this group for the entire round. Your role as either a Type A or Type B player is the same as the previous round. Half of the Type B players begin the round Active and half begin Inactive. The group and rank of Active Type B players have been randomly determined to begin the round.

This round will last ten periods and will function similarly to the first round, but a new dimension has been added to the choice of the Type B players. Each period there is a sum of money to be donated to one of two foundations. Not only will the Active Type B players vote to determine how the Type A players use their endowments, they also vote to determine which foundation receives the donation. Remember that this sum of money does NOT affect your payoffs at the end of the experiment.

Each period there are 200 cents available to donate to one of two foundations. Those foundations are Pro-Choice America and the Pro-Life Action League. You have been given a description of each foundation. If at least three Active Type B players vote for Pro-Choice America, then the 200 cents will be added to a pot of money that will be sent to that foundation at the end of the experiment. If at least three Active Type B players vote for the Pro-Life Action League, the 200 cents will go to that foundation at the end of the experiment. Type A players will see the outcome of the vote as well as the vote cast by their group's Type B player.

Active Type B players first vote on how Type A players will use their endowments, and then vote on the donation. Before the vote the Type A players and Active Type B players will be shown the foundation that the majority of Type A players in their group prefer. These preferences were taken from the surveys you completed prior to participating in the experiment. Remember, the foundation you prefer does not affect your payoffs, nor does the donation. After the Type B players vote on both issues, the Type A players will see the outcomes of both votes and then vote on the group's Active Type B player just as you saw in Round One. The voting rules are the same in this round.

Remember, the groups and the rankings of the Active Type B players have been randomly determined to begin the round. The public account is divided in the same way as the previous round. If there are no further questions, we will begin the second round.

ROUND THREE

Type A players will now be assigned a new group and will remain in this group for the entire round. Your role as either a Type A or Type B player is the same as in the previous round. Half of the Type B players will begin the round as Active and half will begin as Inactive. The group and rank of Active Type B players have been randomly determined to begin the round.

This round will last ten periods and will function similarly to the second round. Each period, Type B players vote to determine the use of Type A player‘s endowments as well as vote to decide how the donation will be allocated.

In this round Type B players will be limited in how many consecutive periods they can be Active for a particular group. That limit is 2 consecutive periods. When an Active Type B player reaches the 2 period limit, they automatically become Inactive and are replaced by a randomly chosen Inactive Type B player. The Type A players of that group are informed that the Type B player has reached the limit and they will not vote.

To begin the round, the three highest ranking Active Type B players face the limit after two periods if they are not voted Inactive by their group members prior to the second period. The other Active Type B players ranked 4th and 5th will then move up in rank and will face the 2 period limit in the 3rd period if they are not voted Inactive by their group prior to the third period. If any Active Type B player is voted Inactive in any period, the incoming Type B player faces the 2 period limit two periods after becoming Active regardless of their group or rank if they are not replaced before reaching the limit.

To be clear, the groups that begin the round with Active Type B players ranked 1st, 2nd and 3rd will face the two period limit in the second period of the round unless they vote to replace the Active Type B player before reaching the second period. The groups that begin the round with Active Type B players ranked 4th and 5th will face the two period limit in the third period of the round unless they vote to replace the Active Type B player before reaching the third period.

Remember, the groups and the rankings of the Active Type B players have been randomly determined to begin the round. The public account is divided in the same way as the previous rounds. The donation is determined the same way as before. If there are no further questions, we will begin the third round.

C.2 Sample of Foundation Descriptions

The **Pro-Life Action League** was founded by in 1980 with the aim of saving unborn children through non-violent direct action. Members spread their message through non-violent protests, confronting abortionists, sidewalk counseling outside of abortion clinics and youth outreach programs.

For 40 years, **NARAL Pro-Choice America** has been the nation's leading advocate for privacy and a woman's right to choose. The organization works to elect Pro-Choice candidates and lobbies Congress to support Pro-Choice legislation.

C.3 Pre-experiment Survey

Welcome and thank you for participating in this survey. The following questions relate to current political issues. Completing this survey will allow you the chance to participate in a future study at XSFS, but you are not obligated to do so. Your answers are confidential and secured and will not be distributed to any other party for any other purpose. You are not required to answer any of the questions, but you are encouraged to answer as accurately as possible.

Participation in the survey is purely voluntary and does not affect your eligibility to participate in other XSFS studies. If you choose, you can leave the survey at any time and doing so will not prevent you from participating in other experiments.

1. The Pro-Life Action League was founded by in 1980 with the aim of saving unborn children through non-violent direct action. Members spread their message through non-violent protests, confronting abortionists, sidewalk counseling outside of abortion clinics and youth outreach programs.

How well do you identify with the Pro-Life Action League?

Strongly Do Not Identify

Do Not Identify

Somewhat Do Not Identify

Neutral

Somewhat Identify

Identify

Strongly Identify

2. For 40 years, NARAL Pro-Choice America has been the nation's leading advocate for privacy and a woman's right to choose. The organization works to elect Pro-Choice candidates and lobbies Congress to support Pro-Choice legislation.

How well do you identify with NARAL Pro-Choice America?

Strongly Do Not Identify

Do Not Identify

Somewhat Do Not Identify

Neutral

Somewhat Identify

Identify

Strongly Identify

3. As America's oldest civil rights organization, the Nation Rifle Association's (NRA) mission is to preserve and defend the U.S. Constitution, especially the inalienable right to keep and bear arms guaranteed by the Second Amendment.

   When restrictive “gun control” legislation is proposed at the local, state or federal level, NRA members and supporters are alerted and respond with individual letters, faxes, e-mails and calls to their elected representatives to make their views known.

   How well do you identify with the NRA?

   Strongly Do Not Identify

   Do Not Identify

   Somewhat Do Not Identify

   Neutral

   Somewhat Identify

   Identify

Strongly Identify

4. The Coalition to Stop Gun Violence (CSGV) seeks to secure freedom from gun violence through research, strategic engagement and effective policy advocacy.

   CSGV is comprised of 48 national organizations working to reduce gun violence including religious organizations, child welfare advocates, public health professionals, and social justice organizations.
   How well do you identify with CSGV?

   Strongly Do Not Identify

   Do Not Identify

   Somewhat Do Not Identify

   Neutral

   Somewhat Identify

   Identify

   Strongly Identify

5. Friends of the Earth are the world's largest grassroots environmental network and campaigns on today's most urgent environmental and social issues. It challenges the current model of economic and corporate globalization, and promotes solutions that will help to create environmentally sustainable and socially just societies.
   How well do you identify with the Friends of the Earth?

   Strongly Do Not Identify

   Do Not Identify

   Somewhat Do Not Identify

   Neutral

   Somewhat Identify

   Identify

   Strongly Identify

6. Generally speaking, do you consider yourself to be a(n):

Democrat

Independent

Republican

Libertarian

Socialist

Other (please specify) _____

Don't Know

7. Would you describe yourself as religious? Yes No

8. What, if any, is your religious preference?

Protestant

Catholic

LDS / Mormon

Jewish

Muslim

Other (specify) _____

No Preference / No religious affiliation

Prefer not to say

9. What is your age? _____
10. Are you male or female? _____
11. Are you?

    Single Married Divorced Remarried Committed

12. Are you a parent? Yes No
13. What is your major? _____
14. Which of the following best describes you?

American Indian/ Native American

Caucasian/ White

African American/ Black

Hispanic / Latino

Asian

Pacific Islander

Other _____

15. What is your home state, district or territory? _____

16. How much of the time do you think you can trust government in Washington to do what is right?

Just about always Most of the time Only some of the time Never

17. Do you consider yourself politically active? Yes No

18. Did you vote in the last presidential election? Yes No

19. Did you vote in the last congressional election? Yes No

20. Did you vote in the last state elections? Yes No

21. If you would like to participate in a study related to this survey, please provide your name and the email address you use to receive emails from XSFS so that you can be invited to participate. _____ _____

Thank you for completing the survey. Because of your participation, you are now eligible to participate in an upcoming experiment related to this survey.

The experiment connected to this survey will begin running in the near future and invitations for participating in it will be sent at that time.