Term Length and Political Performance

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Abstract

We evaluate the effects of a fundamental lever of constitutional design: the duration of office terms. We exploit a natural experiment in the Argentine House of Representatives where term lengths were assigned randomly. Results for an index as well as individual measures of legislative performance show that longer terms enhance legislative performance. A second experiment in the Argentine Senate extends results to a different chamber and time. This evidence that longer terms enhance political performance highlight limits to classic theories of electoral discipline (Barro 1973, Ferejohn 1986) predicting that shorter terms, by tightening accountability, will incentivize hard work by politicians. We discuss and test possible explanations. Shorter terms appear to worsen performance not due to campaign distractions but due to an investment logic. When returns to effort are not immediate, shorter terms dampen incentives to exert effort.

JEL Classification: H1

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1 Introduction

A fundamental problem in constitutional design is to decide for how long officials should serve before they can be replaced. In the case of democratically elected representatives the problem boils down to one of frequency of elections. One advantage to keeping term lengths short is that more frequent accountability should keep representatives on their toes, leading to better representation of voters' interests. This notion is formalized in the classic papers by Barro (1973) and Ferejohn (1986) on electoral discipline. In their models, when office terms are made shorter politicians lose discretion, exert more effort, and extract lower rents from citizens (Barro 1973, p. 30, shows explicitly that shirking increases with the time between elections). According to these models, more frequent accountability should always make politicians work harder. But is this always the dominant force shaping political incentives? Although this is an incentives-related question at the heart of the political agency problem, economists interested in the workings of government have paid scant attention to it.

As we discuss in the following section, the received evidence on the effects of term lengths– mostly originating in political science–is not abundant and suffers from various identification problems. This paper is a first attempt at measuring the effects of term lengths through a natural experiment. This helps us overcome the identification challenges involved as well as examine whether political incentives respond to some other force beyond accountability.

There are reasons why shortening office terms too much in order to strengthen account- ability may backfire and weaken politicians' incentives. Very frequent elections could distract politicians away from policy and towards campaigning. It is also possible that politicians may need longer time horizons in order to invest in assets specific to their political position. The resulting picture is one where the frequency of elections could affect various incentives at once. As a consequence, it is not obvious whether and how term lengths should matter.

Our main objective is to investigate the effects of term lengths in a way that overcomes the various identification difficulties involved. To this end we exploit two natural experiments in the Argentine legislature introducing exogenous variation in legislative term lengths. We find that the length of terms does matter, and that shorter terms worsen legislative performance. A second objective of the paper is to discuss and test for possible explanations. Aided

by a simple theoretical model, we derive tests to identify the mechanism by which longer terms induce a stronger legislative performance. The evidence suggests that the reason why legislators on a shorter track perform less well is not campaign distractions. Rather, longer terms appear to incentivize effort by guaranteeing the receipt of returns to effort over a longer span of time. In other words, legislative effort follows an investment logic that overcomes the accountability pressures stemming from more frequent elections.

As an example of the identification problems facing the study of term lengths, consider the substantial cross-country variation in the length of legislative terms (see Table 1). One could be tempted to exploit the cross-country variation in legislative term lengths to try to ascertain its effects on legislative performance. However, different nations may select different term lengths because they face different incentive trade-offs. Because the length of terms is endogenous, exploiting the cross-country variation cannot help identify the effects of longer terms. An alternative approach would be to focus on a single legislature with staggered terms, such as the Senate of the United States, and study the effects of the proximity of elections on performance. As we discuss in the following section on related literature, this avenue poses serious identification problems as well.

To overcome these problems, we resort to two natural experiments in the Argentine legislature, one in the House in 1983 and one in the Senate in 2001. Our main focus is on the House of Representatives in 1983, for which we have more observations and more measures of legislative performance. On December 10 of 1983 a newly elected set of legislators took office after a seven year dictatorship. House representatives in Argentina face no term limits and their terms are four years long. Also, the Constitution requires the staggered renewal of the House chamber by halves every two years. In order to get the staggered renewal mechanism going, half of the representatives elected in 1983 got two-year terms, and the other half got four-year terms. The allocation of two- and four-year terms in this congress of 1983 was done through a well documented random assignment. We compare the level of legislative performance of the two-year-term legislators to that of their four-year counterparts. We do this for the first two years of legislative activity, while both groups worked side by side. We follow Kling, Liebman and Katz (2007) in that we first study overall effects by aggregating different performance measures into an index of legislative performance. We then study

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the effect of term lengths on the six individual measures of legislative performance that we obtained, namely attendance to floor sessions, participation in floor debates (measured by number of speeches), committee activity (attendance to committee sessions and participation in the production of committee bills), the number of bills each member introduced, and how many of these where approved. We find a significant effect of a longer term on the performance index as well as on four of the six metrics of performance.

We consider two main possible explanations for our results. One is that legislators on a shorter track spend part of their term campaigning. An implication of our model, and a prediction by legislators we interviewed, is that if campaigning is the driving force behind the results, then the performance differential in favor of legislators with longer terms should diminish for legislators representing districts that are very close to the seat of Congress. After all, those legislators face less of a conflict between campaigning and legislating. The data does not support this prediction, suggesting that campaign distractions are not a driving force behind our results. The data supports another prediction of the model: when legislators are sensitive to the time horizon because of an investment logic, legislators in safer seats, having a longer implicit time horizon, should respond less to being dealt a longer term. The idea that time horizons rather than campaigning shape legislative performance is confirmed by our Senate data. We compare the performance of senators serving four- and six-year terms. During the first two years, when none are campaigning, senators on the six-year track work harder than those on the four-year track.

As the Barro and Ferejohn models show, longer terms may entail costs in terms of relaxed accountability. But our empirical study shows that, at least while terms are fairly short, extending terms entails benefits in terms of measured performance. Those benefits do not appear to stem from a simple campaign distraction problem, but from a pure time horizon effect highlighting an investment logic. When returns to effort are not instantaneous, legislators are more likely to exert effort tied to legislative activity when guaranteed a longer term in office. This explanation was rated as highly plausible by the legislators we interviewed. Lastly, we show that the investment logic does not appear to work in connection with the accumulation of a generic stock of expertise that once put together renders legislators indifferent to the time horizon.

The structure of the paper is as follows. In Section 2 we discuss related literature. In Section 3 we describe the natural experiment in the House and present the data. In Section 4 we lay out the econometric model and report the results. We discuss and test possible explanations in Section 5. Section 6 reports results from the second natural experiment in the Argentine Senate. Section 7 lays out our simple theoretical model crystallizing the connection between term lengths and performance. Section 8 contains our conclusions.

2 Related literature

The number of empirical studies focusing on the effects of term lengths is limited. A small literature has attempted to identify whether United States legislators behave differently when approaching reelection, mostly in terms of their voting (but see Lott 1987 who focuses on vote participation). Amacher and Boyes (1978) exploit the staggered composition of the United States Senate and compare–for the 93rd Congress–the voting records of United States senators who differ in the proximity of their reelection. They find that senators closer to reelection vote more in line with representatives (who presumably proxy for constituency interests). Thomas (1985) tracks the voting pattern of senators in their third versus their sixth year, finding a moderating tendency of election proximity. Kalt and Zupan (1990) also report that senators seem to alter their voting pattern when approaching reelection.

Lott and Davis (1992) provide further references in this area. Their discussion emphasizes that most of the papers attempting to identify the effects of electoral proximity focused on voting patterns and suffered from measurement and specification problems.[1] It is worth noting that a study tracking legislators as they approach reelection will tend to confound the pure effect of the time horizon (which would be relevant to identifying the effects of term length) with those of changing political circumstances. The alternative approach of exploiting the staggered structure of the Senate to observe contemporaneous behavior by legislators

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[1] Lott and Davis reexamine data for United States senators and find that the proximity of elections does not significantly affect voting behavior in the United States Senate. The general consensus in the profession since then has converged on the idea that voting patterns in the Congress of the United States are largely independent from electoral pressure (see Poole and Rosenthal 1997 and Lee, Moretti, and Butler 2004).

elected at different times will tend to confound the effects of the proximity of elections with those of tenure. Tenure effects may involve sorting effects and changes in legislators' political capital. Even if one can control for tenure, focusing on legislators elected at different points in time introduces unobserved heterogeneity. For example, the electoral promises made in separate years could differ, and so may the extent to which legislators feel they can depart from the implicit electoral contract. Ideally, one would want to observe legislators appointed at the exact same time, who differ only in the term length they are assigned. This is what our design provides, therefore avoiding the aforementioned identification problems.

Crain and Tollison (1977) consider governorships as investment projects for politicians and compare campaign expenditures across races for two- versus four-year positions. They find that expenditures are larger when campaigning for a four-year governorship than along two consecutive campaigns for two-year governorships. These results are consistent with the direction and logic behind ours, although one cannot rule out the possibility that their results may reflect selection forces. Our study rules out selection effects given that the random assignment of terms occurred after legislators had been elected. Recently, Titiunik (2008) adopted an approach similar to ours to study the effects of randomly assigned term lengths on abstention rates and bills introduced by state senators in Arkansas and Texas. The direction of her results corroborates those we found.

A much larger literature has analyzed the effects of term limits.[2] Term-limit restrictions are interesting per se, but they pose a different problem to that of term lengths. To be sure, holding constant term lengths, the imposition of term limits should tend to reduce the time horizon in office. But term limits also introduce a lame duck period and associated effects stemming from the anticipation of that last period.[3] Term lengths, in contrast, affect the time horizon without introducing last period effects.

Our work is more broadly related to the study of legislative performance. Schiller (1995)

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[2]The work in that area has focused intensely on consequences for turnover (see the papers in the edited volume by Grofman 1996, and also Carey, Niemi, and Powell 2000) and the level of expertise in the legislature. Diermeier, Keane, and Merlo (2005) investigate the impact that the imposition of term limits would have on the value of congressional careers in the United States Congress.

[3]See Besley and Case (1995) for a study of the effects of term limits on fiscal variables across states in the Unites States and Johnson and Crain (2004) for related evidence from democratic nations.

uses the number of bills sponsored by a legislator 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 United States. Padró i Miquel and Snyder (2006) use subjective measures of legislative performance in the House of representatives of North Carolina to explore the effects of legislative tenure. They find that the performance of legislators increases with tenure, and they consider learning by doing as a possible explanation. Ferraz and Finan (2008) show that higher wages improve the performance of city council members in Brazil (they also identify selection improvements). Our focus is complementary by holding wages constant and varying an institutional feature that affects performance.

A small number of theoretical contributions highlight different implications of extending terms. As mentioned earlier, the classic works by Barro (1973) and Ferejohn (1986) 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. This of course does not imply that indefinitely lengthening terms will continue to have the same effect. Maskin and Tirole (2004) study the relative convenience of subjecting a politician 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. In his model the degree of partisan polarization and the severity of uncertainty interact to make both short and long terms potentially optimal depending on the prevailing parameter configuration.

3   Natural experiment and data

3.1   The natural experiment in the Argentine House of Representatives

Argentina is a federal republic consisting of twenty four legislative districts: twenty three provinces and an autonomous federal district. The National Congress has two chambers, the Chamber of Deputies (i.e., the House) and the Senate.[4] At the time of the return to democracy in December 1983, all 254 deputies were elected at the same time, starting their terms on December 10, 1983. In Argentina 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 random assignment.

In order to assign terms, the 254 representatives were first divided into two groups of 127 representatives each. The allocation of individual legislators into groups 1 and 2 was done at the level of the party-province delegation, which implies that all province districts and political parties were, whenever possible, proportionally represented in each group (see Table 2). The procedure for the random allocation of terms, set by the *Comisión de Labor Parlamentaria* (the equivalent of the Rules committee in the United States) involved dividing the representatives in two groups of equal size, Group 1 and Group 2. Each party-province delegation apportioned an equal number of its members to each group.[5] In the case that a party had an odd number of representatives from one province the imbalance was corrected with the analogous surplus from another province where the party also had an odd number of representatives. During a public legislative session on January 20 of 1984, the *Secretario Parlamentario* jointly with a representative from each party performed the lottery draw, which gave legislators in Group 1 a four year term and legislators in Group 2 a two year term.

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

[5]The two representatives from Tierra del Fuego (the smallest district) were allocated to the same group.

At the point when legislators were assigned to groups 1 and 2 the party-province delegations did not know which group would get assigned the long term. One could be concerned that if delegations systematically assigned the better legislators to one particular group then the assignment of term lengths would not be effectively exogenous. But behind a veil of ignorance there would be no reason for risk averse legislators to introduce any imbalance, so we do not see this aspect of the design as problematic. In fact, all observable legislator characteristics are balanced between the two- and the four-year term groups.

As shown in Table 3, there are no statistically significant differences in observables across the two groups of legislators, suggesting that the randomization was successful in ensuring orthogonality between covariates and term assignment. Moreover, the majority of party-province delegations (75%) did the assignment in a way that was essentially random. They assigned legislators occupying an odd-numbered position in the 1983 electoral party list to one group, and those occupying an even-numbered position to the other. Positions in the ticket (i.e., whether a legislator is close to the top or not) depend largely on the demographics of the province area to which the legislator belongs. A second order factor that affects list positions is the perceived popularity of the candidate in her area. Thus, whether a legislator is first or tenth in her party list is not random, but whether she falls in an even- or odd-numbered position is. The remaining 25% of the delegations did not follow the odd vs. even slot procedure to assign legislators to groups, but by all observable measures their assignment appears random as well. As shown in the results section, our findings are robust to eliminating from the sample the representatives in these delegations and to clustering standard errors at the party-province level. The experiment in the Senate, described in detail in Section 6, is simpler. Each province has three senators, and each provincial delegation to the senate was randomly assigned a two-, four-, or six-year term.

3.2   Data and measures of performance

Our dataset contains yearly information on individual performance and legislator characteristics for the two-year period starting in December 1983 and ending on December 1985. Our period of interest in terms of studying the effects of the assignment of term lengths is

from the time of the assignment in late January of 1984 until December of 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 data we obtained from the Argentine Congress includes six objective measures of legislative performance by each legislator: floor attendance (as the percentage of legislative floor sessions), committee attendance (as percentage of committee sessions), number of committee bills in which the legislator participated (as reflected on the committee bills bearing the legislator's signature), number of times the legislator spoke on the floor (non-legislative topics are not included), the number of bills introduced by the legislator, and the number of those bills that were approved.

Table 4 shows the correlation matrix of the six measures we use. The two measures that are most highly correlated are committee attendance and the number of committee bills signed (correlation coefficient equal to 0.49). Attendance to floor sessions and committee sessions, which one would expect to be very strongly correlated, display a correlation of 0.39. But most correlations are much weaker and in some cases negative. Overall, we conclude that these measures hold separate interest as proxies of legislative performance.

It is difficult to rank these measures in terms of which ones do the best job at capturing legislative activity. The legislators we interviewed held the view that the various metrics capture different aspects of a legislator's performance, and that this is useful given that different legislators cultivate different profiles. Some legislators may be very active at introducing bills and seeking to capture the attention of constituents. This will be captured by the measure of bills introduced. Other legislators may care about actually affecting policy, so they may introduce fewer bills but get a higher share of them approved. This recommends utilizing the measure of bills approved as a separate proxy for legislative effectiveness. Another focus for legislators may be not on authoring bills but on pushing the party agenda through committee work, bipartisan negotiations, or by voicing party positions. The latter tasks may in turn attract different types of politician. Those with an ability for drafting legislation will tend to get involved in more painstaking work within committee (proxied by committe work measures), while those with a talent for rhetorics will be more active as floor

speakers (proxied by speeches given).

Is floor attendance relevant? One might argue that even a relatively unproductive legislator may display high attendance. However, attendance may reflect general involvement with the daily legislative business.[6]

For the reasons exposed here and the feedback from legislators, we believe the metrics available to us, while noisy, do proxy for different and relevant dimensions of legislative performance. The legislators we interviewed thought that floor speaking is perhaps the metric that is least correlated with effort. They conjectured that floor speaking would be mostly associated with being a legislator of a certain "type." In particular, frequent speakers would be those whom the party trusts to do a good rhetorical job, those who happen to occupy positions of leadership, and those belonging to a small block. Given that every party gets at least one speech slot per debate, members of smaller blocks would get to speak more often. As we discuss in the results section, these observations of the legislators are corroborated by the data.

In order to draw general conclusions in a context of multiple outcomes, we construct an index of legislative performance that aggregates the six objective measures of legislative performance described above. To construct the index of legislative performance we follow the procedure used in Kling, Liebman, and Katz (2007). The index is defined to be the equally weighted average of z-scores of its components, where the z-scores are calculated by subtracting the mean of two-year term legislators and then dividing by the standard deviation of two-year term legislators. Notice that in all cases higher performance measures have higher z-scores. In the results section we also present estimates for each separate outcome.

The variable of interest 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

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[6]To illustrate how attendance may capture forms of involvement, consider the case of César Jaroslavsky (UCR, Province of Entre Ríos), who was not involved in specific committee work nor introduced many bills of his own, but who played a central political role as majority leader. He was present in over 94% of all floor sessions, placing second in the attendance ranking.

of November 1983), male (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 that are not lawyers), leadership (a dummy variable that takes the value of one for legislators that are president of the chamber, chair of a committee, and majority or minority leader), 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 (a dummy taking the value of one for legislators belonging to a block containing less than four legislators), the distance in kilometers from the capital of the legislator's province to Buenos Aires, and a set of dummy variables for province.[7] [8]

Representatives in Argentina are elected through a closed party list at the provincial level, and not through a uninominal race at the level of a smaller legislative district, as in the United States. Under the party list system, the degree of electoral safety depends on how high up in the party ticket a legislator finds herself. For example, in 1983 the UCR had 19 candidates running for all the seats corresponding to the province of Santa Fe. But given the party's vote share and the proportional representation system, only the top 10 members were seated. Those legislators close to the 10th position in the ticket faced risk going forward, given that the party's electoral strength might erode, and that the legislator's ranking in a future party list depends largely on relatively permanent factors, such as the demographics of the legislator's home area. We develop a dummy variable to capture electoral safety in the following way: we will say a legislator is relatively safe if she entered Congress within the top half of her delegation (in our example, in the top 5 slots), and that she is relatively at risk otherwise. In this spirit, we define a dummy variable called *Slackness* that is equal to one whenever the legislator placed in the upper half of the party-province delegation, and

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[7]The legislative district is defined at the province level even if legislators may be informally linked to a home are within the province.

[8]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.

that is equal to zero otherwise.

4 Econometric model and results

Given random assignment, the impact of serving an initial four-year term relative to serving an initial two-year term can be estimated by 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 (where $t = 1984, 1985$, the two years following the assignment), 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.

Table 5 reports estimates of the impact of serving a four-year term relative to a two-year term on the overall index of legislative performance elaborated following Kling, Liebman, and Katz (2007).[9] Results with and without controls indicate that legislators serving a four-year term display better performance that those serving a two-year term and that the difference is statistically significant. The size of this overall effect of changing the term length from two to four years is, taking the two-year legislators as baseline, about a fifth of a standard deviation. The fact that a longer term increases the index of overall performance may be the result of different patterns of effects over the individual performance measures. To determine whether the effects are wide-ranging or concentrated on just one or two outcomes, we investigate next the effects on individual performance metrics.

In Table 6 we report estimates for the six separate metrics of performance. This analysis reveals that the effects of longer terms are not concentrated in one outcome or two. The point estimate of a longer term in office is positive for all six metrics and statistically significant for four of the six. Moreover, the differences in performance tend to be important in size.[10]

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[9] 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.

[10] The variables committee bills, floor speeches, bills introduced, and bills ratified take discrete values and are strongly skewed to the right with many observations at zero; consequently, ordinary least squares

Getting a longer term appears to significantly increase performance on floor attendance by 3% (relative to the mean of the two-year legislators). Committee attendance is about 12% higher for long term legislators, and the number of committee bills bearing the legislator's signature goes up by 14% in the uncontrolled regression, and by 19% in the controlled one. Floor speaking appears to respond to a longer term –the point estimates indicate an increase of 30% in the uncontrolled regression and a lower 13% in the regression with controls. Estimates of the control variables (not shown but available from the authors upon request) reveal that the opinions of legislators on the determinants of floor speaking were on target. In their view, floor speaking is more a reflection of type than of effort. Legislators predicted that floor speaking would be associated first and foremost with belonging to a small block. Indeed, this appears to be the strongest determinant of the frequency of floor speaking. They also indicated that occupying a leadership position or being a good orator would be associated with participating in floor debates. They were right on this count as well. A leadership position is a strong predictor of floor speaking. We do not have a direct measure of oratory skills, but one would imagine that holding a university degree or being a lawyer is correlated with debating abilities. These variables are indeed strongly related to speech giving. The legislators we interviewed indicated that representatives from remote districts face more of a challenge at maintaining a presence both in their districts and in the legislature. Indeed, performance measures are negatively, and for the most part very significantly, impacted when a legislator represents a district that is far away from Buenos Aires.

The idea that longer terms increase performance also appears to be backed by the measures of "bill production." The point estimates in columns (9) and (10) in Table 6 indicate that the number of bills introduced goes up by 14% and 20% respectively in the uncontrolled and controlled models. These estimates, however, are only marginally significant in the unclustered regression. When we switch attention from the "volume" measure of bill production to the "legislative efficacy" measure, namely the number of bills that pass, the

estimation would be inappropriate. In all these 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 that the correct specification is a negative binomial model for count data as adopted here.

estimates become strongly significant. The point estimates (see columns (11) and (12) in Table 6) indicate that moving from a two- to a four-year term increases the number of passed bills by around a 100%.[11] Overall, the results indicate a strong tendency for longer terms to increase legislative performance.

4.1 Robustness checks

To further validate our results, in Table 7 we report additional estimations under a wide range of alternative specifications and samples.

First, the significance of the term length variable is not affected when we cluster standard errors at the district level, or according to party-district combinations.

Second, all conclusions remain unchanged when we restrict the sample to those party province delegations that used the even/odd rule in order to assign legislators into the two groups, and when, in addition, we also exclude the first two legislators in the party list (we take this extra step because the difference between occupying an even vs. odd position is generally random but one could argue this may not apply to the top 1 position in the party list).

Third, we run separate regressions for the two main parties at that time in order to explore possible heterogeneity in the effect of term lengths according to political party. Despite the smaller sample size, we still find a positive and significant association between term length and legislative performance for legislators of both parties, while the effect is stronger for Peronists.

Finally, the value and significance of the coefficients of interest remain unchanged when we exclude from the sample those legislators that were leaders of the chamber or those few

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[11]Together with the number of committee bills signed, our main measures of pure legislative output are the number of bills each member introduced, and how many of these passed. We explore an alternative definition that considers not only the bills a legislator introduced but also those that she endorsed. Under the alternative definition the coefficient for bills introduced is similar to the one obtained previously. The coefficient for bills ratified is smaller, but the magnitude of the effect is still important (moving from a two- to a four-year term increases the number of bills approved by around 45%). The significance levels remain unchanged for both variables.

legislators that changed leader status during the sample period.[12]

4.2 Potential concerns

Even when our study relies on a well documented randomization, one can still harbor some potential concerns regarding the exogeneity and nature of the treatment. First, it could be the case that after the random assignment was done, re-optimizations took place that might have affected performance for reasons other than the change in term length. For example, it could be that after terms were allocated legislators given a four-year term obtained better committee assignments or more important positions in the committees they belonged to. Thus, in the presence of hierarchical re-optimization the conclusion that lengthening terms is a good idea would not follow if such extension were to benefit all legislators. Our experiment is quite unique in that it is well documented that all committee assignments, leadership positions, and placement along the internal hierarchy of the chamber were decided before the assignment of terms was done. Very few re-allocations are observed after the random assignment, and they are orthogonal to the term length assignment. Only seven legislators left the most important committees after the random allocation of terms (four two-year term and three four-year term legislators). Of the seven substitutes, three legislators ended their term in 1985 and four in 1987. Of all legislators who are considered leaders, only two left their position before December 1985 (one two-year term and one four-year term legislator). One of the substitutes ended his term in 1985 and the other in 1987. Results remain unchanged when we exclude from the sample those legislators that changed status as chamber leaders or moved in or out of the most important committees (see the last column in Table 7).

Second, it could be that the outcome of the lottery directly affects the morale of legislators, boosting the spirits of those who got a four-year term, and depressing the rest. In this case, the instrument would not be affecting behavior through its effect on the term length, but directly through its "win or loss" meaning. According to the literature in experimental psychology (see for instance Amsel, 1992), an implication of the frustration hypothesis is that we should observe an immediate drop in the performance of legislators allocated to

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[12]We experimented with different definitions of leaderhip and always found similar results.

two-year terms, followed by a graduate increase of performance as frustration gets diluted over time. Figure 1 displays the evolution of the performance differential across groups on a monthly basis. We show this for the four measures for which our data allowed such disaggregation (these plots obviate months where the legislature did not register activity). Although there is no rough and ready definition of exactly how long frustration effects should last, it is understood that if present they should affect only very few months after the randomization and then disappear. As Figure 1 shows, the higher performance of four-year legislators is not particularly correlated with the first few months.

5 Possible explanations

In this section we discuss informally and test empirically two possible explanations for the results we have found. Our discussion here makes reference to a simple theoretical model presented in Section 7 that encompasses both explanations.

5.1 Campaigning

A first possible explanation for the positive impact of term length on performance is that legislators with shorter terms may get distracted when campaigning for reelection. The legislators we interviewed pointed out that campaign obligations arrive over time as reelection nears, and that distance to one's constituents determines the degree of tension between legislative work and campaign obligations. Legislators representing remote provinces have to travel far in order to campaign, and therefore find it harder to keep up their legislative performance. Thus, if campaigning is the reason why two-year legislators performed less well in Congress, their performance deficit should be larger when they represent distant districts. This suggests, intuitively, that we should explore an econometric specification with an interaction term between the treatment variable and distance from Buenos Aires to the legislator's province.

Our simple model in Section 7 justifies such a specification. Our model shows how longer terms could foster legislative performance either because of a campaig rationale or because

a time-horizon rationale (to be discussed shortly), or both. The model shows how the campaigning hypothesis being true implies that distance amplifies the comparative static effect of term length on legislative performance. Therefore, we explore the campaign hypothesis by estimating a specification including an interaction term between receiving the long term assignment and the distance from Buenos Aires to the legislator's province. The result is reported in column (1) of Table 8. The distance interaction has the wrong sign and is far from significant, not allowing us to reject the null hypothesis that campaign distractions play no role driving the results presented in the previous section. Replacing the distance variable with a dummy for legislators that are not from Buenos Aires does not help the campaigning hypothesis either.

It seems *prima facie* counter-intuitive that campaigning, being a time-demanding activity, would not appear to differentially damage the short-term legislators. But, as was pointed out by the legislators we interviewed, given the party list system campaigning in Argentina is to a great extent a team effort at the party level. Legislators that are not running for office often campaign alongside those who are.

5.2   Time horizon effects and the investment logic

The second broad explanation for the result that longer terms enhance legislative performance is that the time horizon directly affects legislators' incentives. In a world where legislative activity is instantaneous in the sense that every unit of effort brings its reward immediately, legislators could have great incentives to exert effort even if their terms were short. But in a world where effort brings non-immediate rewards, effort decisions represent an investment and hence time horizons will be relevant. As formalized in our model in Section 7, one can see every unit of effort as an investment project triggering a stream of returns that accrue to a legislator in office. Given a maturity structure for those returns, longer terms are more likely to allow a legislator to recoup the costs of effort.

Is legislative activity compatible with the idea that some units of effort may yield returns that are relatively distant in time? In our view the answer is yes. In the case of effort going into authoring a bill, the mean time lag since the introduction of a bill to its approval was,

in our sample period, of 327 days, even abstracting from the time spent preparing the bill. Also, a legislator will often have to decide whether to spend time absorbing information that will be useful while a given policy issue remains current, which may be a few years. In the case of costs incurred to improve one's productivity (or lower one's variable costs of legislative involvement), note that some investments may be slow to amortize. A legislator may buy an apartment close to the legislature in order to lower her future costs of attending meetings, or shut down her private law firm in order not to have a second activity competing for her time and attention. Shorter-term legislators may decide not to incur these costs.

A second question on the plausibility of the time horizon/investment explanation is whether a change from a two- to a four-year term could significantly affect the effective time horizon facing legislators. The answer is yes because of the low reelection rates in Argentina. This rate was of 25% for our sample of legislators.[13]

As shown in Section 7, the time horizon hypothesis yields an implication we can take to the data: legislators who are electorally safer should care less about the term length they get. In one extreme, term length does not affect the expected time in office for someone whose reelection is guaranteed. In the other extreme, the term length affects one for one the expected tenure of someone who is certain not to be reelected. As a result, if safer legislators care less about term length, an interaction variable between being safer and getting the four-year term should be negative.

The variable capturing electoral safety is the variable "Slackness" introduced in Section 3. In column (2) in Table 8 we report results indicating that the interaction of the *Four-year term* variable and the electoral safety measure is indeed negative and is statistically significant. Being electorally safe appears to undo a substantial portion of the effect of being dealt a longer term.

These results support the idea that the effect of term length is to enhance legislative performance because of its impact on the time horizon facing legislators.

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[13]The average reelection rate for the 1983-2001 period was 20% (see Jones, Saiegh, Spiller and Tommasi 2002).

5.3 Intertemporal cooperation and social norms

There is an alternative investment logic story that is not exclusively focused on individual incentives and incorporates collective considerations. It is possibble that legislators may "invest" by working hard early in their terms in order to be allowed to shirk later, as part of a repeated game equilibrium where shirking early would trigger a collective reversion to shirking. There are two different models one can write that capture this story.[14] First consider a cohort of infinitely lived legislators elected for a single period but who can be reelected for ever.[15] Legislation is seen as a voluntary contribution game. Legislators may contribute low, medium, or high levels of effort. Effort is privately costly but legislative output is collectively beneficial, so each legislator would rather shirk and have others contribute. It is possible to characterize conditions involving the reelection probability (which acts as a discount factor), the costs of effort, and the returns to legislation, such that legislators cannot sustain high levels of cooperation when their terms last for a single period. At the same time, it is possible to characterize conditions such that legislators with two-period terms will be able to sustain an equilibrium where they cooperate at high levels during the first half of their terms, while allowing themselves to cooperate at medium levels during the second half. This profile is sustained by the threat of reverting to low cooperation if anyone deviates. In this model, extending term lengths from one to two periods allows stronger cooperation and higher performance.

Closer to the case of the Argentine legislature with its staggered renewal structure, consider next a version of the same game with overlapping cohorts of infinitely lived legislators. It is again possible to characterize conditions under which the extension of term lengths will make stronger cooperation possible. As a result, the fact that the empirical effects we identify could be driven by social norms pinning down equilibria in repeated games does not necessarily change the policy implications. In these models longer terms allow for more

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[14]The two models we describe next are available upon request.

[15]The models described below are related to that by Dickson and Shepsle (2001). They offer an interesting treatment with overlapping generations of finitely lived players. We focus on infinitely lived players in order to abstract from the last period issues and better capture the Argentine context, where term limits are not present.

cooperation with and without overlapping generations of players. The only exception occurs in the case where we assume that the legislature has a *fixed* amount of work to do, and the social norm simply allocates it unevenly, having legislators who are farther from reelection bear a larger share of the burden. This asymmetry could result directly from the staggered structure of the chamber regardless of the length of terms. It is however difficult to imagine why legislators would prefer lopsided effort allocations if overall productivity is fixed and they do not care about time horizons. In such a situation both discounting motives and a desire to smooth effort over time (which arises under any convexity in the cost of effort) would create a strict preference against lopsided allocations. The latter are hard to justify without a cooperation argument like the one discussed above, which is itself an investment argument.

Our data does not allow a conclusive test rejecting an explanation relying on social norms with or without an investment aspect. But on top of the theoretical reasons just outlined, we have two more reasons to be confident that such mechanisms are absent from the Argentine context. First, the effects we identify appear sensitive to legislators' *effective* time horizon (i.e., the degree of electoral safety matters). This indicates that a social norm tied to the term length cannot be the whole explanation.[16] Secondly, we consulted legislators for their interpretation of the results. They spontaneously suggested the possibility that the time horizon may affect the calculus of individual legislators, as well as the possibility that campaign distractions might matter. The legislators we talked to considered very implausible that intertemporal cooperation agreements could shape levels of performance in the Argentine context. (This is sensible given the low reelection rates in Argentina, but could be plausible in other contexts.) Their view was that there are many degrees of freedom in the individual choice of involvement by legislators, and that these choices could be affected by the time horizon facing them.

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[16]To be sure, one could still construct a game where players condition on the effective time horizon, rather than on the remainder of one's term. However, given the likely lack of common knowledge on the effective time horizon facing different individuals, such an equilibrium is highly implausible.

6 Additional evidence from the Senate

An important question is to what extent are our results unique to the House of representatives and to a specific instance in time. In order to address such concerns, we exploit another natural experiment in the Argentine Senate in 2001. This second instance, taking place seventeen years later, involved very different economic and political circumstances.

As a result of a constitutional reform in 1994, the whole Senate needed to be renewed in 2001, when the body's 71 senators were elected at the same time to start their terms on December 10.[17] The modification of term lengths and renewal rates required that some senators be assigned two-year terms, others four-year terms, and others six-year terms. The allocation was done through a well documented random assignment during a public legislative session on December 12 of 2001. The random assignment was performed at the district (i.e., province) level. All three senators from each province were jointly and randomly placed on a two-, four-, or six-year track. One implication of this design is we cannot use province dummies, although we can control for distance.

To keep with the House experiment where the short term legislators were on a two-year track, we will begin by comparing senators in the two-year track with all others (in the four- and six- year tracks). Table 9 shows the summary statistics, showing that the predetermined observables are balanced. The only one observable that shows a significant difference between the two and four + six year groups is distance, which is not an individual but a delegation characteristic. When looking at ten observables over two different experiments, it is likely that one will be significantly different due to chance.

Our dataset for the Senate contains yearly information on legislative performance and legislator characteristics for the two-year period starting in December 2001 and ending in December 2003. The database made available to us includes only three objective measures of legislative performance: floor attendance, the number of bills introduced by each legislator, and the number of bills that, having been introduced by each legislator, were also approved.

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[17]There were 71 senators (instead of 72) because one of the three seats belonging to the federal district was left vacant until 2003. Like House representatives, senators are eligible for reelection and face no term limits.

We have no information on committee activity and on-the-floor activity due to lack of records. Of the 71 legislators that started their term in December 2001, six resigned before December 2003. Thus the sample includes 130 observations corresponding to 65 legislators for two years.[18]

We define the *Long term* variable as a dummy taking the value one if the senator got a four- or six-year term, and the value zero if the legislator got a two-year term. Again, in order to draw general conclusions in a context of multiple outcomes we use an index of legislative performance.

In columns (1) and (2) in Table 10 we show results with and without controls for the Senate. These results on the index of legislative performance broadly confirm the picture emerging from the experiment in the House: longer terms enhance legislative productivity.[19] Delving into the individual metrics of performance (regression results not reported but available upon request), we find that the change of receiving a longer term (four or six years) over the mean performance of the two-year senators is of 2% for floor attendance, 49% for the number of bills introduced, and 27% for the number of bills passed. These percentages are, respectively, 3, 43, and 39 in the uncontrolled regressions (these figures can be recovered from Table 9). As shown in Table 9, only one of theses differences is significant, suggesting that most of the effect in the index regression reported in Table 10 is driven by the number of bills introduced. One should be careful not to downplay the evidence on the other two metrics, however, given that the differences in all three metrics go in favor of the long-term legislators, which is informative. In the case of attendance, the size of the difference between the short- and long-term senators is similar to the one found in the House, and in the case of bills passed the size of the effect is large, if imprecisely estimated.

The experiment in the Senate also allows us to revisit the problem of what explains the effects of longer terms. In columns (3) and (4) of Table 10 we provide an additional test

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[18]One of these legislators resigned before the random allocation. Of the other five legislators two were allocated to a two-year term, two were allocated to a four-year term, and one to a six-year term.

[19]When we consider three treatments categories (two-, four-, and six-year terms) we find that the point estimate of being assigned to a four-year term is possitive but smaller to the one associated to being assigned to a six-year term. In other words, effects appear to get stronger the longer the term assigned.

for the campaigning hypothesis. We exclude from the sample all senators in the two-year track, keeping only those in the four- and six-year tracks, and we also redefine the *Long term* variable to take the value of one for six-year senators and zero for the four-year ones. In this specification, results tend to favor the view that six-year legislators perform better than four-year legislators *during the first two years* of their tenures. At that early stage in their tenures campaigning considerations are absent in Argentine politics. The fact that those legislators in the longer track perform better so far in advance further backs the idea that the time horizon shapes incentives before campaigning becomes an issue. This reinforces the idea that an investment logic is at play.

Lastly, we enquire about the nature of the potential investments involved in legislative activity. This is useful from the perspective of the optimal design of terms. One possibility is that the investments made by legislators accumulate in a stock of expertise or advantage that can be carried forward, and that once accumulated renders legislators unresponsive to term lengths. This would be the case for instance if term lengths affected performance because they foster learning by doing about generic legislative aspects. Another possibility is that investments reflect continuing and diverse opportunities that legislators never cease to be interested in, provided they can be confident about repayment. If the first possibility were true, the investment logic would be relevant at relatively early stages of a legislator's career. Then it could be optimal to allow inexperienced legislators a long first term in order to incentivize learning and initial investments, but it would be desirable to have more senior legislators face shorter terms in order to benefit from stronger accountability. If the second possibility were true, term lengths could be determined without regard to seniority (which is the case in reality). In order to explore what type of investment predominates, we ask whether the effects of term lengths are stronger for inexperienced legislators. In columns (5) and (6) we estimate specifications including an interaction between the *Long term* variable and *Freshman*. If generic investments are what drive the investment logic, we would expect experienced legislators to care less about what term length they get. In other words, we would expect the interaction between *Freshman* and the *Long term* variable to be positive and significant. We find that the interaction effect between *Freshman* and tenure is not

significant and that it has the incorrect sign in the model with controls.[20] We conclude that investments either depreciate after a few years, or are related to varied and continuing opportunities that are also valuable for experienced legislators. As a result, nothing indicates that term lengths should be determined with regard to seniority, since the benefits of longer terms appear to accrue to experienced legislators too.

7 A simple model

In this section we present a very simple model that crystallizes the intuition why term lengths might have effects on effort and performance by altering the time horizon in office. Also, the model helps characterize tests that can help isolate an explanation for our main empirical results. In our model effort and performance are positively related, so to the effects of hypothesis testing and interpretation it is not very important whether the dependent variables in our empirical study are thought to proxy one or the other.

Environment and returns to effort

A politician enters office in period $t = 1$ to serve his first term; calendar periods are indexed with $t = 1, 2, ...$, while legislative terms are indexed with $i = 1, 2, ...$ The politician must decide how much effort e to exert during her first term. Assume for simplicity that effort is exerted at the very start of the term (computations are similar for any calendar period within a term, so shifting or adding effort instances only complicates algebra without adding insight).

To capture in the simplest possible way the fact that the time horizon might matter, the stream of returns to a unit of effort exerted in $t = 1$ can take two forms. In a state when streams are "long" (a state indicateed with $H = 1$) a unit of effort yields a unit return in each calendar period $t \geq 1$ in terms of policy achievements, legacy building, etc., for as long as the politician remains in office. In a state when streams are "short" (which we indicate

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[20]We tested this hypothesis using our data from the House experiment, and found no support for it, just as with the Senate data. The House data, however, is less suitable for the test than the one from the Senate because the House members in our dataset entered Congress in 1983, after a long dictatorship. As a result, only a handful of them had previous legislative experience, and the test is not very powerful.

with $H = 0$) a unit of effort yields a unit return for exactly $h \leq \tau$ periods. We assume the returns are deterministic but it is simple to add uncertainty. Moreover, the politician discounts the future according to the factor $\delta \in (0, 1)$. Suppose also that a legislator expects to be reelected with probability $p(\pi, \Sigma)$, which depends positively on the electoral safety parameter π and on the overall amount of electoral effort Σ exerted during the term preceding the election. In principle it is possible to make reelection probabilities change over time, but given our focus doing so does not yield additional insight, so we assume the probability of reelection is a stationary function. The parameter π tracks legislator characteristics such as the demographics of the legislator's district: coming from a populous district within a province dictates a higher position in the party list.

A legislator faces a first term length of τ calendar periods (where τ may change depending on treatment) and, if reelected, a future of infinitely many terms each of length T. As a result of the assumptions above, the politician perceives an expected stream of returns to a unit of effort exerted at the start of the first term equal to,

$$1 + \delta + \delta^2 + \delta^3 + ... + \delta^{h-1} + H\left(\delta^h + \delta^{h+1} + ... + \delta^{\tau-1}\right) + Hp(\pi, \Sigma)\left[\delta^\tau + \delta^{\tau+1} + ... + \delta^{\tau+T-1}\right] +$$
$$+ Hp(\pi, \Sigma)^2\left[\delta^{\tau+T} + \delta^{\tau+T+1} + ... + \delta^{\tau+2T-1}\right] + Hp(\pi, \Sigma)^3\left[\delta^{\tau+2T} + \delta^{\tau+2T+1} + ... + \delta^{\tau+3T-1}\right] + ...$$

This stream can be re-written as,

$$= \frac{\left(1 - \delta^h\right)}{1 - \delta} + H\frac{\left(\delta^h - \delta^\tau\right)}{1 - \delta} + H\delta^\tau\frac{1 - \delta^T}{1 - \delta}p(\pi, \Sigma)\left\{\left(1 + p(\pi, \Sigma)\delta^T + p(\pi, \Sigma)^2\delta^{2T} + ...\right)\right\} =$$
$$= \frac{\left(1 - \delta^h\right)}{1 - \delta} + H\frac{\left(\delta^h - \delta^\tau\right)}{1 - \delta} + Hp(\pi, \Sigma)\delta^\tau\frac{1 - \delta^T}{1 - \delta}\frac{1}{1 - p(\pi, \Sigma)\delta^T}. \tag{2}$$

The **time horizon hypothesis** entails (besides $\delta > 0$) that $H > 0$, so legislators care about the number τ of calendar periods in their first term.

Costs of legislative and electoral effort

Legislative effort e is costly to the politician according to the function

$$c(e) = \phi(\pi)\left(e + \sigma(\tau)\rho\right)^2. \tag{3}$$

The term $\phi(\pi)$ implies the cost function may differ for legislators with different electoral safety π. We are agnostic as to whether a higher π raises or decreases costs of effort –that is,

the function ϕ may be positively or negatively sloped.[21] Finally, the cost of effort depends also on the amount of electoral effort $\sigma(\tau)$ expended in the same calendar period. We assume that the electoral schedule imposes campaigning obligations such that by the end of the term the legislator has contributed the required effort Σ. This electoral effort is defrayed over time within the term. At the beginning of a term of length τ the politician must exert an amount of electoral effort $\sigma(\tau)$, and the impact on costs is larger if the legislator represents a more distant province–distance is proxied by $\rho \in [0,1]$. If campaign obligations increase with proximity to the election, then we have $\sigma'(\tau) < 0$, i.e., legislators at the beginning of a longer term have fewer electoral commitments. The inequality $\sigma'(\tau) < 0$ constitutes the **campaigning hypothesis**.

The problem of the legislator

The politician cares linearly about expected returns to political effort and about effort costs. Thus, using (2) and (3) an amount of effort e exerted at the start of the first term yields expected payoff,[22]

$$V(e) = e\left\{\frac{(1-\delta^h)}{1-\delta} + H\left[\frac{(\delta^h - \delta^\tau)}{1-\delta} + p(\pi, \Sigma)\delta^\tau \frac{1-\delta^T}{1-\delta}\frac{1}{1-p(\pi,\Sigma)\delta^T}\right]\right\} - \phi(\pi)[e + \sigma(\tau)\rho]^2,$$

The politician chooses effort e to maximize $V(e)$. The first order condition is,

$$\frac{(1-\delta^h)}{1-\delta} + H\left[\frac{(\delta^h - \delta^\tau)}{1-\delta} + p(\pi, \Sigma)\delta^\tau \frac{1-\delta^T}{1-\delta}\frac{1}{1-p(\pi,\Sigma)\delta^T}\right] - 2\phi(\pi)[e + \sigma(\tau)\rho] = 0,$$

from where we can solve for equilibrium legislative effort,

$$e^* = \frac{\frac{(1-\delta^h)}{1-\delta} + H\left[\frac{(\delta^h - \delta^\tau)}{1-\delta} + p(\pi, \Sigma)\delta^\tau \frac{1-\delta^T}{1-\delta}\frac{1}{1-p(\pi,\Sigma)\delta^T}\right]}{2\phi(\pi)} - \sigma(\tau)\rho. \tag{4}$$

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[21] On the one hand, it may be that individuals with a higher π face lower costs if electoral safety has any connection with legislative skill. But if safety is linked to exogenous notoriety or fortune, then the opportunity costs of legislative effort may be higher.

[22] The complete payoff of a legislator includes the returns to effort exerted in terms 2, 3, etc. But because the continuation game after a politician is reelected is identical regardless of the length of the first term, we abstract from it.

Comparative statics: treatment effect, and testable hypothesis to distinguish alternative explanations

The key question is whether longer terms will increase or decrease effort. The comparative static effect of term length τ on effort e^*–the theoretical correlate of the empirical treatment effect–is,

$$\frac{de^*}{d\tau} = \frac{-H\frac{\delta^\tau \ln \delta}{1-\delta}\left(1 - p\left(\pi, \Sigma\right)\frac{1-\delta^T}{1-p(\pi,\Sigma)\delta^T}\right)}{2\phi\left(\pi\right)} - \rho\sigma'\left(\tau\right). \tag{5}$$

Note that $\frac{de^*}{d\tau}$ is guaranteed to be positive whenever $\sigma'\left(\tau\right)$ is not too positive and $H = 1$. That means that longer term lengths will increase legislative effort due to possibly two different effects: (i) the time horizon hypothesis: given $H > 0$, a longer term guarantees a longer time to reap the rewards of legislative effort (given by the first term $\frac{-H\frac{\delta^\tau \ln \delta}{1-\delta}\left(1-p(\pi,\Sigma)\frac{1-\delta^T}{1-q(\pi,r(\pi))\delta^T}\right)}{2\phi(\pi)} > 0$), or (ii) because a legislator is busier with electoral commitments as the election draws nearer (given by the second term $-\rho\sigma'\left(\tau\right)$, which is also positive whenever $\sigma'\left(\tau\right) < 0$).

Next, we identify tests to detect whether one or both of these forces are at play in our empirical results.

Testing the campaign hypothesis. We study the effect of distance ρ on the treatment effect of term length on legislative effort:

$$\frac{d^2 e^*}{d\tau d\rho} = -\sigma'\left(\tau\right).$$

This means that if the campaign hypothesis is true ($\sigma' < 0$), then the treatment effect of a longer term must get larger for legislators representing more distant districts. As discussed in Section 5 and shown in column (1) of Table 8, this prediction is rejected by the data. In our model this means that $\sigma' = 0$.

Given expression (5), the fact that there is a treatment effect and that we cannot reject the null hypothesis of no campaign effects ($\sigma' = 0$), it follows that H must be positive –in other words, the time-horizon hypothesis must be true. However, we would like to find a more direct test that can corroborate this conclusion.

Testing the time horizon hypothesis. We first indicate what would be an intuitive although on its own inappropriate test of the time horizon hypothesis. One might imagine that legislators who are electorally safer (higher π) may work more because their implicit time

horizon in office is longer due to their higher reelection probability. It is easy to check that the comparative static effect of π on e^*, however, is ambiguous. In particular, if $\phi' > 0$ implying safer legislators have a higher opportunity cost for their time, safer legislators may work less. Table 5 shows that there is no significant effect of slackness–our proxy for electoral safety–on legislative performance (the point estimates are in fact negative), suggesting that ϕ is positively sloped.

Armed with this information, we can now derive a test of the time-horizon hypothesis. We study the effect of electoral safety π on the treatment effect of term length on legislative effort:

$$\frac{d^2 e^*}{d\tau d\pi} = \frac{H\frac{\delta^\tau \ln \delta}{1-\delta}\left[\left(1-\delta^T\right)\frac{\frac{dp(\pi,\Sigma)}{d\pi}}{\left(1-p(\pi,\Sigma)\delta^T\right)^2}\left(\phi\left(\pi\right)+\mu\right)+\left(1-p\left(\pi,\Sigma\right)\frac{1-\delta^T}{1-p(\pi,\Sigma)\delta^T}\right)\phi'\left(\pi\right)\right]}{2\left(\phi\left(\pi\right)+\mu\right)^2}.$$

Under $H = 0$ for all $\phi'\left(\pi\right)$ we have $\frac{d^2 e^*}{d\tau d\pi} = 0$. In contrast, Under $H = 1$ and $\phi'\left(\pi\right) \geq 0$, we must have $\frac{d^2 e^*}{d\tau d\pi} < 0$. As discussed in the previous paragraph, the data suggests that ϕ' is positive. It follows that if the time-horizon hypothesis is true, then safer legislators should care less about what term length they get dealt ($\frac{d^2 e^*}{d\tau d\pi} < 0$). This prediction is met with support in the data, as shown in column (2) of Table 8, further validating the idea that the treatment effects are driven by the change in the time-horizon.

8   Conclusion

We present a study of the effects of term length on the performance of politicians. The length of terms is a fundamental spring in constitutional design. To the best of our knowledge this is the first investigation of the effects of such institution relying on natural experiments. We begin by studying the impact of randomly assigned term lengths on the legislative performance of Argentine House representatives elected in 1983. The results indicate that legislators serving a four-year term have a better performance than those in a two-year track.

A natural experiment is typically restricted to a specific instance in time and space, leaving open the important question of the extent to which the results that have been obtained can be generalized. We take a step to address this second limitation by examining data

from a second, analogous, natural experiment in the Argentine Senate in 2001. This second experiment shows results that are consistent with the picture emerging from the first.

In this paper we also take steps not just to investigate whether term lengths matter and in which direction, but also to gain insight on how they matter. One possibility is that longer terms enhance the incentives of legislators because effort decisions represent investments that are slow to pay off. But another, perhaps more mechanical explanation is that legislators on a shorter track spend part of their time office worrying about their reelection campaign. Our data does not lend support for the idea that campaigning drives results, while largely supporting the idea that time horizons matter to legislators. Overall, our results support the idea that even when the accountability logic highlighted by Barro (1973) and Ferejohn (1986) may be important, in the context we study political incentives seem to be strongly affected by an investment logic.

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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, Spain, 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, 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	Group 1 (later assigned a four-year term)										Group 2 (later assigned a two-year term)									Total
	Total	UCR	PJ	PI	UCD	DC	AUT	MPJ	MPN	PB	Total	UCR	PJ	PI	UCD	LIB	MFP	MPN	PB	
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 de San Juan; LIB is Partido Liberal.

Table 3. Summary statistics - House

	Long track	*Short track*	*Difference of means*
Floor attendance (in %)	82.346	79.833	2.513**
	(0.733)	(0.726)	(1.032)
Committee attendance (in %)	56.507	50.872	5.635**
	(1.543)	(1.552)	(2.188)
Number of committee bills	47.336	41.397	5.939*
	(2.366)	(2.224)	(3.247)
Number of floor speeches	5.616	4.339	1.277
	(0.561)	(0.569)	(0.800)
Number of bills introduced	6.224	5.496	0.728
	(0.655)	(0.587)	(0.879)
Number of bills ratified	0.276	0.128	0.148***
	(0.042)	(0.025)	(0.049)
Age	50.168	50.868	-0.700
	(0.959)	(0.926)	(1.333)
Male	0.944	0.967	-0.023
	(0.021)	(0.016)	(0.026)
Freshman	0.944	0.934	0.010
	(0.021)	(0.023)	(0.031)
Lawyer	0.368	0.273	0.095
	(0.043)	(0.041)	(0.059)
University degree	0.184	0.157	0.027
	(0.035)	(0.033)	(0.048)
Leader	0.136	0.083	0.053
	(0.031)	(0.025)	(0.040)
Slackness	0.600	0.521	0.079
	(0.044)	(0.046)	(0.063)
Majority party	0.504	0.488	0.016
	(0.045)	(0.046)	(0.064)
Small block	0.056	0.058	-0.002
	(0.021)	(0.021)	(0.030)
Distance	6.598	6.82	-0.220
	(0.515)	(0.572)	(0.769)

Note: The long track corresponds to a four-year term. The short track corresponds to a two-year term. Leader is a dummy variable that takes the value one when the legislator is the president of the chamber, a majority or minority leader, or a committee chair. Freshman is a dummy taking the value one for Representatives without any previous legislative experience at the national level. Slackness is a dummy variable that takes the value one if, given the party-province list in the 1983 elections, the legislator placed in the top half of the elected delegation. Small block is a dummy variable that takes the value of one when the legislator belongs to a party holding three or fewer seats. Distance is the distance (in hundreds of kilometers) from the capital of the legislator's district to Buenos Aires (the seat of the national legislature). Standard errors are in parentheses. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level, based on a t test on equality of means.

Table 4. Correlations among measures of legislative performance

	Floor Attendance	Committee attendance	Committee bills	Floor speeches	Bills introduced	Bills ratified
Floor attendance	1					
Committee attendance	0.39	1				
Committee bills	0.27	0.49	1			
Floor speeches	0.04	-0.09	-0.08	1		
Bills introduced	-0.02	0.05	0.18	0.04	1	
Bills ratified	0.16	0.03	0.07	0.15	0.13	1

Note: correlations computed on raw data observed on yearly basis. Collapsing the data by individual yields similar results.

Table 5. The effects of term length on legislative performance

	Dependent variable: Index of legislative performance		
	(1)	(2)	(3)
Four-year term	0.205	0.188	0.186
	(0.049)***	(0.050)***	(0.051)***
	{0.061}***	{0.062}***	{0.063}***
Age		0.0004	0.001
		(0.002)	(0.003)
		{0.003}	{0.003}
Male		0.082	-0.004
		(0.137)	(0.125)
		{0.165}	{0.137}
Freshman		0.088	0.124
		(0.137)	(0.132)
		{0.181}	{0.172}
Lawyer		0.031	0.055
		(0.059)	(0.058)
		{0.074}	{0.073}
University degree		0.115	0.117
		(0.062)*	(0.067)*
		{0.071}*	{0.076}
Leader		0.201	0.211
		(0.091)**	(0.096)**
		{0.110}*	{0.113}*
Slackness		-0.021	-0.023
		(0.048)	(0.049)
		{0.058}	{0.060}
Majority party		0.134	0.128
		(0.052)***	(0.053)**
		{0.064}**	{0.065}**
Small block		0.132	0.140
		(0.124)	(0.118)
		{0.155}	{0.147}
Distance		-0.006	
		(0.004)	
		{0.005}	
District dummies	No	No	Yes

Notes: Huber-White robust standard errors are in parentheses. Standard errors clustered at the legislator level are in braces. All models include a time dummy and are estimated by OLS. The number of observations is 492. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

Table 6. The effects of term length on legislative performance by outcome

	Floor attendance		Committee attendance		Committee bills	
	(1)	(2)	(3)	(4)	(5)	(6)
Four-year term	2.513	2.548	5.635	6.259	0.133	0.175
	(0.903)***	(0.846)***	(2.189)***	(2.040)***	(0.073)*	(0.080)**
	{1.076}**	{0.956}***	{2.764}**	{2.498}***	{0.099}	{0.108}*
Change	3%	3%	11%	12%	14%	19%
Controls	No	Yes	No	Yes	No	Yes
Method	OLS	OLS	OLS	OLS	Negbin	Negbin

	Floor speeches		Bills introduced		Bills ratified	
	(7)	(8)	(9)	(10)	(11)	(12)
Four-year term	0.263	0.122	0.133	0.184	0.753	0.669
	(0.158)*	(0.146)	(0.149)	(0.114)*	(0.249)***	(0.251)***
	{0.197}	{0.172}	{0.184}	{0.135}	{0.256}***	{0.249}***
Change	30%	13%	14%	20%	112%	95%
Controls	No	Yes	No	Yes	No	Yes
Method	OLS	OLS	OLS	OLS	Negbin	Negbin

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. All models include a time dummy. Controls include Age, Male, Freshman, Lawyer, University degree, Leader, Slackness, Majority party, Small block, and the set of district dummies. The number of observations is 492. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

Table 7. Robustness checks

	Dependent variable: Index of legislative performance			
	(1)	(2)	(3)	(4)
Four-year term	0.205***	0.205***	0.174***	0.282***
	[0.051]	(0.052)	{0.064}	{0.073}
Number of observations	492	492	316	168
	Dependent variable: Index of legislative performance			
	(5)	(6)	(7)	(8)
Four-year term	0.146**	0.329***	0.217***	0.201***
	{0.067}	{0.106}	{0.063}	{0.063}
Number of observations	244	220	438	472

Notes: Standard errors clustered at party/district combinations are shown in brackets (column (1)). Standard errors clustered at the district level are shown in parentheses (column (2)). Standard errors clustered at the legislator level are in braces. Regression (3) includes only those party-province delegations that used the even/odd rule in order to assign legislators into the two groups, whereas regression (4) also excludes the first two legislators in the party list. Regression (5) includes only majority party (Unión Cívica Radical) legislators, whereas regression (6) includes only minority party (Partido Justicialista) legislators. Regression (7) excludes legislators that are leaders, and regression (8) excludes those legislators that change leader status during the sample period. All models include a time dummy and are estimated by OLS. **Significant at the 5% level; ***Significant at the 1% level.

Table 8. Tests for the campaigning and the time-horizon hypotheses

	Dependent variable: Index of legislative performance	
	(1)	(2)
Four-year term	0.226	0.300
	(0.082)***	(0.073)***
	{0.103}**	{0.090}***
Four-year term x Distance	-0.006	
	(0.008)	
	{0.010}	
Four-year term x Slackness		-0.207
		(0.106)**
		{0.127}*
Controls	Yes	Yes
District dummies	No	Yes

Notes: Huber-White robust standard errors are in parentheses. Standard errors clustered at the legislator level are in braces. Distance is the distance (in hundreds of kilometers) from the capital of the legislator's province to Buenos Aires (the seat of Congress). Slackness is a dummy variable that takes the value one if, given the party-province list in the 1983 elections, the legislator is placed in the top half of the elected delegation. All models include a time dummy and are estimated by OLS. Controls include Age, Male, Freshman, Lawyer, University degree, Leader, Slackness, Majority party, Small block, and Distance. The number of observations is 492. *Significant at the 10% level; **Significant at the 5% level; ***Significant at the 1% level.

Table 9. Summary statistics - Senate

	Long track	Short track	Difference of means
Floor attendance (in %)	83.345	80.975	2.3705
	(1.267)	(2.090)	(2.445)
Number of bills introduced	33.591	23.476	10.115
	(3.134)	(2.869)	(4.249)**
Number of bills ratified	2.318	1.667	0.652
	(0.361)	(0.294)	(0.466)
Age	50.750	52.238	-1.488
	(1.276)	(1.801)	(2.207)
Male	0.591	0.714	-0.123
	(0.075)	(0.101)	(0.126)
Freshman	0.545	0.571	-0.026
	(0.076)	(0.111)	(0.134)
Lawyer	0.455	0.333	0.121
	(0.076)	(0.105)	(0.130)
University degree	0.273	0.476	-0.203
	(0.068)	(0.112)	(0.131)
Leader	0.705	0.619	0.085
	(0.070)	(0.109)	(0.129)
Majority party	0.341	0.286	0.055
	(0.072)	(0.101)	(0.124)
Small block	0.091	0.190	-0.010
	(0.044)	(0.088)	(0.098)
Distance	1284.432	983.715	300.718
	(108.178)	(71.909)	(129.896)**

Note: The long track corresponds to four- and six-year terms. The short track corresponds to a two-year term. Leader is a dummy variable that takes the value one when the legislator is the president of the chamber, a majority or minority leader, or a committee chair. Freshman is a dummy taking the value one for Representatives without any previous legislative experience at the national level. Small block is a dummy variable that takes the value of one when the legislator belongs to a party holding three or fewer seats. Distance is the distance (in hundreds of kilometers) from the capital of the legislator's district to Buenos Aires (the seat of the national legislature). **Significant at the 5% level, based on a t test on equality of means.

Table 10. Evidence from the Senate

	Dependent variable: Index of legislative performance					
	(1)	(2)	(3)	(4)	(5)	(6)
Long term	0.353	0.298	0.449	0.451	0.342	0.346
	(0.154)**	(0.184)*	(0.201)**	(0.201)**	(0.240)	(0.260)
	{0.192}*	{0.231}	{0.241}*	{0.248}*	{0.279}	{0.338}
Freshman x Long term					0.020	-0.085
					(0.344)	(0.364)
					{0.387}	{0.462}
Controls	No	Yes	No	Yes	No	Yes
Number of observations	130	130	88	88	130	130

Notes: Huber-White robust standard errors are in parentheses. Standard errors clustered at the legislator level are in braces. In columns (3) and (4) we report regressions excluding two-year Senators, where Long term is a dummy variable that takes the value of one for legislators in a six-year track and zero for those in a four-year track. In all other models Long term is a dummy variable that takes the value of one for legislators in either a four-year or a six-year track and zero for those in the two-year track. Freshman is a dummy taking the value one for Senators without any previous legislative experience at the national level. All specifications include a time dummy and are estimated by OLS. Controls include Age, Male, Freshman, Lawyer, University degree, Leader, Majority party, Small block, and Distance. *Significant at the 10% level; **Significant at the 5% level.

Figure 1. Monthly evolution of performance differential by type of performance measure
(Difference in means, 4-year vs 2-year tracks)