Term Length and Political Performance

(Preliminary draft - comments welcome)

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Abstract

We evaluate the effects of the duration of legislative terms on the performance of legislators. Causal inference is made difficult by the potential endogeneity of the duration of terms, which varies markedly across countries. We exploit a natural experiment in the Argentine legislature to overcome this identification problem. Results for six objective measures of legislative output show that longer terms enhance legislative performance. A simple model indicates that in principle longer terms should induce lower effort because of two reasons: the electoral returns of legislative effort are discounted more heavily (a discounting effect) and effort can be spread more evenly over time (a smoothing effect). We consider two main explanations for why the opposite is observed. One is that legislators serving shorter terms are distracted by campaigning, but this view is not supported by the data. The evidence can be rationalized in an enhanced version of our model where political learning by doing is present. If learning is strong enough to overcome the discounting and smoothing effects, longer term legislators work harder, as they have a better chance to reap the returns to a larger stock of experience.

JEL Classification: H1

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1 Introduction

A fundamental problem of constitutional design is to decide for how long officials should serve before they can be fired. In the case of democratically elected representatives the problem boils down to one of frequency of elections. Short term lengths should have at least two advantages. One is to allow for the quick reversal of bad appointments. The other is that more frequent instances of accountability should keep representatives on their toes, leading to better representation of voters' interests. The classic models by Barro (1973) and Ferejohn (1986) prove just this proposition. When terms are made shorter politicians lose discretion, exert more effort, and extract lower rents.

But short terms may also entail costs, if only because elections are costly to organize. It is also possible that more frequent elections may entail costs in terms of countervailing incentives for politicians. In the case of legislators, more frequent elections may distract attention away from legislative duties. In addition, investment in specific human capital by legislators may be discouraged. When the main form of expertise acquisition is legislating, politicians may pay more attention to legislative duties if they believe that a larger stock of experience can be exploited when legislating in the future. But if more frequent elections lower the perceived chance that the rewards from experience will be reaped, shorter terms could decrease, rather than increase, legislators' willingness to work hard. The resulting picture is one where the frequency of elections affects various incentives at once, clouding the ability to predict effects on performance. Moreover, there is virtually no empirical work that can illuminate how the incentive trade-offs play out in regards to the problem of determining term lengths. This is surprising, given the basic nature of the problem. Do term lengths matter? And if so, how?

The length of legislative terms varies substantially around the world (see Table 1). The term length of a House representative is two years in the United States, three years in Australia, four in Germany, five in Spain, and six in Sri Lanka. One could be tempted, at this point, to exploit the cross-country variation in legislative term lengths to try to ascertain its effects on legislative performance. However, two observations are in order. First, the cross-country variation may be due to the simple fact that term length does not matter, and hence nations select them pretty much randomly. Second, in the case that term lengths matter, different nations may select different term lengths because they face different incentive trade-offs. As a result, exploiting the cross-country variation cannot help identify the effects of longer terms, because the length of terms is endogenous.

Our objective in this paper is twofold. The first is to overcome the difficulty that endogenous institutions pose to the investigation of the effects of term lengths. To this end we exploit a natural experiment in the Argentine legislature guaranteeing the exogenous

assignment of term lengths to two otherwise identical sets of legislators. We find that the length of terms does matter, and that shorter terms worsen legislative performance. The second objective of the paper is to offer a theoretical framework that can help interpret the results. In light of our model, the evidence suggests that legislative learning by doing is a relevant source of incentives, and that shorter terms damage legislative performance because they limit the legislator's ability to reap the rewards from learning by doing.

Argentina ended a seven year long dictatorship and restored democracy on December 10 of 1983. On that day a newly elected crop of legislators took office. House representatives in Argentina face no term limits and their terms are four years long. Also, the Constitution requires the staggered renewal of the chamber by halves every two years. In order to get the staggered renewal mechanism going, half of the representatives that were newly elected in 1983 would have to leave office after just two years. To this end, one half of the legislators got two-year terms, and the other half got four-year terms. The allocation of two- and four- year terms in this foundational Congress of 1983 was done through a well documented random assignment. We exploit this exogenous variation for the duration of legislators' terms to explore the impact of the duration of legislative terms on the performance of individual Congress members. We use objective measures of legislative performance such as floor and committee attendance, participation in floor debates and in committees, number of bills each member introduced, and how many of these became law.

We compare the measures of legislative involvement in the first two years of legislative activity, while both the two- and four-year term legislators worked side by side. The effect of term duration is significant and consistent in its direction across all six metrics of performance. Legislators facing shorter terms display significantly lower measures of legislative involvement. An immediate question is why this might be. In fact, as we show in the baseline version of our model, a four-year legislator has two reasons to work less hard during the first two years of her term than a two-year legislator. First, the returns of her effort in terms of improved reelection prospects are more distant in time, and should be discounted more heavily –we call this the discounting effect. Second, under convex costs of effort legislators prefer to spread effort over time, and those who enjoy a longer term have a longer time over which to spread their effort –this is analogous to the smoothing of consumption in dynamic models of saving and consumption, and we therefore call it the smoothing effect. However, as just said, during the first two years the four-year legislators appear to work harder, not less hard, than the legislators whose terms cover only those two years. This suggests that some other force wipes out the discounting and smoothing effects.

One plausible explanation is that two-year legislators spend part of their term campaigning for reelection, so they get distracted from legislative activities. If this explanation is true, two-year legislators should decrease performance in their second year relative to their first

year when compared with four-year legislators. The data do not support this hypothesis. But maybe this masks significant heterogeneity across districts. As indicated by legislators we interviewed, the campaigning effects, if present, would not be noticeable for legislators from the capital city, Buenos Aires. After all, their campaigning takes place in the very city where they discharge their legislative duties. If campaigning gets in the way of legislation, legislators believe it will do it more strongly for those who represent districts that are more distant from Buenos Aires. Our regressions including interactions with a dummy for the interior of the country, and regressions including interactions with distance from Buenos Aires are again unsupportive of the idea that campaigning matters. The lack of support for a campaign-induced legislative slow-down surprised us. One possible explanation for this lack of support, which is endorsed by legislators we interviewed, is that in a system based on party lists campaigns are a party-wide effort. Legislators that are not running are also heavily involved in campaigning.[1]

But if campaign distractions do not explain why short-term legislators perform less well, then what does? A second explanation, which is crystallized in our model, is that learning by doing is present. We consider a dynamic model where current legislative effort adds to a stock of legislative experience. More experience, in turn, generates returns in the form of lower costs of future legislative effort. The perspective of lower costs in the future makes legislators want to accumulate experience, incentivizing current hard work. Legislators facing a short term, however, do not internalize much of those future returns to experience. These returns will only materialize if the legislator is reelected. Legislators facing a longer term will internalize more of those returns because a larger portion of them materialize before the legislator has to face reelection. This gives the long-term legislator a stronger incentive to exert effort. Thus, the evidence we present is compatible with the idea that learning-by-doing effects are strong enough to overcome the pure discounting and smoothing effects mentioned earlier.

The learning-based explanation was deemed plausible by the legislators we interviewed, and other scholars before us have held that learning is an important part of the legislator's calculus. Spiller and Tommasi (2007) argue that politicians facing short horizons have weaker incentives to invest in developing legislative capabilities. Rather than spending their time drafting legislation or participating in the legislative debate, legislators might prefer to engage in more personally rewarding activities such as speaking to the press. Our theoretical work shares their view, but also emphasizes that in order to generate higher net incentives, longer horizons must create substantial differential returns to experience in order to overcome the

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[1]An example is this "team" effect is Jesús Rodríguez, who was not running in the elections on November 3 of 1985, but who was heavily involved in the campaign. For instance, he was a keynote speaker in the rally closing the electoral campaign for the Unión Cívica Radical in a fully packed Boca Juniors stadium.

discounting and smoothing effects.

The idea that legislative expertise matters has also been highlighted in local debates in the United States, where State legislators as well as scholars have expressed that a problem with term limits is that they lower the stock of legislative expertise by forcing turnover (see for instance English 2003, Birkholz 2005).[2] Perhaps more closely related to our work is a paper by Padró i Miquel and Snyder (2004), who use subjective measures of legislative performance in the House of Representatives of North Carolina to explore the effects of legislative tenure. The authors find that the performance of legislators increases with tenure, and they mention learning by doing as a plausible explanation. An important difference between their paper and ours is that they investigate effects accruing over time in association with a longer realized tenure for reelected legislators, which is itself a proxy for expertise development and other legislative traits. In contrast, we focus on the causal effects of a specific institution affecting the guaranteed time in office before reelection must be sought.

Our analysis is relevant to the problem of how democracy facilitates representation by high-quality politicians. The quality of legislators is not just determined by exogenous factors (such as IQ or previous professional experience) but also by endogenous elements, such as how much legislative-specific human capital is accumulated once in office. If term lengths affect the quality of politicians through incentives to accumulate expertise, then the focus of research on the quality of politicians should not be restricted to selection effects, but also study how institutions may foster human capital formation.[3] More generally, the possibility that institutions affect the endogenous quality of rulers qualifies the old dilemma, summarized by Hume (1985 [1777]), that the quality of government may be caused either by the quality of men or the quality of institutions. Our results suggest that institutional factors may foster changes in the quality of the men that have already been appointed.

To the best of our knowledge, there is no empirical work analyzing the effects of term lengths. A small number of theoretical contributions highlight different implications of extending terms. As mentioned earlier, the classic work by Barro and Ferejohn yields a picture where more frequent elections always yield stronger incentives. Contrary to this view, our results suggest that over some temporal range it is possible to space out elections, thus saving on electoral costs, while at the same time enhancing incentives for legislative performance. Maskin and Tirole (2004) study the relative convenience of subjecting a politician

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[2]For the effect of term limits on the quality of the legislature see Petracca (1995) and Mondak (1995a, 1995b). Notice that the problem of term limits is different from that of term length although both the presence of term limits and the shortening of term lengths will, other things equal, lower the expected time in office.

[3]Caselli and Morelli (2004) and Dal Bó, Dal Bó, and Di Tella (2006) study forces causing adverse selection effects that lower the quality of polticians.

to reelection or insulating her from that pressure–thus turning her into a "judge." The optimal choice depends on how eager the politician is to be reelected as this determines the likelihood that reelection concerns may distort policy choices. Schultz (2008) considers a model where representatives have private information and must make policy decisions with an eye towards getting reelected. He shows that when there is large uncertainty about the prevailing state of the world relative to the degree of partisan polarization, shorter terms are preferred. The literature on central banks contains relevant contributions on the issue of optimal term lengths. Waller and Walsh (1996) show that long term appointments insulate monetary policy from political shifts but prevent the adjustment of policy to match changes in the preferences of the public.

Our work is related more generally to the study of the determinants of legislative performance. Schiller (1995) uses bill introduction to measure performance and finds that senior senators sponsor more bills than junior members. She also reports a higher performance for senators that hold committee chairs or are chairs of a large number of subcommittees. Similar results are reported in Hamm, Harmel, and Thompson (1983) for a few state legislatures in the US. Weissert (1991) and Haynie (2002) report some evidence that legislative performance is higher for senior members, for members that hold committee chairs, for members holding chamber leadership positions, and for members of the majority party.

The structure of the paper is as follows. Section 2 describes the natural experiment and presents the data. Section 3 reports the econometric model and the results. Section 4 contains the model and Section 5 concludes.

2   Natural experiment and data

Argentina is a federal republic consisting of 23 provinces and an autonomous federal district. The National Congress has two chambers, the Chamber of Deputies and the Senate.[4] At the time of the return to democracy in December 1983 the Chamber of Deputies had 254 members elected from province districts. Deputies were, and still are, eligible for re-election without term limits.

In the Congress of 1983 all 254 deputies were elected at the same time, starting their terms on December 10. In Argentina representatives in the Chamber of Deputies have four-year terms and the Constitution requires the renewal of half the chamber every two years. In order to get the staggered renewal mechanism going it was necessary to allocate half of the representatives elected in 1983 to two-year terms. The allocation of two- and four- year terms in this foundational Congress was done through a random assignment.

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[4]For a description of argentine Congress see Molinelli, Palanza, and Sin (1999) and Jones et al. (2007).

In order to perform the allocation of terms, the 254 representatives were first divided into two groups of 127 representatives each. As shown in Table 2, the allocation into groups 1 and 2 was done in such a way that all province districts and political parties were, whenever possible, proportionally represented in each group. Later on, in a public legislative session, legislators in Group 2 were allocated through a random assignment to start with a two-year initial term, ending up their terms on December 9 of 1985. Legislators in Group 1 were allocated to end up their terms on December 9 of 1987.

The exact procedure for the random allocation of terms, prepared by the *Comisión de Labor Parlamentaria*, was as follows: (i) the two representatives from the district of Tierra del Fuego were allocated into the same group; (ii) half of the representatives from the other districts was allocated into Group 1 and the other half into Group 2. In the case that a party had an odd number of representatives coming from one province they corrected the imbalance with the analogous surplus from another province where the party also had an odd number of representatives; (iii) the letter A was assigned to Group 2 and the letter B to Group 1; (iv) a lottery system determined that the first ball to be released from a lottery drum will correspond to a four-year term; (v) from a lottery drum containing two balls, one with the letter A and the other one with the letter B, it was released a ball with the letter B (Group 1). Thus, representatives in Group 1 were allocated to an initial four-year term. The random allocation was performed by the *Secretario Parlamentario* jointly with a representative from each block in a public legislative session on January 20 of 1984.

Our dataset contains yearly information on legislative outcomes and legislators' characteristics for the two-year period December 1983 to December 1985. From the 254 legislators that started their term in December 1983, three resigned and five died before December 1985. Thus the sample includes 492 observations corresponding to 246 legislators for two years.

The database includes six objective measures of legislative performance: floor attendance, committee attendance, number of bills introduced at committees, number of times the legislator spoke on the floor (non-legislative topics are not included), number of bills introduced, and the number of bills ratified. The treatment variable is Four-year term, an indicator variable that takes the value of one for those legislators which were randomly assigned to an initial four-year term and zero otherwise. The database also includes a number of legislator characteristics, such as age (as of November 1983), gender (a dummy variable that takes the value of one for male legislators), legislative inexperience at the national level (a dummy variable that takes the value of one for freshmen), being a lawyer (a dummy variable that takes the value of one if the legislator is a lawyer), holding a university degree (a dummy variable that takes the value of one for legislators with a university degree), leadership (a dummy variable that takes the value of one for legislators that are president or vice president

of the chamber, majority leader, minority leader, or chair of a committee),[5] belonging to the majority party (a dummy variable that takes the value of one for members of the majority party), belonging to a small block (less than four deputies), and a set of dummy variables for province district.[6] Summary statistics are reported in Table 3.

The probability of receiving a given term length treatment is orthogonal to political party and province district variables by virtue of the random assignment design. Although the duration of terms was randomly assigned, it is useful to examine whether, *ex post*, the treatment assignment is correlated with legislator characteristics. Table 4 examines this by reporting the results of a Probit regression of the probability of being randomized into the four-year term treatment group on the set of legislator characteristics. As expected, the regressors are not significant predictors of the treatment.

As explained above, the Congress of 1983 started its activities in early December and the random assignment of terms was only performed at the end of January 1984. We use this two-month gap to explore whether pre-lottery outcomes differ according to treatment status. Table 5 reports mean comparison tests for floor attendance, floor speaking, bills introduced, and number of bills ratified (committee data cannot be disaggregated between pre- and post-lottery periods). In all cases there are no differences in outcomes according to the ulterior treatment status, suggesting a strong similarity between legislators in an eventual two-year and a four-year track before treatment assignment.

3 Econometric model and results

We estimate the intention-to-treat effect using the following regression model:

$$Y_{it} = \alpha + \gamma \text{Four-year Term}_i + \beta X_i + \mu_t + \varepsilon_{it} \tag{1}$$

where Y_{it} is any of the performance measures under study for legislator i in period t, γ is the parameter of interest, X_i is a matrix of legislator characteristics, μ_t is a time effect, and ε_{it} is the error term. Since all legislators complied with treatment assignment, the intention-to-treat effect, γ, is equivalent to the average treatment effect of serving a four-year term relative to a two-year term.[7]

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[5]The assignment of deputies to committees and the positions of president and vice president of the chamber, majority leader, minority leader, and chair of committees were all decided before the random allocation of terms.

[6]Since the return to democracy in 1983 the two dominant political parties in Argentina have been the Unión Cívica Radical (Radical party) and the Partido Justicialista (Peronist party). In the period under analysis the majority party was the Unión Cívica Radical.

[7]There is some attrition in our sample since five legislators died and three legislators resigned before the end of the sample period. It is noteworthy that the three legislators that resigned were assigned to two-

Table 6 reports estimates of the impact of serving a four-year term relative to a two-year term, both in absolute terms and as a percentage of the mean outcome for legislators serving a two-year term.[8] We present results with and without controls. Given random assignment of treatment, including legislator characteristics as controls in the regression model is not necessary for consistency, though it may reduce standard errors. A typical concern when conducting inference for the estimated parameters of equation 1 is that the errors for the same legislator might not be independent. To address this concern, aside from usual Huber-White robust standard errors, we report robust standard errors clustered at the legislator level.

Results for the six legislative outputs suggest that legislators serving a four-year term have a better performance than those in a two-year track and that the differences in performance are important in economic terms, ranging from three percent for floor attendance to more than a hundred percent for the number of bills ratified.

We have checked the robustness of our results to alternative specifications. The value and significance of the coefficients of interest remain unchanged when we control for the distance from the capital of the legislator district to Buenos Aires. Conclusions in terms of the significance of the coefficients remain also unchanged when standard errors are clustered at the district level.[9]

Overall, results support the hypothesis that legislators facing a short horizon in Congress invest less in developing legislative expertise, which is reflected in a poorer performance in the legislature.

An alternative explanation to the finding of a positive impact of term duration on performance could be that, during the second year of their term, legislators in a two-year track spend their time seeking reelection. Under this view the differences in performance should be more pronounced in the second year as legislators move closer to the election date. The drop in performance for two-year legislators relative to four-year legislators should also be more pronounced for those representing districts farther away from Buenos Aires, where the

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year terms, which is in line with the idea that legislators in short tracks have fewer incentives in acquiring legislative capabilities than those in a longer track.

[8]The variables bills introduced at commitees, floor speaking, number of bills introduced, and number of bills ratified take discrete values and are strongly skewed to the right with a large number of zeros; consequently, ordinary least squares estimates would be inappropriate. As observed in Table 3, the variance is much greater than the mean for these four variables, thus suggesting a negative binomial model for count data. Indeed, in all count-data models we were able to reject the hypothesis that the dispersion parameter is equal to zero according to a likelihood-ratio test, a result that suggests the response variable is overdispersed. For committee attendance we use a Tobit specification (there are 2.6 percent of observations truncated at zero and 0.6 percent of observations truncated at 100), whereas for floor attendance we use Ordinary Least Squares since there is no truncation in the data.

[9]All regressions mentioned but not shown are available from the authors upon request.

legislature is located. We explore this hypothesis by including two interaction variables. One is an interaction between the treatment and a dummy that takes the value of one for the second year, and the other one is a the triple interaction between the treatment, the second-year dummy, and the distance to Buenos Aires from the legislator's province (the location of the latter being proxied by its capital city). As reported in the odd-numbered columns of Table 7, the interaction variables are not significant at the usual levels of confidence.[10] A possible explanation for these results, which is endorsed by legislators we interviewed, is that legislators in a two-year track might have started their efforts towards reelection immediately after the random allocation of terms. We explore this possibility by including the interaction between the treatment variable and the distance variable. Again, as shown in the even-numbered columns of Table 7, we find no interaction effects. Similar results are obtained when we include the interaction between the treatment variable and a dummy for the interior of the country. In all cases but one, the lack of support for the campaigning hypothesis does not stem from large standard errors but from pretty precise estimations of zero effects.[11]

Another alternative explanation could be that incentives are not operating on the legislators' side but on the party side. Under this hypothesis, parties could select a group of legislators and "invest" in these legislators by giving them the best projects, more access, and more resources. If this were the case, it seems natural for political parties to select legislators in a four-year track. An implication of this hypothesis is that the effect, at least for some of the outcomes of interest, should be driven by a few legislators. We explore this possibility by running least absolute deviation regressions for all outputs and find no support.

4   The Model

The comparison of incentives across different term lengths will be done by looking at legislators that face a two-period term versus those who face a one-period term. There are two ways of doing this. One is to compare the incentives of legislators who face permanent differences in their term lengths in an infinite horizon setting. This exercise yields results that are analogous to those presented below, where we compare legislators who differ in the length of their first term only. We choose to perform the latter comparison because it tracks more closely the natural experiment presented above. Therefore, we will call those legislators whose first term is for just one period the "short-term legislators", while those facing two

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[10]Similar conclusions are obtained when the regression model includes the interaction terms between the treatment and the distance, and the second-year dummy and the distance.

[11]The exception is the performance metric for committee attendance and the interaction of year two dummy and treatment.

period terms from the start will be called the "long-term legislators."

To make our point with the simplest model possible, we consider a legislator who lives for three periods across two regimes. In the first, she is given a legislative term of two periods. In the second, she is given a first term of only one period. In both instances she can be reelected to a second, one-period term.

The legislator wants to maximize the sum of discounted payoffs $\sum_{t=1}^{3} \delta^{t-1} y_t$, where $\delta \in (0, 1]$ is the discount factor. The payoffs y_t depend on a rent from being in office r and a cost of exerting effort. A legislator may care about exerting effort during her term in office both because effort yields a legislative output that she cares about per se, and because working hard leads to a higher chance of reelection. To keep the model simple we abstract from the first motivation, although it can easily be added. Thus, the payoff obtained in period t is equal to $r - c(e_t, k_t)$ when in office in period t, and it is equal to a fixed amount $w < r$ when out of office. The payoff w can be seen as a wage that can be earned when out of Congress, either in the private sector, or in some other public employment. The term $c(e_t, k_t)$ captures the cost of legislative effort e_t, where this cost may depend on the stock of legislative expertise, or legislative capital k_t. The cost function satisfies $c(0, k) = 0$, $\frac{\partial c}{\partial k} < 0$, $\frac{\partial^2 c}{\partial k^2} > 0$ (i.e., experience lowers costs but at a decreasing rate) and also $\frac{\partial c}{\partial e} > 0$, $\frac{\partial^2 c}{\partial e^2} > 0$ for $e > 0$, and $\frac{\partial c}{\partial e}(0) = 0$. We assume simply that $k_t = k_{t-1} + e_{t-1}$, so that the stock of legislative expertise is made up of the added effort expended in the past. The legislator starts out with a level of capital k_1. In this model the possibility of learning by doing affects payoffs by lowering the cost of effort, rather than increasing the product that can be obtained by a given level of effort, although this second form of learning by doing can be added.

The difference between the two regimes is that the short-term legislator faces reelection after only one period, while the long-run legislator faces reelection after two periods. If the short-run legislator is reelected, after his second term he goes back to private life and earns w. This assumption affects the level of payoffs obtainable relative to the long-term legislators but does not affect the relevant incentives we want to study.

A politician is reelected at the end of a term with probability $P(e)$, where e is the sum of total effort expended during the periods comprised in the legislative term (e_1 for the short term legislator and $e_1 + e_2$ for the long term legislators). The probability of reelection satisfies $P'(e) > 0$ and $P''(e) < 0$ indicating decreasing marginal returns in terms of reelection chances. The reelection chance depends on effort as when voters use a retrospective voting rule that promises reelection contingent on the observation of a level of effort from the incumbent that is large enough. Because in the last period politicians have no incentives to exert effort, voters do not consider conditioning reelection on legislative capital. This makes sense in a world where voters do not care about the timing of effort deployment by politicians. A model where voters discount effort that is more distant in time would simply

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lead to some weighting against e_t relative to e_{t+1}.[12] This will only strengthen the point made by our model, namely that strong learning by doing effects are necessary to cause the initial effort of long-run legislators to be larger than that of short-term legislators.

The fact that the probability of reelection depends positively on legislative effort will of course be relevant to the results, as it injects a motivation for the legislator to exert herself. However, we would be able to make all the same points we wish to make by assuming that legislators desire to exert effort in order to increase a legislative output which they value per se, even if their effort makes no dent in the chance that they will be fired. That intrinsic valuation for legislative output could arise because politicians are policy-motivated in a direct, contemporaneous sense (Maskin and Tirole 2004 also consider the possibility that the official may care about the legacy from her time in office).

The probabilistic component of reelection can arise from a variety of factors. The emergence of a challenger whose charisma is *ex ante* unknown and drawn from a probability distribution is usually considered (see, for instance, Canes-Wrone, Herron, and Shotts 2001; see Rogoff and Sibert 1988 for an explicit derivation). Other factors are better discussed by giving some detail of the electoral mechanics in Argentina, especially in the context of 1980s which is our period of interest. The probability of reelection in Argentina depends on whether the legislator occupies a position in the province-wide party list, and also on how high up in the list the candidate's position is. Legislative seats apportioned to the province are proportionally assigned to parties according to the parties' vote totals at the province level. A candidate cannot be elected when out of the party list, and the probability of gaining a seat depends on how high on the list her position is. Thus, partisan swings at the province level introduce noise in the reelection outcome, rendering reelection a probabilistic outcome. Other sources of noise are district specific. Whether and where the legislator ends up in the list depends on a variety of factors. One factor is tightly related to the popularity of the legislator in his district, just like in the American system, and is clearly affected by the emergence of attractive challengers, which is unknown ex ante. The perception, at the district level, of the representative's legislative work for the district may also be affected by shocks. Lastly, an important factor in list placement is the relative population density of the legislator's district, which may change over time in unpredictable ways.

For ease of exposition we split the theoretical argument in two parts. We first establish a benchmark comparison of the effects of longer terms by focusing on a case where learning by doing is absent, in the sense that experience does not lower the costs of future effort. We then move into the case where learning by doing is present.

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[12]Nordhaus (1975) studied a political business cycle model with retrospectively myopic voters.

4.1 The case without learning

4.1.1 Legislators with a two-period term: the "long term legislators"

The legislator solves

$$\max_{e_1,e_2} V^L = \left\{ r - c\left(e_1\right) + \delta\left[r - c\left(e_2\right)\right] + \delta^2 \left\{P\left(e_1 + e_2\right)r + \left[1 - P\left(e_1 + e_2\right)\right]w\right\}\right\}.$$

The first-order conditions are,

$$\frac{\partial V^L}{\partial e_1} = -c'\left(e_1^L\right) + \left(r - w\right)\delta^2 P'(e^L) = 0,$$

$$\frac{\partial V^L}{\partial e_2} = -c'\left(e_2^L\right) + \left(r - w\right)\delta P'(e^L) = 0,$$

which can be combined to yield,

$$c'\left(e_1^L\right) = \delta c'\left(e_2^L\right),$$

which implies that $e_1^L < e_2^L$, given the convexity of $c\left(\cdot\right)$ and provided that $\delta < 1$. The second-order conditions are shown in the Appendix.

4.1.2 Legislators with a first one-period term: the "short term" legislators

The legislator whose first term is single period solves

$$\max_{e_1} V^S = \left\{r - c\left(e_1\right) + \delta\left\{P\left(e_1\right)r + \left[1 - P\left(e_1\right)\right]w\right\} + \delta^2 w\right\}.$$

The first-order condition for this problem characterizes a solution e_1^S which is the optimal effort choice of the short-term legislator,

$$c'\left(e_1^S\right) = \left(r - w\right)\delta P'\left(e_1^S\right). \tag{2}$$

The second-order condition is verified given the convexity of $c\left(\cdot\right)$ and the concavity of $P\left(\cdot\right)$.

4.1.3 Comparing performance: short term vs long term legislators without learning

We now compare the effort e_1^S in the first period by a short-term legislator against the choice e_1^L of a long-term legislator.

Proposition 1 *In the problem without learning, short-term legislators exert higher effort than long-term legislators in the first period. Formally, $e_1^S > e_2^L > e_1^L$.*

Proof. Because $c'(0) = 0$, and $c''(e) > 0$ for all $e > 0$, the long-term legislator reaches an interior solution with positive effort in both periods of her term (i.e., $e_2^L, e_1^L > 0$). From (2) we get,

$$\frac{c'\left(e_1^S\right)}{P'\left(e_1^S\right)} = \frac{c'\left(e_2^L\right)}{P'\left(e_1^L + e_2^L\right)}.$$

Concavity of c($\cdot$) and convexity of P($\cdot$) yield $e_1^S > e_2^L$. ∎

Why does a legislator facing a long term exert lower effort in period one than a legislator facing a shorter term? In other words, why is $e_1^S > e_1^L$? One reason is that the legislator facing a more distant reelection discounts more heavily the electoral returns of current effort. But there is a second reason. If discounting were the only factor, we should observe that the period-two effort of a long term legislator equals the period-one effort of a short-term legislator, as in period two a long-term legislator is as close to election day as a short-term one. However, the last proposition tells us that the period-two effort by a long term legislator is lower than the period-1 effort by the short-term legislator. The explanation is that, facing convex costs, the long-term legislator smooths her investments over time. Therefore, there are two effects responsible for the result that short-term legislators exert higher period-one effort. One is a discounting effect, and the other one is an investment-smoothing effect.

4.2 The case with learning by doing

The short-term legislator solves the same problem as without learning because there is no effort in the last legislative period. The long-term legislator solves,

$$\max_{e_1, e_2} V^L = \left\{ r - c\left(e_1, k_1\right) + \delta\left[r - c\left(e_2, k_2\right)\right] + \delta^2 \left\{ P\left(e_1 + e_2\right) r + \left[1 - P\left(e_1 + e_2\right)\right] w \right\} \right\},$$

where k_1 is the initial level of capital and $k_2 = k_1 + e_1$, and now costs in the second period depend explicitly on the stock of experience k_2.

The first-order conditions are,

$$\frac{\partial V^L}{\partial e_1} = -c'\left(e_1^{Lk}\right) - \delta\frac{\partial c_2}{\partial k_2} + (r - w)\,\delta^2 P'\left(e^{Lk}\right) = 0, \tag{3}$$

$$\frac{\partial V^L}{\partial e_2} = -c'\left(e_2^{Lk}\right) + (r - w)\,\delta P'\left(e^{Lk}\right) = 0. \tag{4}$$

These expressions can be combined to yield,

$$c'\left(e_1^{Lk}\right) + \delta\frac{\partial c\left(e_2^{Lk}, k_2\right)}{\partial k_2} = \delta c'\left(e_2^{Lk}\right),$$

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where the superscript k denotes that the solution corresponds to the case where the stock of experience matters. The last equality indicates that e_1^{Lk} may be larger or smaller than e_2^{Lk} depending on the sizes of δ and $\frac{\partial c\left(e_2^L, k_2\right)}{\partial k_2}$. In particular, the last equality can be written as,

$$c'\left(e_1^{Lk}\right) + c'\left(e_1^{Lk}\right)\frac{(1-\delta)}{\delta} + \frac{\partial c\left(e_2^{Lk}, k_2\right)}{\partial k_2} = c'\left(e_2^{Lk}\right).$$

If the effect of experience on period 2 costs is zero $\left(\frac{\partial c\left(e_2^L, k_2\right)}{\partial k_2} = 0\right)$, as in the benchmark case with no learning, then any discounting $(\delta < 1)$ forces e_1^L to be smaller than e_2^L. But if the effect of experience is large enough given the strength of discounting (i.e., if $\left|\frac{\partial c\left(e_2^L, k_2\right)}{\partial k_2}\right| >$ $c'\left(e_1^{Lk}\right)\frac{(1-\delta)}{\delta}$) then $e_1^{Lk} > e_2^{Lk}$. Note that when the future is not discounted at all $(\delta = 1)$ then any learning by doing will make $e_1^{Lk} > e_2^{Lk}$.

The second-order conditions are shown in the Appendix.

4.2.1 Comparing performance: short term legislators vs long term legislators with learning

We now establish the main theoretical result of the paper.

Proposition 2 *If learning by doing effects are strong enough the first period effort of the long-term legislator is higher than that of the short-term legislator.*

Proof. The first order condition for first period effort by the short-term legislator was $c'\left(e_1^S\right) = (r - w)\,\delta P'\left(e_1^S\right)$. So to compare e_1^S and e_1^{Lk} we use the latter expression in combination with (3). We can write,

$$\frac{c'\left(e_1^{Lk}\right) + \delta\frac{\partial c\left(e_2^{Lk}, k_1 + e_1^{Lk}\right)}{\partial e_1}}{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)} = \frac{c'\left(e_1^S\right)}{P'\left(e_1^S\right)}.$$

If $\frac{dc}{dk_2} = 0$ we are back in the no-learning case and $e_1^L < e_1^S$. But in the presence of learning effects $\left(\frac{\partial c}{\partial k_2} < 0\right)$ the conclusion can change. The past inequality can be written as,

$$c'\left(e_1^{Lk}\right)\frac{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)}{P'\left(e_1^S\right)} + c'\left(e_1^{Lk}\right)\left[1 - \frac{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)}{P'\left(e_1^S\right)}\right] + \delta\frac{\partial c\left(e_2^{Lk}, k_1 + e_1^{Lk}\right)}{\partial e_1} = c'\left(e_1^S\right)\frac{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)}{P'\left(e_1^S\right)},$$

and setting $\alpha \equiv c'\left(e_1^{Lk}\right)\left[1 - \frac{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)}{P'\left(e_1^S\right)}\right] + \delta\frac{\partial c\left(e_2^{Lk}, k_1 + e_1^{Lk}\right)}{\partial e_1}$ we can write,

$$c'\left(e_1^{Lk}\right)\frac{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)}{P'\left(e_1^S\right)} + \alpha = c'\left(e_1^S\right)\frac{\delta P'\left(e_1^{Lk} + e_2^{Lk}\right)}{P'\left(e_1^S\right)}.$$

Note that the first term on the left hand side is identical to the term on the right hand side up to the argument in the marginal cost function which is increasing, and note the factor $\frac{\delta P'\left(e_1^{Lk}+e_2^{Lk}\right)}{P'\left(e_1^S\right)}$ is also increasing in e_1^S. Then $\alpha < 0$ implies $e_1^{Lk} > e_1^{Sk}$. Note that if learning effects are strong enough (i.e., if $\left|\frac{\partial c}{\partial k_2}\right| > c'\left(e_1^{Lk}\right)\left[\frac{1}{\delta} - \frac{P'\left(e_1^{Lk}+e_2^{Lk}\right)}{P'\left(e_1^S\right)}\right]$) then $\alpha < 0$. ∎

As discussed in the previous subsection, in the case without learning the long-term legislator always exerts less effort during the first period. This is due to two forces we discussed, namely the discounting and the smoothing effects. However, when current effort yields future returns to experience the long-term legislator has a reason to expand her effort further than in the absence of such effects. The reason is that her first-period effort will lower her effort costs in the second period. If the returns to experience are high enough, the long-term legislator will be seen to exert higher first-period effort than the short-term legislator. The short-term legislator does not have a comparable learning by doing motive to expand her first-period effort. If she is reelected, her second legislative term, which takes place in the second period, will be her last. As a result, she will not exert any effort in her second term, leading to no opportunities to reap the rewards of experience. This comparative lack of learning incentives on the part of the short-term legislator is very stark in our three-period model, but would also emerge if we allow for continued play and effort exertion in the second legislative term. The short-term legislator will always have lower incentives to invest in accumulating experience as this experience will only be of value conditional on being reelected. The long-term legislator does not need to be reelected to enjoy the returns of experience in the second half of her first term. As long as reelection probabilities are below one, the incentives to develop expertise will always be stronger for legislators serving longer terms.

5 Conclusion

A baseline dynamic model of legislative incentives suggests that legislators with longer terms should exert less effort than legislators with lower terms. Two reasons back up that claim. One is that legislators with longer terms will discount the future more strongly, and the other is that those legislators will spread their effort more thinly over time for reasons akin to those driving consumption smoothing. However, our empirical study relying on a natural experiment in Argentina reveals the opposite pattern. Results for six legislative outputs suggest that legislators serving a four-year term have a better performance than those in a two-year track. We consider two explanations. One is that legislators with shorter terms may be distracted from legislative activities by campaigning responsibilities, but this explanation is not supported by additional tests. The second explanation, which is crystallized in our model, is that learning-by-doing effects are present in legislatures, and that they are strong

enough to compensate for the discounting and smoothing effects mentioned earlier. Because legislators with longer terms have a longer horizon of time during which to reap the benefits of a richer experience, they feel incentivized to exert higher effort in the first place.

The use of a natural experiment allows us to overcome the identification problems arising from the fact that political institutions are usually endogenous. The experimental nature of our study enables the measurement of effects than can be deemed causal. Despite this advantage, our study has limitations. Most natural experiments are restricted to specific instances in time and space, leaving open the important question of the external validity of the results that have been obtained. However, we trust that several other instances may have occurred over time in different parts of the world where the length of terms has been randomized. Therefore, it should be possible to adopt the blueprint used in this paper to explore the effects of term lengths in political bodies operating under different electoral rules, and in different points in time and space. The use of additional measures of performance would be also desirable. Hopefully a succession of complementary studies will help piece together a consistent picture of which institutional springs can be used to improve the quality and performance of political representatives.

6   Appendix

6.1   Second-order conditions for the problem of long-term legislators without learning

The Hessian matrix of the sum of discounted payoffs is

$$H = \begin{bmatrix} -c''(e_1) + (r-w)\,\delta^2 P''(e) & (r-w)\,\delta^2 P''(e) \\ (r-w)\,\delta^2 P''(e) & -\delta c''(e_2) + (r-w)\,\delta^2 P''(e) \end{bmatrix};$$

$$|H_1| = -c''(e_1) + (r-w)\,\delta^2 P''(e) < 0;$$
$$|H_2| = \left[-c''(e_1) + (r-w)\,\delta^2 P''(e)\right] \cdot \left[-\delta c''(e_2) + (r-w)\,\delta^2 P''(e)\right] - \left[(r-w)\,\delta^2 P''(e)\right]^2$$
$$= c''(e_1)\delta c''(e_2) - c''(e_1)(r-w)\,\delta^2 P''(e) - \delta c''(e_2)(r-w)\,\delta^2 P''(e) > 0.$$

6.2   Second-order conditions for the problem of long-term legislators with learning

The Hessian matrix of the sum of discounted payoffs is

$$H = \begin{bmatrix} -c''(e_1) - \delta\frac{\partial c(\cdot)}{\partial k_2} + (r-w)\,\delta^2 P''(e) & (r-w)\,\delta^2 P''(e) \\ (r-w)\,\delta^2 P''(e) & -\delta c''(e_2) + (r-w)\,\delta^2 P''(e) \end{bmatrix};$$

$$|H_1| = -c''(e_1) - \delta\frac{\partial c(\cdot)}{\partial k_2} + (r-w)\,\delta^2 P''(e) < 0;$$
$$|H_2| = \left[-c''(e_1) - \delta\frac{\partial c(\cdot)}{\partial k_2} + (r-w)\,\delta^2 P''(e)\right]\cdot\left[-\delta c''(e_2) + (r-w)\,\delta^2 P''(e)\right] - \left[(r-w)\,\delta^2 P''(e)\right]^2$$
$$= c''(e_1)\delta c''(e_2) - c''(e_1)(r-w)\,\delta^2 P''(e) + \delta^2\frac{\partial c(\cdot)}{\partial k_2}c''(e_2) - \delta^3\frac{\partial c(\cdot)}{\partial k_2}(r-w)\,P''(e) -$$

$$\delta c''(e_2)(r-w)\,\delta^2 P''(e) > 0.$$

7   References

Barro, Robert (1973). The Control of Politicians, An Economic Model, Public Choice 14, 19-42.

Birkholz, Patricia (2005). Effects of Term Limits in Michigan: Bureaucrats with More Power. Spectrum: The Journal of State Government (Winter), 35-36.

Canes-Wrone, Brandice, Michael C. Herron, and Kenneth W. Shotts (2001). Leadership and Pandering: A Theory of Executive Policymaking, *American Journal of Political Science* (45), 532-550.

Caselli, Francesco and Massimo Morelli (2004). Bad politicians. Journal of Public Economics 88 (3-4), 759-782.

Dal Bó, Ernesto, Pedro Dal Bó, and Rafael Di Tella (2006). "Plata o Plomo?": Bribe and Punishment in a Theory of Political Influence. American Political Science Review 100, 41-53.

English, Art (2003). Effects of Term Limits in Arkansas: Opportunities and Consequences. Spectrum: The Journal of State Government (Fall), 30-33.

Ferejohn, John (1986). Incumbent Performance and Electoral Control. Public Choice 50, 5-26.

Hamm, Keith, Robert Harmel, and Robert Thompson (1983). Ethnic and Partisan Minorities in Two Southern State Legislatures. Legislative Studies Quarterly 8, 177-189.

Haynie, Kerry (2002). The Color of Their Skin or the Content of Their Behavior? Race and Perceptions of African American Legislators. Legislative Studies Quarterly 27, 295-314.

Hume, David (1985 [1777]). That Politics May Be Reduced to a Science, in Essays Moral, Political, and Literary, edited by Eugene F. Miller. Indianapolis: Liberty Fund.

Jones, Mark, Sebastian Saiegh, Pablo Spiller, and Mariano Tommasi (2007). Congress, Political Careers, and the Provincial Connection. In P. Spiller and M. Tommasi (eds.), The Institutional Foundations of Public Policy in Argentina. Cambridge University Press.

Maskin, Erik and Jean Tirole (2004). The Politician and the Judge, Accountability in Government. American Economic Review 94 (4), 1034-1054.

Molinelli, Guillermo, Valeria Palanza, and Gisela Sin (1999). Congreso, Presidencia y Justicia en Argentina. Materiales para su Estudio. Buenos Aires: Temas Grupo Editorial.

Mondak, Jeffrey (1995a). Elections as Filters: Term Limits and the Composition of the US House. Political Research Quarterly 48, 701-727.

Mondak, Jeffrey (1995b). Focusing the Term Limits Debate. Political Research Quarterly 48, 741-750.

Nordhaus, William (1975). The Political Business Cycle. Review of Economic Studies 42, 169-190.

Padró i Miquel, Gerard and James Snyder (2004). Legislative Effectiveness and Legislative Life. MIT Department of Economics Working Paper No. 04-28.

Petracca, Mark (1995). A Comment on Elections as Filters. Political Research Quarterly 48, 729-740.

Rogoff, Kenneth and Anne Sibert (1988). Elections and Macroeconomic Policy Cycles. Review of Economic Studies 55 (1), 1-16.

Schiller, Wendy (1995). Senators as Political Entrepreneurs: Using Bill Sponsorship to Shape Legislative Agendas. American Journal of Political Science 39, 186-203.

Schultz, Christian (2008). Information, Polarization and Term Length in Democracy. Journal of Public Economics, forthcoming.

Spiller, Pablo and Mariano Tommasi (2007). The Institutional Foundations of Public Policy in Argentina. Cambridge University Press.

Waller, Christopher and Carl Walsh (1996). Central-Bank Independence, Economic Behavior, and Optimal Term Lengths. American Economic Review 86, 1139-1153.

Weissert, Carol (1991). Policy Entrepreneurs, Policy Opportunists, and Legislative Effectiveness. American Politics Quarterly 19, 262-273.

Table 1. Duration of terms in selected legislatures

Term duration (years)	Countries, and states in the United States of America
2	United States House of Representatives US states: Alaska, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Missouri, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, and Wyoming
3	Australia, Bhutan, El Salvador, Mexico, Nauru, New Zealand, and Philippines
4	Albania, Andorra, Angola, Armenia, Argentina, Austria, Belgium, Bosnia and Herzegovina, Brazil, Bulgaria, Chad, Chile, Colombia, Costa Rica, Croatia, Denmark, Dominican Republic, Germany, Ghana, Greece, Guatemala, Haiti, Honduras, Hungary, Iran, Iraq, Japan, Jordan, Kazakhstan, Kiribati, Lebanon, Liechtenstein, Lithuania, Macedonia, Madagascar, Mauritius, Moldova, Mongolia, Montenegro, Netherlands, Nigeria, Poland, Portugal, Romania, Russia, Slovakia, Solomon Islands, South Korea, Syria, Tuvalu, and Vanuatu US states: Alabama, Louisiana, Maryland, Mississippi, Nebraska, and North Dakota
5	Afghanistan, Antigua and Barbuda, Azerbaijan, Bahamas, Bangladesh, Barbados, Benin, Bolivia, Botswana, Burkina Faso, Burundi, Cambodia, Cameroon, Canada, Cape Verde, Central African Republic, China, Comoros, Cuba, Cyprus, Czech Republic, Democratic Republic of the Congo, Djibouti, Dominica, Egypt, Ethiopia, Fiji, France, Gabon, Gambia, Grenada, Guinea, Guyana, India, Ivory Coast, Jamaica, Kyrgyzstan, Laos, Lesotho, Luxembourg, Malawi, Malaysia, Mali, Malta, Mauritania, Monaco, Morocco, Mozambique, Namibia, Nicaragua, Niger, North Korea, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Republic of the Congo, Saint Lucia, Samoa, San Marino, Senegal, Seychelles, Sierra Leone, Singapore, South Africa, Spain, Suriname, Tajikistan, Tanzania, Togo, Tunisia, Turkey, United Kingdom, Uruguay, Uzbekistan, Vietnam, Zambia, and Zimbabwe
6	Liberia, Sri Lanka, Sudan, and Yemen

Note: when the legislature consists of a lower and an upper house, we consider the lower house.

Table 2. Distribution of legislators by province and political party for the random allocation of terms

District	Total	Group 1 (later assigned a 4-year term)											Group 2 (later assigned a 2-year term)										
		UCR	PJ	PI	UCD	DC	AUT	MPJ	MFP	MPN	PB	Total	UCR	PJ	PI	UCD	DC	LIB	MPJ	MFP	MPN	PB	Total
Capital	25	7	3	-	1	1	-	-	-	-	-	12	7	4	1	1	-	-	-	-	-	-	13
Buenos Aires	70	18	16	1	-	-	-	-	-	-	-	35	19	15	1	-	-	-	-	-	-	-	35
Catamarca	5	1	1	-	-	-	-	-	-	-	-	2	1	2	-	-	-	-	-	-	-	-	3
Córdoba	18	6	3	-	-	-	-	-	-	-	-	9	5	4	-	-	-	-	-	-	-	-	9
Corrientes	7	2	1	-	-	-	1	-	-	-	-	4	1	1	-	-	-	1	-	-	-	-	3
Chaco	7	1	2	-	-	-	-	-	-	-	-	3	2	2	-	-	-	-	-	-	-	-	4
Chubut	5	2	1	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-	-	2
Entre Ríos	9	2	2	-	-	-	-	-	-	-	-	4	3	2	-	-	-	-	-	-	-	-	5
Formosa	5	1	2	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-	-	2
Jujuy	6	1	1	-	-	-	-	1	-	-	-	3	1	2	-	-	-	-	-	-	-	-	3
La Pampa	5	1	1	-	-	-	-	-	-	-	-	2	1	1	-	-	-	-	-	1	-	-	3
La Rioja	5	1	2	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-	-	2
Mendoza	10	3	2	-	-	-	-	-	-	-	-	5	3	2	-	-	-	-	-	-	-	-	5
Misiones	7	2	2	-	-	-	-	-	-	-	-	4	2	1	-	-	-	-	-	-	-	-	3
Neuquén	5	1	-	-	-	-	-	-	-	1	-	2	1	1	-	-	-	-	-	-	1	-	3
Río Negro	5	2	1	-	-	-	-	-	-	-	-	3	1	1	-	-	-	-	-	-	-	-	2
Salta	7	2	2	-	-	-	-	-	-	-	-	4	1	2	-	-	-	-	-	-	-	-	3
San Juan	6	1	1	-	-	-	-	-	-	-	1	3	1	1	-	-	-	-	-	-	-	1	3
San Luis	5	1	1	-	-	-	-	-	-	-	-	2	2	1	-	-	-	-	-	-	-	-	3
Santa Cruz	5	1	1	-	-	-	-	-	-	-	-	2	1	2	-	-	-	-	-	-	-	-	3
Santa Fe	19	5	5	-	-	-	-	-	-	-	-	10	5	4	-	-	-	-	-	-	-	-	9
S. del Estero	7	2	2	-	-	-	-	-	-	-	-	4	1	2	-	-	-	-	-	-	-	-	3
Tucumán	9	2	3	-	-	-	-	-	-	-	-	5	2	2	-	-	-	-	-	-	-	-	4
T. del Fuego	2	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	2
TOTAL	254	65	55	1	1	1	1	1	-	1	1	127	64	56	2	1	-	1	-	1	1	1	127

Notes: UCR is Unión Cívica Radical; PJ is Partido Justicialista; PI is Partido Intransigente; UCD is Unión del Centro Democrático; DC is Democracia Cristiana; AUT is Partido Autonomista; MPJ is Movimiento Popular Jujeño; MFP is Movimiento Federalista Pampeano; MPN is Movimiento Popular Neuquino; PB is Partido Bloquista; LIB is Partido Liberal.

Table 3. Summary statistics

	Mean	Standard deviation	Minimum	Maximum
Floor attendance (in %)	81.13	11.47	21	98
Committee attendance (in %)	53.86	24.37	0	100
Number of committee bills	44.26	36.04	0	220
Frequency of floor speaking	4.99	8.89	0	88
Number of bills introduced	5.70	9.66	0	104
Number of bills ratified	0.20	0.54	0	4
Age	50.66	10.60	27	77
Gender (Male=1)	0.96	0.20	0	1
Experience (Freshman=1)	0.93	0.25	0	1
Lawyer	0.32	0.47	0	1
University	0.49	0.50	0	1
Leader	0.21	0.41	0	1
Majority party	0.51	0.50	0	1
Small block	0.06	0.23	0	1
Four-year term	0.50	0.50	0	1

Note: *Leader* is a dummy variable that takes the value 1 when the legislator is the president or vice-president of the chamber, a majority or minority leader, or a committee chair. *Small block* is a dummy variable that takes the value 1 when the legislator belongs to a party holding three or fewer seats.

Table 4. Relationship between treatment and legislator characteristics

	Four-year term
Age	0.0004
	(0.003)
Gender	-0.155
(Male=1)	(0.14)
Experience	0.005
(Freshman=1)	(0.13)
Lawyer	0.035
	(0.10)
University	0.099
degree	(0.09)
Leader	0.109
	(0.08)
Majority party	-0.033
	(0.07)
Small block	-0.048
	(0.14)
Constant	0.157
	(0.69)
Observations	254
p-value of all covariates	0.52

Notes: Results reported are marginal effects from a Probit regression. Huber-White robust standard errors are in parentheses.

Table 5. Pre-lottery comparisons for selected outcomes

	Two-year term	Four-year term	Difference
Floor attendance	96.51	97.23	-0.72
	(0.63)	(0.56)	(0.84)
Floor speaking	0.91	1.41	-0.50
	(0.16)	(0.30)	(0.34)
Bills introduced	0.23	0.34	-0.11
	(0.05)	(0.09)	(0.11)
Number of bills ratified	0.02	0.02	0.001
	(0.01)	(0.01)	(0.02)

Notes: standard errors are in parentheses. Committee data cannot be disaggregated between pre- and post-lottery periods.

Table 6. The effects of term length on legislative performance

	Floor attendance		Committee attendance		Committee bills		Floor speaking		Bills introduced		Number of bills ratified	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Four-year term	2.51	2.46	5.67	5.63	0.13	0.18	0.26	0.11	0.13	0.20	0.75	0.66
	(0.90)***	(0.85)***	(2.25)**	(2.07)***	(0.07)*	(0.08)**	(0.16)*	(0.15)	(0.15)	(0.12)*	(0.25)***	(0.24)***
	{1.08}**	{0.95}***	{2.84}**	{2.55}**	{0.10}	{0.11}*	{0.20}	{0.18}	{0.18}	{0.14}*	{0.26}***	{0.24}***
Change	3%	3%	11%	11%	14%	19%	30%	13%	14%	23%	112%	95%
Age		0.13		0.19		-0.001		-0.02		-0.003		-0.01
		(0.041)***		(0.12)		(0.004)		(0.01)*		(0.01)		(0.01)
		{0.043}***		{0.13}		{0.01}		{0.01}*		{0.01}		{0.01}
Gender		6.15		-1.30		0.11		-0.14		-0.19		-0.28
(Male=1)		(2.34)***		(5.07)		(0.19)		(0.33)		(0.19)		(0.45)
		{1.84}***		{5.85}		{0.23}		{0.40}		{0.21}		{0.52}
Experience		3.33		14.11		0.11		0.20		0.13		-0.43
(Freshman=1)		(2.17)		(5.24)***		(0.22)		(0.24)		(0.28)		(0.40)
		{2.42}		{6.90}**		{0.31}		{0.29}		{0.36}		{0.44}
Lawyer		-1.39		-8.11		0.08		-0.27		0.09		-0.06
		(1.05)		(2.94)***		(0.09)		(0.29)		(0.17)		(0.34)
		{1.13}		{3.51}**		{0.12}		{0.31}		{0.20}		{0.34}
University		2.18		8.00		-0.07		0.91		-0.001		0.07
degree		(0.99)**		(2.96)***		(0.10)		(0.33)***		(0.16)		(0.34)
		{1.07}**		{3.59}**		{0.13}		{0.34}***		{0.17}		{0.33}
Leader		0.28		-1.97		-0.01		0.88		0.18		1.04
		(1.02)		(2.72)		(0.09)		(0.17)***		(0.14)		(0.27)***
		{1.15}		{3.42}		{0.12}		{0.20}***		{0.17}		{0.26}***
Majority party		7.77		15.21		0.41		-0.41		-1.28		-0.23
		(0.85)***		(2.25)***		(0.08)***		(0.16)***		(0.12)***		(0.23)
		{0.93}***		{2.69}***		{0.11}***		{0.19}**		{0.15}***		{0.23}
Small block		4.11		-0.27		-0.12		1.54		-0.7		-0.29
		(1.58)***		(4.60)		(0.19)		(0.24)***		(0.21)***		(0.64)
		{1.77}**		{6.01}		{0.26}		{0.29}***		{0.25}***		{0.61}
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District dummies	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Method	OLS	OLS	Tobit	Tobit	Negbin	Negbin	Negbin	Negbin	Negbin	Negbin	Negbin	Negbin
Observations	492	492	492	492	492	492	492	492	492	492	492	492

Notes: Huber-White robust standard errors are in parentheses. Standard errors clustered at the legislator level are in braces. For OLS and Tobit models, Change is calculated as 100*Estimate/mean of the respective output for legislators in a two-year track. For Negbin (Negative Binomial) models, Change is calculated as *exp*(Estimate)-1. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

Table 7. The performance gap between four-year and two-year legislators: Is there a role for distance and a second year slump?

	Floor attendance		Committee attendance		Committee bills		Floor speaking		Bills introduced		Number of bills ratified	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Four-year term	2.49	3.15	2.67	7.26	0.11	0.04	0.35	0.05	0.30	0.31	0.88	1.08
	(1.11)**	(1.44)**	(2.93)	(3.30)**	(0.10)	(0.11)	(0.19)*	(0.25)	(0.18)*	(0.24)	(0.27)***	(0.35)***
	{1.11}**	{1.72}*	{3.02}	{4.45}*	{0.10}	{0.15}	{0.19}*	{0.29}	{0.18}*	{0.28}	{0.27}***	{0.35}***
Four-year term x Time	-0.35		4.98		0.001		-0.39		-0.33		-0.19	
	(2.25)		(5.38)		(0.17)		(0.36)		(0.41)		(0.55)	
	{1.89}		{3.91}		{0.09}		{0.29}		{0.35}		{0.55}	
Four-year term x Time x Distance	0.001		0.0026		0.0002		0.0004		0.0001		-0.0003	
	(0.002)		(0.0044)		(0.0001)		(0.0003)		(0.0003)		(0.0005)	
	{0.002}		{0.0039}		{0.0001}		{0.0002}*		{0.0003}		{0.0005}	
Four-year term x Distance		-0.001		-0.002		0.0002		0.0004		-0.0002		-0.0005
		(0.001)		(0.004)		(0.0001)		(0.0003)		(0.0002)		(0.0004)
		{0.002}		{0.005}		{0.0002}		{0.0003}		{0.0003}		{0.0004}
Time dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	Tobit	Tobit	Negbin	Negbin	Negbin	Negbin	Negbin	Negbin	Negbin	Negbin
Observations	492	492	492	492	492	492	492	492	492	492	492	492

Notes: Huber-White robust standard errors are in parentheses. Standard errors clustered at the legislator level are in braces. Time is an indicator variable that takes the value one for the second year. Distance is the distance (in kilometers) from the capital of the legislator's district to Buenos Aires (the seat of the national legislature).
*Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.