

Guns and Votes*

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January 2016

Abstract

Why do politicians oppose even mild gun control regulations, despite overwhelming public support for them? We argue that this paradox can be explained by re-election motives, which can lead politicians to side with an intense pro-gun minority, against the interests of an apathetic majority. We develop this argument in a simple model of gun control choices, in which politicians are office and policy motivated and voters differ in preference intensity. To assess the evidence, we examine votes on gun-related legislation in the U.S. Senate. In line with the model's predictions, we show that senators are more likely to vote pro gun when they are close to re-election. Only Democratic senators “flip flop” on gun control, and only if the group of pro-gun voters in their constituency is of intermediate size.

JEL classifications: D72, I18.

Keywords: Gun control, electoral incentives.

*We are grateful to Micael Castanheira, Ernesto dal Bo, Mirko Draca, Allan Drazen, Matthew Gentzkow, Steve Levitt, John List, Dilip Mookherjee, Jim Snyder, and Noam Yuchtman for their helpful comments, as well as participants at the 2013 Political Economy NBER Summer Institute, the Faculty Discussion Group on Political Economy at Harvard University, and seminar participants at the University of Chicago, Berkeley University, Chicago GSB, University of Maryland, Georgetown University, ECARES, HEC Montréal, CEU Budapest, Cambridge University, and Max Planck Institute Bonn for their valuable suggestions. We are also indebted to Jorge Sanchez Bravo and Yasemin Satir for excellent research assistance. Funding from the FNRS and from the Centre for Social Conflict and Cohesion Studies (CONICYT/FONDAP/15130009) is gratefully acknowledged.

1 Introduction

For decades there has been a heated debate about gun control in the United States. On the one hand, gun control supporters argue that stricter regulations are needed to reduce violence. On the other hand, gun rights advocates argue that gun controls violate Second Amendment rights and are unlikely to be effective at reducing violent crimes.

Opinion polls reveal that the majority of Americans support stricter gun regulations. While most citizens oppose an all-out ban on guns, they clearly favor a series of less extreme gun-control measures. The extent of support varies across measures: in an ABC News-Washington Post poll carried out in January 2013, 88% of respondents favored background checks on firearms purchased at gun shows, 76% supported checks on buyers of ammunition, 71% backed a new federal database to track gun sales, and 58% favored a ban on high-capacity magazines. Support for gun regulations also varies over time: according to Gallup polls between 1999 and 2012, support for background checks at gun shows increased from 83% to 92%. Admittedly, poll results depend crucially on the way in which the question is framed. When they are asked about specific gun regulations, most respondents—in the country as a whole as well as in individual states—are in favor of them. When instead asked to choose between gun controls and gun rights, respondents tend to be equally split.¹ Overall, however, a vast majority of the electorate has long been in favor of a range of stricter gun regulations.

Why are then U.S. congressmen often reluctant to support even mild gun control measures, against the interests of a majority of their electorate? For example, a poll carried out between April 11 and 14, 2013 showed that 86% of respondents supported a law requiring background checks on people buying guns at gun shows or online (ABC News-Washington Post). Yet, less than a week later many senators voted against an amendment to require background checks for commercial gun sales. This dichotomy was pointed out by President Obama after the vote: “The American people are trying to figure out: How can something have 90% support and yet not happen?” Frustration with the inaction of Congress has led Obama to announce that he will seek to use his

¹A survey carried out in January 2013 by the Pew Research Center shows that 85% of Americans supported background checks for private and gun show sales; in all but two states (Delaware and North Dakota), a majority of respondents were in favor of background checks; in 42 states, support was at least 70%. The poll also shows that 80% of Americans supported laws to prevent people with mental illness from purchasing guns; in all but one state (Delaware), a majority of respondents were in favor of these laws; in 40 states, support was at least 70%. The same Pew Survey asked the question “What do you think is more important – to protect the right of Americans to own guns, or to control gun ownership?”; 51% of respondents said that it is more important to control gun ownership, 45% said it is more important to protect gun rights, and 5% were unsure or did not reply.

executive power to introduce new gun controls.²

In this paper, we provide an explanation for the reluctance of politicians to support widely popular gun regulations. We argue that understanding this “gun control paradox” (Schuman and Presser, 1978) requires taking into account politicians’ re-election motives, as well as differences in the *intensity* of voters’ preferences on gun control. As stressed by Goss (2006, p. 6), “American gun owners are intense, well organized, and willing to vote for or against candidates purely on the basis of their position on gun control.” They represent a “highly motivated, intense minority,” who prevails over a “larger, relatively apathetic majority.”³ This can lead politicians to support the interests of a minority of pro-gun voters.⁴

To guide our empirical analysis, we describe a simple model of gun control choices, in which incumbent politicians are both office and policy motivated. There are two groups of voters in the electorate: pro-gun voters, who are a minority of the electorate and care more intensely about gun control policies; and anti-gun voters, who represent a majority of the electorate but care less intensely about gun control.⁵ Minority voters may also be better informed about politicians’ choices on gun control.

In our model, politicians serve two-period terms, and their choices in the second period—when they are closer to facing re-election—have a larger impact on voters’ decisions. We show that politicians might support gun regulations in the first period, but oppose them in the second period. Only anti-gun politicians should “flip flop” on gun control, since they face a tradeoff between their policy preferences (or those of their party) and their re-election motives. Election proximity should affect their voting behavior only when they are seeking re-election (i.e. they are not retiring), and when

²See Obama’s first weekly address to the American people of 2016. This tough stance was feared by the NRA before Obama’s re-election, when it noted that “a second Obama administration with no future political campaigns to worry about will try to destroy this great American freedom” (“Gun industry thrives during Obama’s first term,” *Huffington Post*, October 19, 2012).

³In a national survey conducted by the Pew Research Center in January 2013 among 1,502 adults, most respondents ranked gun control relatively low on their priority list (18th out of 21 policy goals tested). Similarly, in a survey from Gallup, also conducted in January 2013, just 4% of respondents listed guns when asked for the most important issue facing the country.

⁴Similar arguments are often raised by the media: “Why aren’t the polling numbers on gun control swaying more members of Congress? Many of the poll numbers don’t capture the nuances of public opinion. For example, there is a significant difference in the level of passion of voters on the two sides of the issue. While members of the National Rifle Association or conservative gun owners home in on this issue, gun-control proponents may not register that sort of excitement” (“How Democrats got gun control polling wrong,” *National Journal*, April 18, 2013).

⁵Goss (2006) argues that gun control is a “missing movement” in America. Even though there are some organized gun-control groups, such as the Brady Campaign to Prevent Gun Violence or the Coalition to Stop Gun Violence, their membership pales in comparison to gun-rights groups. Membership figures are difficult to obtain, but Goss estimates that total membership in gun control organizations was 268,000 in 2005. By contrast, the NRA had approximately 4 million members in 2004.

the group of pro-gun voters in their constituency is of intermediate size.

To assess the validity of these predictions, we exploit the staggered structure of the U.S. Senate, in which senators serve six-year terms and one third of them is up for re-election every two years. This provides a quasi-experimental setting to verify whether election proximity affects the voting behavior of incumbent politicians on gun-related legislation. For any given vote, it is possible to compare the behavior of senators who belong to three different “generations,” i.e. who face elections at different times. We can also study whether election proximity affects the stance of individual senators, exploiting the fact that senators cast multiple votes on gun control during their terms in office.

To determine which votes to include, we rely on Gun Owners of America (GOA), a non-profit lobbying organization formed in 1975 to preserve and defend the Second Amendment rights of gun owners. Since 1994, GOA has been keeping track of key gun votes in Congress, indicating whether or not they support them. We study the voting behavior of U.S. senators on these votes for nine consecutive congresses. Our main sample covers the 1995-2010 period, but in robustness checks we include earlier votes.

First, we examine the impact of election proximity on the voting behavior of senators at large. We find that the last generation (i.e. the group of senators facing election within two years) is significantly more likely to vote pro gun than the previous two. Senators who are in the last two years of their mandates are between 3.4 and 9.6 percentage points more likely to vote in favor of pro-gun policies than senators in the first four years, depending on the specification. These changes imply that the predicted probability of voting pro gun increases by between 5.5 and 17.6 percent when senators approach re-election. The pro-gun effect of election proximity continues to hold when, rather than exploiting variation in the voting behavior of different senators, we compare the behavior of the same senator over time: flip flopping by individual senators is both common and recurrent.⁶ Inter-generational differences in senators’ votes on gun control are also robust to using different econometric methodologies and samples of votes, and including a wealth of controls to account for characteristics of legislators (e.g. party affiliation, gender, age), states (e.g. subscriptions to gun magazines, violent crime rate), and votes (e.g. margin of passage or rejection) that might affect senators’ voting behavior.

We next explore the heterogeneous effects of election proximity. We show that Republican senators do not change their voting behavior on gun control when they ap-

⁶Senators often change their stance on gun control more than once. For example, Senator Tom Daschle (Democrat from South Dakota) voted anti-gun in 1993 on 2 votes and in 1995 on 1 vote, when he belonged to the first and second generation, respectively. He then voted pro-gun on 2 out of 4 votes in 1998, when he belonged to the third generation. Following re-election, he voted again anti-gun in 1999 on 4 votes, when he belonged to the first generation.

proach re-election. By contrast, the probability that Democratic senators vote pro gun increases by between 16.6 and 18.9 percent in the last two years of their mandate.⁷ These results are consistent with the predictions of our theoretical model: Republican senators should take a pro-gun stance throughout their mandate, since their policy preferences are aligned with their re-election motives; by contrast, Democratic senators face a tradeoff between voting in line with their gun-control preferences and their re-election prospects, and may thus flip flop on gun control.

Finally, we focus on Democratic senators and examine whether their voting behavior depends on re-election motives and the size of the vocal minority in their constituency. According to our model, election proximity should affect the voting behavior of Democratic senators only if they are not retiring, and if the group of pro-gun voters in their constituency is of intermediate size. In line with these predictions, we find that inter-generational differences disappear for Democratic senators who are retiring. We also find that the effect of election proximity for Democratic senators is non-monotonic: it is only present when the group of pro-gun voters is of intermediate size.

Our paper contributes to the literature on political economy of gun control. Various papers focus on the effectiveness of gun control policies on crime, often reaching conflicting conclusions. In two influential studies, Lott and Mustard (1997) and Lott (1998) conclude that Carrying Concealed Weapons (CCW) laws have reduced violent crime. This finding has been disputed by Duggan (2001), among others. Another strand of the literature examines gun trafficking within the United States (e.g. Webster *et al.*, 2009; Knight, 2013) or internationally (DellaVigna and La Ferrara, 2010; Dube *et al.*, 2013). Few studies have examined U.S. legislators' voting behavior on gun control, focusing on specific bills and on the role of lobbies' contributions and constituencies' characteristics (e.g. Langbein and Lotwis, 1990; Langbein, 1993; Kahane, 1999; Lipford, 2000). A recent paper by Depetris-Chauvin (2015) provides evidence of electoral cycles in gun sales. Ours is the first paper to consider a large set of gun-related votes and examine how re-election motives affect politicians' choices.

Our paper is also related to a broad literature that studies how electoral incentives affect policy choices. Some studies have stressed the importance of electoral calendars when politicians are office motivated (e.g. Rogoff and Sibert, 1988; Rogoff, 1990). The

⁷This result confirms anecdotal evidence that Democratic senators are often afraid of supporting gun control, particularly if they seek re-election in pro-gun states. For example, pointing to Heidi Heitkamp—a Democratic senator from North Dakota—Larry Sabato, director of the University of Virginia's Center for Politics, said: "You think she's going to vote for gun control and have a prayer for re-election?" ("Gun control efforts are expected to be revived in Congress," *Times Union*, December 15, 2012).

role of preference intensity has been emphasized by List and Sturm (2006), who show that re-election motives can affect politicians' choices on environmental regulation. Our paper differs from theirs in two important ways. First, their empirical strategy to identify the effect of electoral incentives is to compare the policy choices of governors who can be re-elected to those of governors who face binding term limits. Our strategy exploits the staggered structure of the U.S. Senate, which allows to study how proximity to elections affects the choices of individual politicians over time. Second, while List and Sturm (2006) focus on environmental policy, we focus on gun control.

Finally, our paper contributes to the literature examining the determinants of the voting behavior of U.S. congressmen. The pioneering contribution by Peltzman (1985) studies senators' voting patterns on federal tax and spending. Recent contributions include Washington (2008), who investigates the effect of parenting daughters on the likelihood that House members will vote for reproductive rights, and Mian *et al.* (2010), who examine legislators' votes on two bills introduced in the aftermath of the recent financial crisis. Closest to our analysis is the paper by Conconi *et al.* (2014a), which exploits inter-cameral differences in term length and the staggered structure of the Senate to show that electoral incentives deter legislators from supporting trade liberalization reforms. Ongoing work by Conconi *et al.* (2016) examines the impact of election proximity on environmental policy choices.

2 Theoretical Framework

In this section, we develop a simple model of senators' gun control choices to help structure our empirical analysis.⁸ We build on standard probabilistic voting models (e.g. Enelow and Hinich, 1982; Lindbeck and Weibull, 1987; Dixit and Londregan, 1995; Grossman and Helpman, 1996, Persson and Tabellini, 2001, and Stromberg, 2004).

We focus on an incumbent senator who serves a mandate lasting two periods, with elections taking place at the end of the second period. In each period, the senator has to vote in favor of (0) or against (1) stricter gun regulations (e.g. opposing or supporting background checks on sales at gun shows). We denote with s_1 and s_2 her votes on gun regulations in period 1 and period 2, respectively.

Voters care about the senators' choices. In particular, the utility derived from gun regulation by a voter belonging to group- j is a weighted sum of her utility in both

⁸This model is a bare-bone version of the one presented in Bouton *et al.* (2014).

periods:

$$W_j(s_1, s_2) = -\alpha_j(\delta|s_j - s_1| + |s_j - s_2|),$$

where s_j is the bliss point of group j 's voters, and $\delta \in (0, 1)$, implying that voters put more weight on the senator's policy choice that are made closer to the elections.⁹ Group j constitutes a fraction n_j of the electorate.

To capture the existence of an "intense" pro-gun minority and an "apathetic" anti-gun majority, we suppose that there are two group of voters, $j \in \{M, m\}$. The two groups differ in three dimensions: (i) in *size*, with M representing the majority group ($n_M > n_m$); (ii) in the relative *intensity* of their preferences ($\alpha_M < 1 < \alpha_m$); and (iii) with respect to the *direction* of their preferences: $s_M = 0$, $s_m = 1$.

Besides gun regulations, voters care about other characteristics of the senator. The total utility of voter i in group j under the incumbent senator is

$$W_j(s) - \sigma_{ij} - \mu,$$

with $\sigma_{ij} \sim U[-\frac{1}{2\phi_j}, \frac{1}{2\phi_j}]$ and $\mu \sim U[-\frac{1}{2\gamma}, \frac{1}{2\gamma}]$. The parameter $-\sigma_{ij}$ represents an individual's ideological preference in favor of the incumbent, while $-\mu$ represents her general popularity.^{10,11}

At the end of the senator's mandate, voters decide whether to re-elect her or vote for a challenger. However, not all voters know what the senator did during her mandate. Let the variable $\xi_{ij} = 1$ if voter i in group j knows what the senator has done, and

⁹Several remarks are in order about this assumption. First, it is in line with theoretical studies emphasizing that voters suffer from a recency bias, following the so-called "what have you done for me lately?" principle (e.g. Fiorina, 1981; Weingast *et al.*, 1981; Ferejohn, 1986; Shepsle *et al.*, 2009). Second, empirical and experimental evidence provides strong support for the existence of such bias (e.g. Lewis-Beck and Stegmaier, 2000; Huber *et al.*, 2012; Healy and Lenz, 2014). Third, in this version of the model, the recency bias directly enters voters' utility function, i.e. voters care less about earlier decisions of politicians. We obtain similar results in a model in which voters care equally about the two periods ($\delta = 1$), but know more about the choices of the incumbent in the second period. Fourth, we assume the same δ for all voters. Yet, all we need for our results to hold is that the discount factor of minority voters is less than 1.

¹⁰As usual in probabilistic voting models, there is an implicit assumption that, for any incumbent, there are always voters that can be swung at the margin, i.e. the support of σ_{ij} is large enough. However, one could imagine situations in which, due to strong ideological divergences, some pro-gun voters may never vote for an incumbent, even if she adopts a pro-gun stance. Our results continue to hold (at least qualitatively) if we introduce such "partisan voters" in the model.

¹¹We could allow for a group-specific bias against or in favor of the incumbent by introducing a non-stochastic shifter, say, ψ_j in the distribution of σ_{ij} , i.e. $\sigma_{ij} \sim U[-\frac{1}{2\phi_j} - \psi_j, \frac{1}{2\phi_j} - \psi_j]$. This could capture differences in the average popularity of the incumbent with different groups of voters, e.g. Republican candidates are more popular among pro-gun voters than anti-gun voters. Introducing such bias would not affect our results, since the incentives of the incumbent would not change at the margin.

$\xi_{ij} = 0$ otherwise. The decision of re-electing the senator is based on a simple rule: each voter i in group j casts the ballot in favor of the senator if her utility under the senator has met some minimum standard \bar{u}_j .¹²

$$\xi_{ij}W_j(s) - \sigma_{ij} - \mu \geq \bar{u}_j.$$

For each individual i in group j , the senator assigns a probability χ_j that the voter knows what she has done during her mandate.

For any given μ , we can compute π_j , the fraction of each group voting for the senator, and then the probability of re-election of the senator:

$$\Pi(s) = \Pr_{\mu} \left(\sum_j n_j \pi_j \geq \frac{1}{2} \right) = \frac{1}{2} + \frac{\gamma}{\phi} \sum_j n_j \phi_j (\chi_j W_j(s) - \bar{u}_j),$$

where $\phi = \sum_j n_j \phi_j$. This expression illustrates the costs and benefits in terms of re-election prospects of a pro-gun vote in any given period. For instance, consider the case of a senator pondering two possible strategies: voting anti-gun in both periods – $(s_1, s_2) = (0, 0)$, and voting anti-gun only in period 1 – $(s_1, s_2) = (0, 1)$. The change in her probability of re-election is proportional to $n_M \phi_M \chi_M \alpha_M - n_m \phi_m \chi_m \alpha_m$. Indeed, $n_j \phi_j \chi_j \alpha_j$ is the expected fraction of group- j voters that can be swung by a change in the senator's voting behavior. Thus, when $n_M \phi_M \chi_M \alpha_M < n_m \phi_m \chi_m \alpha_m$, the senator attracts more votes by appealing to the minority (voting pro-gun) than by appealing to the majority (voting anti-gun).

We focus precisely on such scenarios in which, from a re-election prospects perspective, the “intense minority” of pro-gun voters prevails over the “apathetic majority” of anti-gun voters. A sufficient condition for this assumption to hold is that the minority voters more than compensate for the smaller size of their group ($n_m < n_M$) by caring relatively more about gun control ($\alpha_m > \alpha_M$), and/or by being more informed about politicians' decisions on gun control ($\chi_m > \chi_M$), and/or by being more homogeneous in their ideological preferences ($\phi_m > \phi_M$).

Besides her re-election prospects, the senator cares about the ballot she casts. Her utility is:

$$U(s) = \Pi(s) + \theta \omega(s),$$

¹²Our results do not rely on this specific retrospective voting rule. We can easily rewrite our model as a forward-looking voting model, in which two candidates credibly commit to a policy platform. In such a specification, \bar{u}_j would simply be replaced by voter i 's utility when the challenger wins the election.

where $\omega(s)$ captures the preferences of the senator’s party, and senator’s $\theta(\geq 0)$ is the relative importance of the party line (e.g. Levitt, 1996; Snyder and Groseclose, 2000; Ansolabehere *et al.*, 2001). Alternatively, $\omega(s)$ can be interpreted as the senator’s policy preferences (e.g. Levitt, 1996; Ansolabehere *et al.*, 2001; Washington, 2008).

Given the historical positions of U.S. parties on gun control, we assume that the Democratic party’s line is anti-gun:

$$\omega(0,0) > \omega(0,1) = \omega(1,0) > \omega(1,1),$$

while the Republican party’s line is pro-gun:

$$\omega(1,1) > \omega(1,0) = \omega(0,1) > \omega(0,0).$$

This simple model delivers three testable predictions.¹³

Prediction 1 *Election proximity should have a pro-gun effect on the voting behavior of Democratic senators, but no effect on Republican senators.*

A Democratic senator would like to vote “nay” in both periods to satisfy her party’s line. However, this is costly in terms of re-election prospects, since it would swing away many pro-gun voters and attract fewer anti-gun voters ($n_m\phi_m\chi_m\alpha_m > n_M\phi_M\chi_M\alpha_M$). To reduce these costs, she may decide to vote according to her preferences only in one period: she “flip-flops”. When she does so, she prefers to vote anti-gun in the first period because her choice in that period has a smaller impact on her re-election prospects ($\delta < 1$). By contrast, a Republican senator would like to vote “yea” in both periods to satisfy her party’s line. This is also the best strategy in terms of her re-election prospects, since it would attract many pro-gun voters and swing away fewer anti-gun voters.

Prediction 2 *Election proximity should only have a pro-gun effect on the voting behavior of Democratic senators who are seeking re-election.*

In our model, Democratic senators would only vote anti-gun because they are afraid of losing office. To see this, consider a Democratic senator who is not seeking re-election. This case can be captured by a large enough parameter θ , so that the incumbent’s re-election incentives are swamped by her policy preferences. The retiring Democratic senator thus votes anti-gun in both periods.

¹³For formal proofs, see Bouton *et al.* (2014).

Prediction 3 *Election proximity should only affect the voting behavior of Democratic senators if the group of pro-gun voters in their constituency is of intermediate size.*

When the vocal minority is small enough, voting pro-gun, even if only in the second period, does not lead to a large enough increase in the probability of re-election to compensate a Democratic senator for the cost of voting against her party’s line. When instead the group of pro-gun voters is large enough, a Democratic senator finds it worthwhile to support its interests in both periods. Therefore, a Democratic senator finds it worthy to flip flop only when the pro-gun group is of intermediate size.

3 Data

To assess the validity of the model’s predictions, we have assembled a novel dataset that allows us to link U.S. senators’ voting behavior on gun control to a wealth of characteristics of the legislators and their constituencies. In this section we describe our data, starting from our dependent variable. Tables A-1 and A-2 in Appendix 2 provide definitions and descriptive statistics for all the variables used in our regressions.

3.1 Roll-call votes on gun-related legislation

We examine the voting behavior of U.S. Senators on gun-related legislation. To determine our sample, we rely on the list of votes assembled by Gun Owners of America (GOA), a lobby whose main goal is to protect and defend the Second Amendment rights of gun owners. Since 1994, GOA has been keeping track of key votes in the U.S. Congress. Based on legislators’ decisions on these votes, GOA rates politicians on their gun positions. For the years 1994-1996, we obtain key votes from GOA’s newsletters, which report voting records for senators on key legislation. For subsequent years, we obtain the list of votes from GOA’s website.

One of the advantages of using this source is that we can directly identify votes that are supported by gun-rights groups: GOA lists all the votes it supported, i.e. for which it wanted congressmen to vote “yea.”¹⁴ These include two different types: votes to strengthen the rights of gun owners, and votes to reject gun-control legislation that threatens these rights. An example of the first type is the vote cast in the Senate on July 22, 2009 to pass an amendment introduced by Senator John Thune (R-SD),

¹⁴The National Rifle Association (NRA), the most well-known pro-gun lobby, publishes information on gun ratings of politicians, but does not keep track of key gun votes in Congress. In robustness checks, we include votes from Project Vote Smart, which includes only votes that receive considerable media attention and are passed or defeated by a close margin (see discussion at the end of Section 5).

allowing individuals to carry concealed firearms across state lines. An example of the second type is the vote on May 12, 1999 to table an amendment introduced by Senator Frank Lautenberg (D-NJ) to ban the private sales of firearms at gun shows unless buyers submitted to background registration checks.¹⁵

In our empirical analysis, we will study the determinants of GOA-supported votes, which fit the kind of decisions faced by politicians in our theoretical model. The rationale for this is twofold. First, these votes capture well politicians’ positions on gun control: senators’ decisions on votes supported by GOA are a strong predictor of their ratings by gun-rights organizations (see Bouton *et al.*, 2014). Second, these votes concern gun regulations on which there is a clear party divide: based on the definition of bipartisan cosponsorship from Harbridge and Malhotra (2011), none of these votes was bipartisan.¹⁶

Appendix 1 lists the 19 votes included in our main sample, as well as the description of each vote provided by GOA. Notice that 4 of these votes are not directly gun related, i.e. involve decisions not on gun regulations, but on other policies that are important to GOA as a lobby group. In some regressions, we will exclude these votes from our analysis.¹⁷

3.2 Characteristics of legislators

Our primary interest is to examine the impact of election proximity on the voting records of U.S. senators. As discussed above, senators serve six-year terms, and one third of them are up for re-election every two years (together with the entire House of Representatives). We define those senators facing election within two years as belonging to the third generation; those who face elections next belong to the second generation, while the first generation includes senators facing elections in no sooner than four years.¹⁸ The main regressors of interest for our analysis are thus the indicator variables $SenateG_{it}$, $G \in \{1, 2, 3\}$, capturing the generation to which senator i belongs in year t .

¹⁵In the U.S. Congress, a request to “table” a pending motion is a procedure to suspend consideration of the motion. A vote to table gun-control legislation is thus classified as a pro-gun vote by GOA.

¹⁶A vote is coded as bipartisan if at least 20% of its cosponsors are from a different party than that of the original sponsor. Notice that this definition can only be applied to votes on bills or amendments.

¹⁷GOA also lists votes that it did not support, i.e. for which it wanted congressmen to vote “nay.” We do not include these votes in our empirical analysis, since they are not congruent with our theoretical model. The reason for this is twofold. First, senators’ decisions on these votes have a much smaller impact on their ratings by gun-rights organizations than votes supported by GOA (Bouton *et al.*, 2014). Second, many of these votes involve uncontroversial gun-control measures, often sponsored by legislators from both parties. An example is the 1999 vote on an amendment to force gun sellers to include trigger locks with every handgun sold, which passed by a large margin (78-20) and was introduced by Senator Herb Kohl (D-WI) and co-sponsored by Orrin Hatch (R-UT) and John Chafee (R-RI).

¹⁸We use the term generation instead of class, since the class facing re-election changes each election. For example, Class I senators faced re-election in 2012, while class II senators did in 2008.

Party affiliation is known to be a strong predictor of politicians’ support for gun rights, with Republicans being systematically more pro gun than Democrats (e.g. Lipford, 2000). In our theoretical model, we have relied on these party differences to derive predictions about the impact of election proximity on the voting behavior of Republican and Democratic senators. To empirically assess these predictions, we include the dummy variable $Republican_{it}$, which is equal to one if senator i belongs to the Republican party.¹⁹ We also control for the role of demographic characteristics, by including the variables $Female_i$ and Age_{it} in our analysis.

To verify the role of electoral incentives, we construct the dummy variable $Retiring_{it}$, which takes value 1 during the six years of a senator’s last mandate. The data come from Overby and Bell (2004), augmented using information from the website rollcall.com. Retiring senators are those who voluntarily departed (for personal reasons or to pursue other office), excluding those who were expelled or defeated in primary or general elections.

Several studies find that lobby contributions are a strong predictor of congressmen’s voting behavior (Mian *et al.*, 2010). In the case of gun control votes, Langbein and Lotwis (1990) and Langbein (1993), among others, have explored the role of contributions of pro- and anti-gun lobbies. We gather data of campaign contributions from gun-rights and gun-control lobbies from the Center for Responsive Politics. The variables $Gun-rights\ contributions_{it}$ and $Gun-control\ contributions_{it}$ record campaign contributions received by senator i in year t from gun-rights and gun-control lobbies (in thousands US\$), respectively.²⁰ As discussed below, our key results concerning the effect of election proximity hold regardless of whether or not we include lobby contributions.

In robustness checks, we include two additional controls for legislators. The variable $Margin\ of\ victory_{it}$ measures the difference in votes between the winner (senator i) and the runner-up in the last election.²¹ Finally, the variable $Tenure_{it}$ measures the number of congresses a senator has served.

¹⁹We allow this variable to be time varying, since two senators in our sample (Ben Nighthorse Campbell and Arlen Specter) switched from one party to the other. Four senators switched from one of the parties to being independent: senators Joe Lieberman and Bernard Sanders (coded as Democrats), and senators Robert Smith and James Jeffords (coded as Republicans).

²⁰The Center for Responsive Politics provides information on the contributions received by individual politicians for each Congress. In our analysis, we assign to each year of a Congress the total amount of contributions received in that Congress.

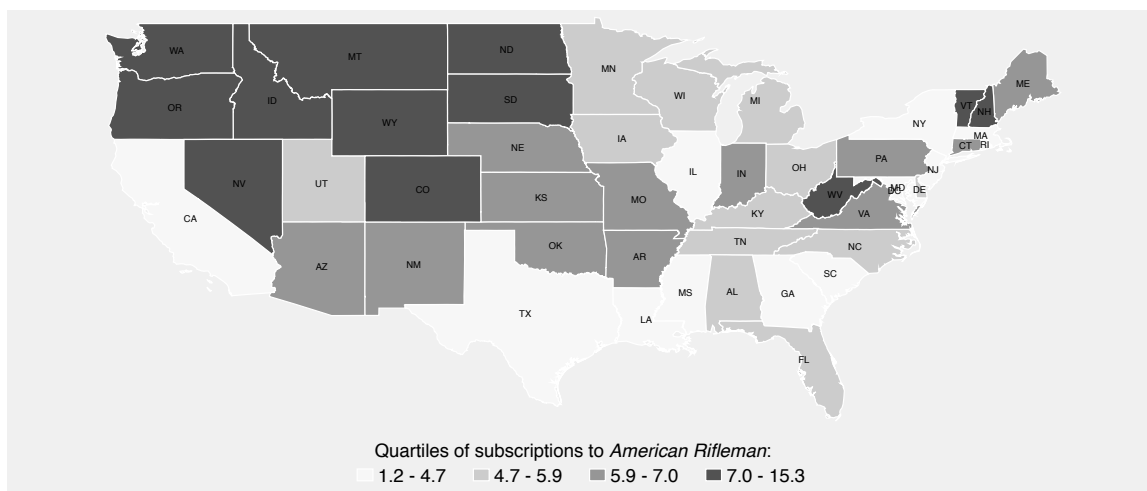
²¹More precisely, $Margin\ of\ victory_{it} = \frac{v_i - v_r}{v_i + v_r}$, where v_i and v_r denote respectively the votes received by the incumbent and the runner-up.

3.3 Characteristics of constituencies

We include a set of variables to control for differences across senators’ constituencies.

To proxy for the size of the pro-gun minority, we use state-level data of subscriptions to gun magazines. These data come from audit reports of circulation from the Alliance for Audited Media. *American Rifleman* is published by the NRA and is the gun magazine with the largest circulation.²² The variable *Gun magazine subscriptions_{jt}* is the number of subscriptions to *American Rifleman* per 1,000 inhabitants in state j and year t . Figure 1 shows that there is significant variation in per capita subscriptions across states. Somewhat surprisingly, per capita subscriptions to gun magazines are higher in some Democratic-leaning states (e.g. Oregon, Washington) than in some Republican-leaning states (e.g. Texas, Georgia).²³ This can be partly explained by the fact that subscriptions to gun magazines tend to be higher in rural states.²⁴

Figure 1: Subscriptions to *American Rifleman* magazine per 1,000 inhabitants



Notes: The figure shows quartiles of the average number of subscriptions to *American Rifleman* magazine per 1,000 inhabitants for each of the 48 contiguous U.S. states. The corresponding numbers for Alaska and Hawaii are 16.5 and 3.0, respectively. The average is taken over the period 1993–2010.

²²*American Rifleman* is the default magazine that individuals receive when joining the NRA. In 2010, *American Rifleman* had 53% of the total circulation of NRA magazines, followed by *American Hunter* with 30% and *America’s 1st Freedom* with 17%. It was also the leading magazine in 49 of the U.S. states (the exception was Wisconsin, in which *American Hunter* was the leading one). Our results are unaffected if we use subscriptions to *American Hunter* instead of *American Rifleman*, or if we sum subscriptions to both magazines to proxy for the size of the pro-gun minority.

²³For each of the four Presidential elections that have occurred during our sample period, we have computed the share of votes for the Republican candidate in each state. The correlation between this variable and *Gun magazine subscriptions_{jt}* is 0.27.

²⁴Using information from the U.S. Census Bureau, we find that the correlation between the share of each state’s population living in rural areas and per capita subscriptions to gun magazines is 0.39.

The variable $Crime\ rate_{jt}$ is the number of violent crimes (murder and non-negligent manslaughter, forcible rape, robbery, and aggravated assault) per 1 million inhabitants in state j and year t , from the Federal Bureau of Investigation (FBI).

The variable $Education_{jt}$ indicates the proportion of the population of state j in year t with a college degree. The sources are the Current Population Survey (CPS) for years 1994–2006 and the American Community Survey (ACS) for years 2007–2010.

In some specifications we also include the dummy variable $Swing\ state_{jt}$, which is equal to 1 if in state j the margin of victory in the last presidential election was less than 5%.²⁵

3.4 Characteristics of votes

Snyder (1992) argues that, when interest groups list key votes in Congress, they select a disproportionate number of close votes, exaggerating the degree of extremism and bipolarity. This does not seem to be a concern for our sample of votes, since GOA includes many votes that passed or were rejected by a wide margin (the margin of passage or rejection for votes supported by GOA ranges between 2 and 91 votes, with a median of 24). Nevertheless, in robustness checks, we include the dummy variable $Close\ vote_v$, which takes the value of 1 if the vote was approved or rejected with a margin smaller than the median margin of passage or rejection for all votes in our sample.

In some specifications, we also control for the direction of the vote by including the dummy variable $Accept_v$, which is equal to 1 if vote v is to accept pro-gun legislation (rather than to reject gun-control legislation).

4 Empirical strategy

We follow two complementary strategies to identify the effect of election proximity of senators' votes on gun control. First, we exploit variation in the voting behavior of *different senators*, depending on which generation they belonged to at the time of the vote. Second, we exploit changes in the voting behavior of the *individual senators* over time.

Using our first strategy, we verify whether election proximity has an impact on sen-

²⁵We can also construct the variable $Gun\ production_{jt}$, using information from the Bureau of Alcohol, Tobacco, Firearms and Explosives. Unfortunately, this is only available for the period 1998–2010, so including it in our analysis would reduce the size of the sample. When we tried including it, it was never significant and our main results were unaffected.

ators’ voting behavior by estimating the following model:

$$Vote_{ijvt} = \beta_0 + \beta_1 Senate3_{it} + \beta_2 \mathbf{X}_{it} + \beta_3 \mathbf{W}_{jt} + \beta_4 \mathbf{Z}_v + \nu_j + \eta_t + \epsilon_{ijvt}. \quad (1)$$

The dependent variable is $Vote_{ijvt}$, which is equal to 1 if senator i from state j votes pro gun on vote v in year t . In our main sample, this occurs when a senator votes “yea” on a GOA-supported vote (either to introduce pro-gun legislation or to reject gun-control measures).²⁶

The main regressor of interest is $Senate3_{it}$, the dummy variable for the third generation of senators, identifying legislators who are closest to facing re-election. For ease of exposition, we combine the first and second generations of senators into one omitted category.²⁷ According to the first prediction of our theoretical model, there should be inter-generational differences in senators’ voting behavior. In particular, if election proximity increases the probability that a legislator votes pro-gun, the coefficient of the variable $Senate3_{it}$ should be positive and significant.

The matrix \mathbf{X}_{it} includes additional controls for legislators (e.g. party affiliation, gender, age), \mathbf{W}_{jt} is a matrix of state-specific characteristics (e.g. crime rate, education), and \mathbf{Z}_v includes vote-specific controls (e.g. vote dummies, a control for whether the vote was close). In our benchmark specifications, we also include two sets of fixed effects: ν_j are state dummies, capturing time-invariant characteristics of constituencies that may affect senators’ voting behavior (e.g. rural); η_t are year dummies, which allow us to account for year-specific variables (e.g. share of Democratic senators in Congress). In alternative specifications, we either replace the year dummies with vote dummies or add interactions between state and year dummies. Notice that, when we include such interactions, we identify the effect of election proximity based on differences in the voting behavior of senators from the same state in the same year. This allows us to account for changes in voters’ preferences over gun regulation due to a shock in a specific state and year (e.g. a shooting rampage).

In our benchmark regressions, we estimate equation (1) using a probit model, but the results continue to hold if we use of a linear probability model (LPM). We cluster standard errors at the state level, but the results are similar if we cluster standard errors at the vote level.

One might be concerned that the timing of the votes could be correlated with charac-

²⁶There are 55 instances in which a senator did not cast a vote, representing 3% of the total number of votes. Our results are unaltered if we include these observations and code them as a “nay”.

²⁷The results are virtually identical if we only include first-generation senators in the omitted category: $Senate3_{it}$ remains positive and significant and $Senate2_{it}$ is not statistically significant.

teristics of the senators who belong to the third generation (e.g. their party affiliation). If this is the case, a positive correlation between belonging to the third generation and voting pro gun may be driven by selection effects rather than by the impact of election proximity. Notice, however, that the the distribution of Democratic and Republican senators up for re-election is rather balanced.²⁸ Furthermore, the inclusion of year or vote dummies alleviates this concern, by allowing us to control for the composition of the Senate at the time of the vote.

Our second empirical strategy fully deals with this concern by comparing the voting behavior of individual senators over time. We estimate the following model:

$$Vote_{ijvt} = \lambda_0 + \lambda_1 Senate3_{it} + \lambda_2 \mathbf{X}_{it} + \lambda_3 \mathbf{W}_{jt} + \lambda_4 \mathbf{Z}_{vt} + \rho_i + \eta_t + \epsilon_{ijvt}, \quad (2)$$

in which we include senator fixed effects (ρ_i), year fixed effects (η_t), as well as controls for legislators (\mathbf{X}_{it}), their constituencies (\mathbf{W}_{jt}) and the votes (\mathbf{Z}_v). To estimate equation (2), we use a linear probability model to avoid the incidental parameter problem.

In these estimations, the effect of election proximity is identified only by comparing the voting behavior of the same senator over time, when he or she belonged to different generations. In this case, if we find evidence of inter-generational differences in senators' voting behavior, they cannot be driven by selection effects in the timing of the votes. This strategy also allows to account for the role of unobservable characteristics of politicians that may affect their voting behavior (e.g. personality traits, attitude vis-à-vis gun control).

5 Empirical results

5.1 The impact of election proximity

Table 1 presents our benchmark regressions, in which we verify the pro-gun effect of election proximity, comparing the voting behavior of senators who are closest to the end of their term when casting their vote (for whom the dummy variable $Senate3_{it}$ is equal to 1) with that of senators who are further away from re-election. The various specifications differ in terms of the regressors and the fixed effects that we include, or in the sample of votes.

²⁸In our sample of votes there are on average 16 Democratic senators who belong to the third generation (with a minimum of 12 senators in 2007-2008 and a maximum of 19 in 2005-2006). Recently, the party split has become more unbalanced. For example, in the 2012 election, 23 Democratic senators were elected (in addition to 2 independents who caucus with the Democrats); they will be up for re-election during the 115th Congress (2017-2018).

Table 1: The pro-gun effect of election proximity, comparing across senators

Dep. variable: Model: Sample of votes:	Vote _{ijvt} Probit							
	All				Directly gun-related			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Senate3 _{it}	0.060*** (0.020)	0.041*** (0.014)	0.034*** (0.013)	0.087** (0.038)	0.078** (0.031)	0.050*** (0.016)	0.047*** (0.013)	0.096** (0.044)
Republican _{it}		0.385*** (0.032)	0.334*** (0.028)	0.603*** (0.058)		0.344*** (0.035)	0.301*** (0.030)	0.537*** (0.067)
Male _i		0.048 (0.041)	0.048 (0.038)	0.084 (0.118)		0.063 (0.063)	0.056 (0.056)	0.125 (0.161)
Age _{it}		-0.004*** (0.001)	-0.004*** (0.001)	-0.009*** (0.003)		-0.004** (0.002)	-0.004** (0.001)	-0.008** (0.003)
Gun-control contributions _{it}		-0.025*** (0.009)	-0.033*** (0.012)	-0.046* (0.026)		-0.023** (0.009)	-0.032*** (0.011)	-0.037 (0.025)
Gun-rights contributions _{it}		0.003* (0.002)	0.006** (0.003)	0.007 (0.007)		0.003 (0.002)	0.006** (0.003)	0.005 (0.007)
Gun Magazine Subscriptions _{jt}		0.013 (0.021)	0.003 (0.022)			0.028 (0.028)	0.024 (0.029)	
Violent Crime Rate _{jt}		0.002 (0.002)	0.002* (0.001)			0.001 (0.002)	0.001 (0.002)	
Education _{jt}		-0.008 (0.007)	-0.008 (0.007)			-0.010 (0.009)	-0.008 (0.008)	
Predicted Probability	0.616	0.614	0.613	0.548	0.622	0.621	0.621	0.546
Year dummies	yes	yes	no	yes	yes	yes	no	yes
State dummies	yes	yes	yes	yes	yes	yes	yes	yes
Vote dummies	no	no	yes	no	no	no	yes	no
Year × State dummies	no	no	no	yes	no	no	no	yes
Observations	1767	1767	1767	829	1281	1281	1281	616
Pseudo R-squared	0.421	0.596	0.710	0.381	0.446	0.594	0.711	0.347

Notes: The table reports marginal effects from a probit model, with robust standard errors in parentheses, adjusted for clustering at the state level. The dependent variable $vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . ***, ** and * indicate statistical significance at 99%, 95% and 90%, respectively.

In column 1 we report the results of a parsimonious specification in which we only include our key regressor of interest and year and state fixed effects, while in column 2 we include additional controls for senators and their constituencies. In column 3 we replace year fixed effects with vote fixed effects (our sample includes years with more than one vote). In column 4 we include $Year \times State$ dummies, identifying the effect of election proximity only based on differences in the voting behavior of senators representing the same state. Finally, in columns 5-8 we reproduce the same specifications as in columns 1-4, but restricting the analysis to votes that are directly gun-related.

Focusing first on our key regressor, we see that the estimated marginal effects for $Senate3_{it}$ are always positive and statistically significant. Our estimates imply that senators in the last two years of their term are between 3.4 and 9.6 percentage points more likely to vote pro gun, compared to senators in their first four years. Using the predicted probabilities reported at the bottom of the table, we find that election proximity increases the probability of a pro-gun vote by between 5.5 and 17.6 percent.²⁹ Notice that these results capture the impact of election proximity on the voting behavior of *all* senators, independently of their party affiliation. We will later show that the effect is much larger when focusing on Democratic senators.

Regarding the other regressors, we find that politicians are split along party lines: Republican senators are much more likely to vote pro gun. This confirms the assumption in our theoretical model about the differences in the policy preferences of politicians who belong to the two parties. Of the demographic characteristics, only age has a significant (negative) effect on gun control. The estimated coefficient of the male dummy is positive but not significant, suggesting that female senators may be more supportive of gun control, but that there are too few to precisely estimate this effect (only 23 out of 204 senators in our sample are female). State-level variables are never significant because their limited variation is captured by the state dummies. If we remove these dummies from the specifications in columns 2-4 and 6-8, the estimated coefficient for gun magazine subscriptions becomes positive and highly significant. Education, on the other hand, becomes negative and significant, while crime rate remains statistically insignificant.

The coefficient on gun-rights (respectively gun-control) contributions is positive (respectively negative), though significant only in some specifications. As pointed out by Mian *et al.* (2010), one should be cautious about interpreting these results, since lobby groups are likely to give contributions only to selected senators. Indeed, in our sample of 204 senators, 80 of them did not receive contributions from either lobby. In the words

²⁹In each specification, the increase in the predicted probability due to election proximity is computed dividing the marginal effect for $Senate3_{it}$ by the average predicted probability.

of Stratmann (2002, 346), “if interest groups contribute to legislators who support them anyway, a significant correlation between money and votes does not justify the conclusion that money buys votes. In this case, the same underlying factors that cause a group to contribute to a legislator might also cause a legislator to vote in the group’s interest.” Still, the specifications of columns 1 and 5 of Table 1 show that our results concerning the impact of election proximity on senators’ voting behavior continue to hold if we drop the variables *Gun-rights contributions_{it}* and *Gun-control contributions_{it}*.³⁰

As discussed in the previous section, we can also identify the role of election proximity by exploiting changes in the voting behavior of the same senator over time, when he or she belonged to different generations. The results of six specifications estimated using this alternative methodology are reported in Table 2. Notice that in these specifications we cannot include senators’ time-invariant characteristics like gender (which are already accounted for by the senator fixed effects) and age (since we always include year dummies). However, we are able to keep party affiliation since some senators changed party during our sample period.³¹

The estimated coefficients for *Senate3* are always positive and statistically significant, and since they are derived from a linear probability model, they provide an immediate quantification of the effects of the regressors on the likelihood of voting pro gun. They indicate that the probability that an individual senator supports pro-gun policies increases between 3.8 and 6.4 percentage points when close to re-election –which is similar to the marginal effects obtained in Table 1, when comparing the voting behavior of different senators. Notice that these results are solely identified by senators flip flopping on gun control, i.e. changing their voting behavior throughout their terms.

Concerning the other controls, one difference with Table 1 is that the estimated coefficients for the variables *Gun-rights contributions_{it}* and *Gun-control contributions_{it}* are no longer significant, suggesting that there is little variation in the amount of money received by individual senators during their mandates. In addition, an increase in violent crime rate in a senator’s constituency is associated with more support for pro-gun policies.

Summing up, we find that election proximity has a pro-gun effect on senators’ voting behavior. This result is identified both by comparing the behavior of different senators voting on the same legislation and the behavior of individual senators across different votes. Inter-generational differences in senators’ voting behavior on gun control are also

³⁰The results presented in the following sections are also robust to excluding these variables.

³¹The *Republican* dummy captures the effect of senators switching parties (see footnote 19). Our results on the effect of election proximity remain unchanged if we exclude party affiliation or remove these senators.

robust to carrying out analysis on the full samples of votes or only the directly gun-related votes, including different sets of controls and fixed effects, and using different econometric models.

Table 2: The pro-gun effect of election proximity, comparing within senators

Dep. variable: Model: Sample of votes:	Vote _{ijvt} LPM					
	All			Directly gun-related		
	(1)	(2)	(3)	(4)	(5)	(6)
Senate3 _{it}	0.040** (0.019)	0.042** (0.020)	0.038* (0.020)	0.062** (0.024)	0.064** (0.030)	0.062** (0.030)
Republican _{it}		0.200** (0.097)	0.197** (0.097)		0.184** (0.084)	0.183** (0.084)
Gun-control contributions _{it}		0.006 (0.007)	0.006 (0.007)		0.006 (0.008)	0.006 (0.008)
Gun-rights contributions _{it}		-0.000 (0.000)	0.000 (0.000)		-0.001 (0.002)	-0.001 (0.002)
Education _{jt}		-0.010 (0.009)	-0.010 (0.009)		-0.018 (0.011)	-0.018 (0.011)
Violent Crime Rate _{jt}		0.006*** (0.002)	0.006*** (0.002)		0.006** (0.002)	0.006** (0.002)
Gun Magazine Subscriptions _{jt}		0.000 (0.020)	0.001 (0.021)		-0.014 (0.023)	-0.015 (0.023)
Senator dummies	yes	yes	yes	yes	yes	yes
Year dummies	yes	yes	no	yes	yes	no
Vote dummies	no	no	yes	no	no	yes
Observations	1840	1840	1840	1363	1363	1363
R-squared	0.190	0.201	0.317	0.223	0.230	0.350

Notes: The table reports coefficients of a linear probability model, with robust standard errors in parentheses, adjusted for clustering at the senator level. The dependent variable $Vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . ***, ** and * indicate statistical significance at 99%, 95% and 90%, respectively.

5.2 Heterogenous effects

In what follows we show that, in line with the three predictions of the theoretical model, the impact of election proximity on senators' voting behavior depends on their party affiliation, whether they are retiring or seeking re-election, and the size of the pro-gun minority in their constituency.

5.2.1 Party affiliation

We start by assessing further the validity of the first prediction of our model: election proximity should only have a pro-gun effect on the voting behavior of Democratic senators. As in the previous section, we carry out this exercise using different samples of votes, including different sets of controls and fixed effects, and employing alternative econometric models.

Table 3 reports the results of regressions in which we allow the effect of election proximity to differ between parties. To do so, we include the dummy variables *Senate3Democrat* and *Senate3Republican*, which take the value of 1 when a Democratic or Republican senator belongs to the third generation, respectively. We also include the variable *Senate12Republican*, which identifies Republican senators belonging to the first two generations. In these regressions, the omitted category includes Democratic senators belonging to the first and second-generation. Thus, the estimated coefficient for *Senate3Democrat* captures the effect of election proximity on Democratic senators, while the corresponding effect for Republican senators is found by testing whether the marginal effects for *Senate3Republican* and *Senate12Republican* are statistically different from each other (see the tests at the bottom of the table).

Columns 1 and 2 quantify the effect of election proximity across senators. In columns 3 and 4 we include senator dummies, which allow us to quantify the effect of electoral proximity for a given senator.³² Using both identification strategies, we find that election proximity has no impact on the stance of Republican senators: the tests at the bottom of the table indicate that their voting behavior does not depend on which generation they belong to. By contrast, election proximity has a pro-gun effect on the voting behavior of Democratic senators: in all specifications, the estimates for the variable *Senate3Democrat* are positive and significant. These findings are in line with the first prediction of our model: Republicans' policy preferences are aligned with their re-election motives, so they should vote pro gun throughout their terms in office; by contrast, Democrats face a tradeoff between their policy preferences and their re-election prospects, so they should be more likely to vote pro gun at the end of their terms, when their policy choices have a greater impact on their probability of retaining office.

³²Notice that identification of *Senate3Democrat*, *Senate3Republican* and *Senate12Republican* does not rely on senators switching parties (we obtain similar results if we remove these senators).

Table 3: The impact of election proximity, party differences

Dep. variable: Model:	Vote _{ijvt}			
	Probit		LPM	
Sample of votes:	All	Directly gun-related	All	Directly gun-related
	(1)	(2)	(3)	(4)
Senate3 Democrat _{it}	0.045** (0.022)	0.058** (0.024)	0.080** (0.039)	0.098** (0.045)
Senate3 Republican _{it}	0.421*** (0.034)	0.386*** (0.046)	0.258** (0.105)	0.253*** (0.095)
Senate12 Republican _{it}	0.426*** (0.033)	0.373*** (0.034)	0.245** (0.104)	0.228** (0.092)
Male _i	0.046 (0.040)	0.060 (0.063)		
Age _{it}	-0.004*** (0.001)	-0.004** (0.002)		
Gun-control contributions _{it}	-0.026*** (0.010)	-0.025** (0.011)	0.002 (0.007)	0.002 (0.008)
Gun-rights contributions _{it}	0.004* (0.002)	0.004 (0.003)	-0.000 (0.000)	0.000 (0.002)
Gun Magazine Subscriptions _{jt}	0.013 (0.021)	0.029 (0.028)	0.002 (0.021)	-0.011 (0.023)
Violent Crime Rate _{jt}	0.002 (0.002)	0.001 (0.002)	0.007*** (0.002)	0.005** (0.002)
Education _{jt}	-0.008 (0.007)	-0.010 (0.009)	-0.011 (0.009)	-0.019* (0.011)
Test Senate3 Republican _{it} = Senate12 Republican _{it} (p-value) ^a	0.804	0.679	0.472	0.459
Predicted probability, Democrats	0.312	0.339		
Predicted probability, Republicans	0.884	0.858		
Year dummies	yes	yes	yes	yes
State dummies	yes	yes	no	no
Senator dummies	no	no	yes	yes
Observations	1767	1281	1840	1363
Pseudo R-squared	0.596	0.594		
R-squared			0.203	0.232

Notes: Columns 1-2 report marginal effects from a probit model, with robust standard errors in parentheses, adjusted for clustering at the state level. Columns 3-4 report coefficients of a linear probability model, with robust standard errors in parentheses, adjusted for clustering at the senator level. The dependent variable $Vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . ***, ** and * indicate statistical significance at 99%, 95% and 90%, respectively. ^a χ^2 -test in columns 1-2, F-test in columns 3-4.

The results of Table 3 indicate that the pro-gun effect of election proximity documented in Tables 1 and 2 is driven by changes in the voting behavior of Democratic senators. The estimates of Table 3 imply that the effect of election proximity on Democratic senators is much larger than what found in the previous tables, when looking at

all senators: the probability that Democratic senators vote pro gun increases by between 14.4 and 17.1 percent in the last two years of their terms, an effect more than twice as large than the one found in Table 1 (columns 2 and 6) or Table 2 (columns 2 and 5).

5.2.2 Re-election motives

The empirical results presented so far provide clear support for the first prediction of our theoretical model: third-generation senators are more likely to vote in favor of pro-gun policies, but only if they belong to the Democratic party.

We next assess the validity of the second prediction, according to which retiring Democratic senators should be immune from electoral incentives and thus vote according to their preferences throughout their terms. To this purpose, in Table 4 we focus on the voting behavior of Democratic senators, and define the dummy variables *Senate3Retiring* and *Senate3NotRetiring*, which take value 1 when a third-generation senator is either retiring or running for re-election, respectively. We also include the term *Senate12Retiring* which identifies Democratic senators who are retiring and are serving the first four years of their last term in office. In these specifications, the omitted category only includes first- and second-generation Democratic senators who are seeking re-election.

During our sample period, 21 Democratic senators announced that they were stepping down from office. In columns 1 and 2, the effect of retirement is identified by comparing the voting behavior of different senators. In columns 3 and 4, in which we include senator fixed effects, identification comes from comparing the voting behavior of retiring senators in their last term with that in previous mandates.

The estimated marginal effects for *Senate3NotRetiring* are positive and highly significant in all specifications, reflecting the pro-gun effect of election proximity for Democratic senators who are seeking re-election. In line with the second prediction of our model, election proximity has only a pro-gun effect on Democratic senators who are seeking re-election (see the test at the bottom of the table).³³ In terms of magnitude, the effect is even larger than in Table 3: for Democratic senators who are not retiring, election proximity increases the probability of a pro-gun vote by between 21.3 and 27.8 percent.

³³The results reported in column 2 actually show that retiring Democratic senators are *less* likely to vote pro-gun when they approach the end of their last term. Recall that our coding for the dummy variable *Retiring_{it}* takes the value of 1 during the six years of a senator's last mandate. This result might thus be due to the fact that senators took the decision to retire towards the end of their last term.

Table 4: The impact of election proximity on Democrats, retiring or seeking re-election

Dep. variable: Model:	Vote _{ijvt}			
	Probit		LPM	
Sample of votes:	All	Directly gun-related	All	Directly gun-related
	(1)	(2)	(3)	(4)
Senate3 Not Retiring _{it}	0.077*** (0.028)	0.100*** (0.031)	0.087** (0.041)	0.126*** (0.048)
Senate3 Retiring _{it}	-0.192** (0.094)	-0.757*** (0.092)	-0.124 (0.189)	-0.194 (0.255)
Senate12 Retiring _{it}	-0.067 (0.095)	-0.049 (0.087)	-0.007 (0.137)	-0.078 (0.189)
Male _i	0.011 (0.071)	0.040 (0.088)		
Age _{it}	-0.004** (0.002)	-0.004** (0.002)		
Gun-control contributions _{it}	-0.026 (0.026)	-0.012 (0.008)	-0.000 (0.007)	-0.001 (0.009)
Gun-rights contributions _{it}	0.011** (0.005)	0.004 (0.008)	-0.001 (0.011)	-0.009 (0.008)
Gun Magazine Subscriptions _{jt}	0.041 (0.042)	-0.004 (0.051)	-0.015 (0.046)	-0.079* (0.044)
Violent Crime Rate _{jt}	-0.002 (0.004)	-0.001 (0.004)	0.008*** (0.002)	0.010*** (0.003)
Education _{jt}	0.001 (0.015)	-0.004 (0.022)	-0.033** (0.014)	-0.056*** (0.020)
Test Senate3 Retiring _{it} = Senate12 Retiring _{it} (p-value) ^a	0.317	0.000	0.222	0.507
Predicted probability, Not Retiring	0.379	0.375		
Predicted probability, Retiring	0.189	0.197		
Year dummies	yes	yes	yes	yes
State dummies	yes	yes	no	no
Senator dummies	no	no	yes	yes
Observations	703	548	907	668
Pseudo R-squared	0.512	0.602		
R-squared			0.282	0.330

Notes: Columns 1-2 report marginal effects from a probit model, with robust standard errors in parentheses, adjusted for clustering at the state level. Columns 3-4 report coefficients of a linear probability model, with robust standard errors in parentheses, adjusted for clustering at the senator level. The dependent variable $Vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . ***, ** and * indicate statistical significance at the 99%, 95% and 90%, respectively.

^a χ^2 -test in columns 1-2, F-test in columns 3-4.

The overall effect of retirement is also in line with what our theoretical model would predict: retiring Democratic senators are more likely to vote anti gun, in line with their policy preferences. Based on the specification of column 1, the predicted probability that a retiring Democratic senator votes pro gun is only 19%, while it is 38% for a

Democratic senator who is still running for re-election. The results are analogous when computed using the specification of column 2.

5.2.3 Size of the pro-gun minority

In line with the first two predictions of our model, the results presented above show that election proximity has a pro-gun effect on the voting behavior of senators, and that this effect is driven by Democratic senators who are seeking re-election.

In this section, we assess the validity of the third prediction of our model: Democratic senators should only flip flop on gun control when the size of the pro-gun minority in their constituency, proxied by per capita subscriptions to gun magazines, is neither too small nor too large.

When looking at Democratic senators in our sample, we find that many are elected in states that are traditionally Democratic leaning, which have either low (e.g. California and New Jersey) or high levels of per capita subscriptions to gun magazines (e.g. Oregon or Vermont). Some are even elected in states that are traditionally Republican leaning and have high per capita subscriptions (e.g. Montana and North Dakota).³⁴ Moreover, there is considerable time variation in per capita subscriptions to gun magazines during our sample period (see Figure A-1 in Appendix 2).

According to the third prediction of our model, we should find an inverted U-shaped relationship between the probability that a Democratic senator flip flops and per capita subscriptions to gun magazines in her state. To verify this, we restrict again our sample to Democratic senators and interact the variable *Senate3* with *Gun magazine subscriptions* and its square term.³⁵ Our theory suggests that the estimate for the linear term should be positive, while the square term should have a negative sign.

The results of the four specifications reported in Table 5 clearly support the third prediction of our model. In the first two columns we use subscriptions to *American Rifleman* magazine to proxy for the size of the vocal pro-gun minority and we consider all GOA votes (column 1) or only directly gun-related votes (column 2). Although the coefficients of interest are not precisely estimated, the test at the bottom of the table indicates that *Senate3* and the two interaction terms are jointly significant at 1%. In the last two columns, we re-estimate the same specifications using per capita subscriptions to *American Hunter* magazine. As discussed earlier, this is the second most important

³⁴Only five states did not have a Democratic senator during our sample period: Idaho, Kansas, Mississippi, Utah and Wyoming.

³⁵We obtain similar results if we instead use the entire sample and introduce additional interactions with *Republican*. The results are also similar if we exclude retiring senators from the sample.

gun magazine after *American Rifleman*. This set of results is similar to the first two columns.

Table 5: The impact of election proximity on Democrats, by size of the pro-gun minority

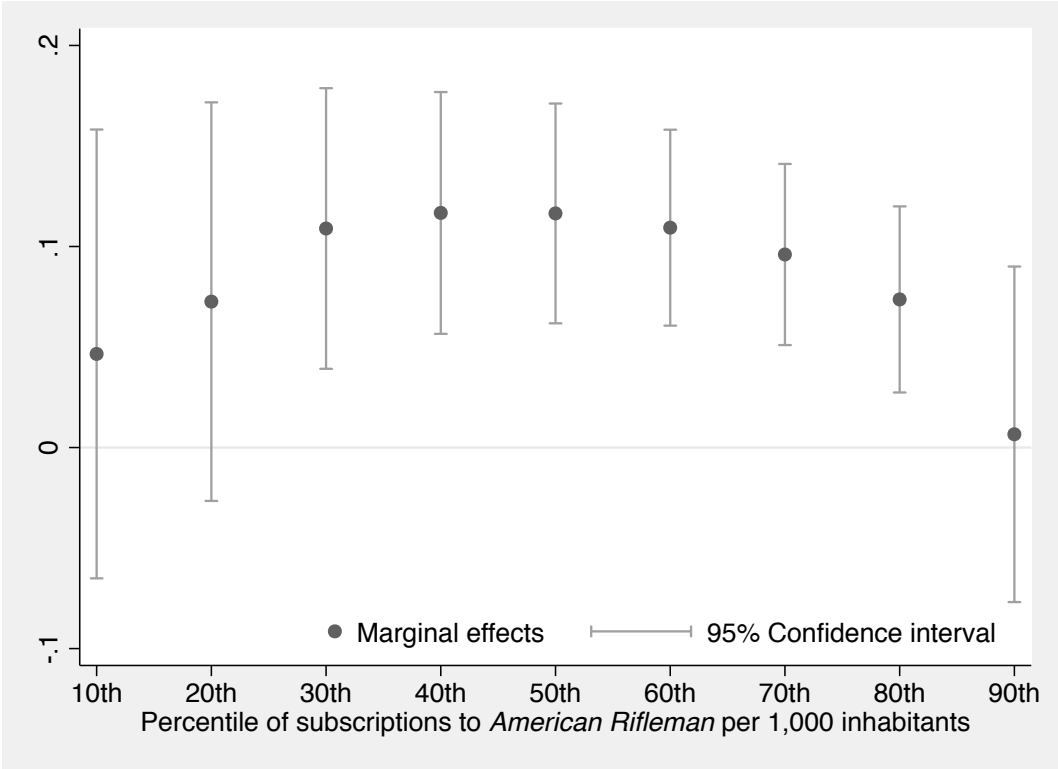
Dep. variable: Model: Sample of votes:	Vote _{ijvt} Probit			
	American Rifleman		American Hunter	
	All (1)	Directly gun-related (2)	All (3)	Directly gun-related (4)
Senate3 _{it}	-1.317 (1.526)	-3.051 (2.738)	-0.759 (0.720)	-1.361 (1.340)
Senate3 _{it} * Gun Magazine Subscriptions _{jt}	0.590 (0.421)	1.394 (0.901)	0.499* (0.261)	1.008** (0.509)
Senate3 _{it} * Gun Magazine Subscriptions _{jt} ²	-0.048* (0.029)	-0.125* (0.074)	-0.045** (0.022)	-0.108** (0.045)
Gun Magazine Subscriptions _{jt}	0.891** (0.383)	1.258** (0.552)	1.307** (0.551)	2.663*** (0.976)
Gun Magazine Subscriptions _{jt} ²	-0.036** (0.015)	-0.067*** (0.017)	-0.062* (0.036)	-0.162*** (0.056)
Male _i	-0.033 (0.402)	0.201 (0.710)	-0.050 (0.378)	0.253 (0.625)
Age _{it}	-0.029*** (0.010)	-0.044*** (0.012)	-0.033*** (0.012)	-0.052*** (0.014)
Gun-rights contributions _{it}	0.083*** (0.028)	0.084 (0.058)	0.098*** (0.027)	0.138*** (0.050)
Gun-control contributions _{it}	-0.262** (0.133)	-0.191 (0.191)	-0.289** (0.133)	-0.228 (0.168)
Violent Crime Rate _{jt}	-0.006 (0.022)	0.006 (0.025)	-0.006 (0.024)	0.005 (0.028)
Education _{jt}	0.048 (0.092)	0.100 (0.155)	-0.006 (0.084)	-0.041 (0.166)
Joint test for Senate3 _{it} and interactions (p-value)	0.005	0.000	0.006	0.000
Year dummies	yes	yes	yes	yes
State dummies	yes	yes	yes	yes
Observations	703	548	703	548
Pseudo R-squared	0.511	0.601	0.512	0.604

Notes: The table reports coefficients of a probit model, with robust standard errors in parentheses, adjusted for clustering at the state level. The dependent variable $vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . The variable *Gun magazine subscriptions_{jt}* is the number of magazine subscriptions to *American Rifleman* in columns 1 and 2, and *American Hunter* in columns 3 and 4, per 1,000 inhabitants. ***, ** and * indicate statistical significance 99%, 95% and 90%, respectively.

We provide a graphical representation of these results in Figure 2, based on the specification of column 2 (the qualitative results would be identical if the figure were

based on any other specification of Table 5). This figure shows the marginal effects for Democratic senators belonging to *Senate3* for different percentiles of the distribution of gun magazine subscriptions. This allows us to illustrate how the impact of election proximity on senators' voting behavior varies with the size of the pro-gun minority in their constituency.

Figure 2: The impact of election proximity on Democrats, by size of the pro-gun minority



Notes: The figure shows average marginal effects for $Senate3_{it}$, for various percentiles of gun magazine subscriptions (based on estimates from column 2 in Table 5). Error bars are $\pm 95\%$ confidence intervals.

Figure 2 clearly supports the non-monotonic relationship implied by Prediction 3: election proximity only affects the voting behavior of Democratic senators if the pro-gun group in their constituency is neither too small nor too large. In particular, there is no effect in constituencies with per capita subscriptions to *American Rifleman* in the bottom 20th percentile. On the other hand, the minority has to be quite large (i.e. above the 80th percentile) to eliminate flip-flopping behavior.

5.3 Additional robustness checks

In what follows, we discuss the results of a series of additional estimations to verify the robustness of our main finding, i.e. the impact of election proximity on senators' voting

behavior. The results of these regressions can be found in Appendix 3.

First, in Table A-3 we reproduce the same specifications of Table 1 using a linear probability model. Our results are unaffected when employing this alternative methodology, and the point estimates for *Senate3* are similar to the marginal effects computed using a probit model.

Second, in Table A-4 we add two sets of additional votes to our original sample. In columns 1 to 4 we include two key votes on gun control that were cast in 1993, the year before GOA started collecting congressional votes. The first vote was on an amendment “Prohibiting the Possession of Semi-Automatic Assault Weapons” (S Amdt 1152), which introduced restrictions on the manufacture, transfer, and possession of certain semiautomatic assault weapons and large capacity ammunition feeding devices. The second vote was on the “Brady Handgun Violence Prevention Act” (H.R. 1025), which instituted federal background checks on firearm purchasers in the United States. The bill was named after James Brady, who was shot during an attempted assassination of President Ronald Reagan on March 30, 1981 (see Lipford, 2000 for more details). In columns 5-8, we include all gun-related votes listed by Project Vote Smart, a non-profit organization dedicated to disseminate information about candidates and elected officials. Project Vote Smart keeps track of key U.S. congressmen’s decisions on various policy issues. Key votes are identified based on various criteria, including whether they received media attention and whether they passed by a small margin. For gun control, Project Vote Smart lists 14 votes between 1993 and 2010, 5 of which are already in our main sample.³⁶ In all columns of Table A-4 we find that the coefficient on *Senate3* is positive and statistically significant.

Finally, in Table A-5 we include additional controls to account for other potential drivers of senators’ voting behavior on gun control. In columns 1 and 5, we include the state-specific variable *Swing state_{jt}*, which identifies battleground states (i.e. states in which no Presidential candidate had an overwhelming majority in the previous election). In columns 2 and 6, we include two senator-specific variables: *Margin of victory_{it}*, which captures the gap in votes between senator *i* and the runner-up in the last election; and *Tenure_{it}*, which accounts for senators’ length of service. In columns 3 and 7, we add two vote-specific controls: the dummy variable *Close vote_v*, which takes the value of 1 if the vote was closer than the median margin of passage or rejection for all votes in

³⁶Unfortunately, Project Vote Smart does not specify the direction of the vote, so we manually code votes as pro or anti gun. We exclude one vote (“Charging Teens as Adults for Crimes Involving a Firearm” (S Amdt 1117), co-sponsored by senators Carol Moseley Braun (D-IL) and Christopher Bond (R-MO)) that is also listed as a key crime vote, since senators may have opposite views on guns and crime.

our sample; and the dummy variable $Accept_v$, which identifies votes to accept pro-gun legislation (rather than to reject gun-control legislation). Finally, in columns 4 and 8, all variables are included together. The results presented in Table A-5 show that including these additional controls do not affect our main result concerning the pro-gun effect of election proximity, as $Senate3$ remains positive and highly significant. The other regressors are also unaffected. Among the new controls, only the estimated coefficients for $Close\ vote_v$ and $Accept_v$ are statistically significant in some specifications.

6 Conclusions

In this paper, we have argued that electoral incentives can help explain the “gun control paradox,” i.e. why U.S. congressmen are reluctant to support even mild gun-control regulations, notwithstanding broad public support for these measures. The general idea is that politicians may prefer to support the interests of an intense minority of voters, on issues that are of secondary importance to the rest of the electorate. In the case of gun control, although a majority of voters favors stricter regulations, a minority opposes them with greater intensity.

To capture this idea, we have described a simple model of gun control choices, in which incumbent politicians are both office and policy motivated. There are two groups of voters in the electorate: anti-gun voters, who represent a majority of the electorate and care less intensely about gun control; and pro-gun voters, who are a minority of the electorate and care more intensely about gun control. The model delivers testable predictions about the impact of election proximity on politicians’ voting behavior on gun regulations.

To assess the validity of these predictions, we have studied the voting behavior of U.S. senators on gun-related legislation since the early 1990’s. The staggered structure of the U.S. Senate, in which members serve six-year terms and one third is up for re-election every two years, allows to compare the voting behavior of different generations of senators. We have obtained three main results. First, senators who are closer to facing re-election are more likely to vote pro gun. Second, only Democratic senators flip flop on gun control during their terms in office, becoming more supportive of pro-gun legislation when they approach re-election. Third, election proximity has an impact on the voting behavior of Democratic senators only when they are seeking re-election (i.e. not retiring) and when the pro-gun group in their constituency is neither too small nor too large. Our results are robust to focusing on different subsets of gun votes, using alternative econometric models to identify the impact of election proximity, and

including a rich set of controls for legislators and their constituencies.

Our analysis suggests that in representative democracies policy choices may often diverge from what the majority of the electorate wants. This is because citizens have only one vote to make representatives accountable on a bundle of issues. Besley and Coate (2008) argue that direct initiatives allow to unbundle policy issues, improving the congruence between citizens' preferences and policy outcomes. One might thus expect to see stricter gun regulations in the sixteen U.S. states that allow for direct initiatives.³⁷ Indeed, several ballot propositions did result in the introduction of stricter gun regulations.³⁸ However, there are good reasons to believe that the outcome of initiatives on gun control may not always coincide with the preferences of the majority of voters. First, there may be a pro-gun bias in terms of which propositions end up on the ballot. This is because organizing initiatives is costly in terms of both time and money, and citizens who strongly oppose gun regulations may be more willing to incur such costs.³⁹ Gun-related initiatives are also likely to suffer from a pro-gun bias in voters' turnout, if citizens who are against gun regulations are more willing to incur the costs of voting (e.g. spending time to register, rearranging work schedules, getting to the polls, and gathering information on the candidates).⁴⁰

An important avenue for future research is to understand how voters' preference intensities affect the role of lobby groups. The existing literature has emphasized other channels through which lobbies may affect policy outcomes, e.g. by offering campaign contributions to incumbent politicians (Grossman and Helpman, 1994), or providing access to politicians to special interests and issue-specific information to politicians (Blanes-i-Vidal *et al.*, 2012; Bertrand *et al.*, 2014). Our analysis suggests that the inten-

³⁷The direct initiative process allows ordinary citizens to draft a petition in the form of a legislative bill or constitutional amendment. If the petition receives sufficient popular support, the measure is then placed directly on a ballot, without the need to first submit it to the legislature.

³⁸For example, in 1990 84,5% voters in Florida supported a constitutional amendment to introduce a mandatory period of three days between retail purchase and delivery of any handgun. Similarly, in 1998 72% of voters in Florida supported constitutional amendment to introduce a three-day delay between retail purchase and delivery of any handgun. Background checks for transfers of firearms were also introduced in Oregon through an initiative in 2000.

³⁹Organizing an initiative is a complex legal process, involving several steps: 1) preliminary filing of a proposed petition with a designated state official; 2) review of the petition for conformance with statutory requirements and, in several states, a review of the language of the proposal; 3) preparation of a ballot title and summary; 4) circulation of the petition to obtain the required number of signatures of registered voters, usually a percentage of the votes cast for a statewide office in the preceding general election; and 5) submission of the petition to the state officials, who must verify the number of signatures. Organizing a successful initiative is also financially very costly, which requires hiring specialized firms to run opinion polls before drafting the petition and to collect the required number of signatures.

⁴⁰This bias should be less severe when votes on initiatives are held together with Presidential elections, which exhibit the highest turnout. Interestingly, all the ballot measures that led to the introduction of stricter gun regulations were voted at the same time as Presidential elections.

sity of members' preferences can explain why a lobby like the NRA can be so powerful. "The NRA is considered by many the most powerful lobbying group in the country, despite relatively modest financial resources and just 4 million members. (...) The NRA focuses almost exclusively on gun control, which enables its leaders to doggedly pursue their legislative ends. Perhaps more important, many NRA members are as single-minded as the organization itself. Polls often show that more Americans favor tightening gun control laws than relaxing them, but gun rights advocates are much more likely to be single-issue voters than those on the other side of the question. As a result, the NRA can reliably deliver votes" ("Why is the NRA so powerful? How the gun lobby leverages modest resources into outsized influence", *Slate*, June 29, 2012).

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Appendix 1 Votes on gun regulations supported by GOA

Date	Vote	Description provided by GOA	Yeas-Nays	Result	Directly gun-related?
Nov. 9, 1995	H.J.R.115, amendment No. 3049	The Senate rejected a first vote on the Simpson-Istook provision which would restrict welfare to lobby organizations.	46-49	Failed	no
Nov. 9, 1995	H.J.R.115, amendment No. 3049	The Senate passed a compromise version of the Simpson-Istook provision. The compromise which passed would only limit those non-profit groups with budgets of more than \$3 million from both lobbying and receiving federal grants.	49-47	Passed	no
July 21, 1998	Smith amendment No. 3234	Pro-gun Senator Bob Smith (R-NH) introduced an "Anti-Brady" amendment. The Smith amendment would prohibit the FBI from using Brady background checks to tax or register gun owners. Further, the amendment requires the "immediate destruction of all [gun buyer] information, in any form whatsoever."	69-31	Passed	yes
July 21, 1998	Boxer amendment No. 3230	Vote to table an amendment that would prohibit the transfer of guns which are not equipped with a locking device.	61-39	Passed	yes
July 22, 1998	Durbin amendment No. 3260	The Senate defeated a "lock-up-your-safety" amendment introduced by Sen. Dick Durbin (D-IL). Durbin's provision would make it a federal crime to keep a firearm and ammunition on your premises under the following conditions: you know or should know that a juvenile can gain access to your firearm, and a juvenile does obtain access to it and does as little as exhibit it.	69-31	Passed	yes
July 28, 1998	Feinstein amendment No. 3351	Senator Dianne Feinstein (D-CA) offered an anti-gun provision as an amendment to S. 2312. Her language would prohibit the importation of firearm magazines holding over 10 rounds that were manufactured before the 1994 ban was enacted.	54-44	Passed	yes
May 12, 1999	S. amendment No. 331	The Senate defeated an amendment introduced by anti-gun Senator Frank Lautenberg (D-NJ). The provision would have banned private sales of firearms at gun shows unless buyers submitted to background registration checks. Draconian restrictions would have also been imposed on gun show promoters.	51-47	Failed	yes
May 13, 1999	S. amendment No. 343	Feinstein Modified Amendment, to provide for a ban on importing large capacity ammunition feeding devices, prohibit the transfer to and possession by juveniles of semiautomatic assault weapons and large capacity ammunition feeding devices, and enhance criminal penalties for transfers of handguns, ammunition, semiautomatic assault weapons, and large capacity ammunition feeding devices to juveniles.	39-59	Failed	yes
May 13, 1999	S. amendment No. 344	Hatch/Craig Amendment No. 344, to provide for effective gun law enforcement, enhanced penalties, and facilitation of background checks at gun shows.	3-94	Failed	yes
May 14, 1999	S. amendment No. 350	Internet firearms sales. Schumer Amendment No. 350, to amend title 18, United States Code, to regulate the transfer of firearms over the Internet.	50-43	Passed	yes

July 13, 2006	H.R. 5441, amendment No. 4615	The amendment, introduced by Sen. David Vitter (R-LA), provides that no money can be used by federal agents to confiscate firearms during a declared state of emergency. The amendment was added to the Department of Homeland Security appropriations bill (H.R. 5441).	84-16	Passed	yes
Jan. 18, 2007	S. 1, amendment 20.	The Senate narrowly passed the Bennett amendment to strike language in S.1 that would infringe upon the free speech rights of groups like GOA. Offered by Sen. Robert Bennett (R-UT), the amendment struck requirements that would have required GOA to monitor and report on its communications with its members, and could easily have led to government demands for GOA's membership list.	55-43	Passed	no
Sept. 6, 2007	H.R. 2764, amendment No. 2774	The Vitter provision stipulates that no U.S. funds can be used by the United Nations – or organizations affiliated with the UN – to restrict or tax our gun rights. Hence, the amendment would give a mildly pro-gun administration the excuse to stop sending US taxpayer funds to the United Nations as soon as they adopt any policy to restrict the Second Amendment rights of Americans.	81-10	Passed	no
Feb. 25, 2008	S. 1200, amendment No. 4070	Vote to adopt an amendment that would prohibit funds in the Indigenous Health Bill (S 1200) from being used to “carry out any anti-firearm program, gun buy-back program, or program to discourage or stigmatize the private ownership of firearms for collecting, hunting, or self-defense.”	78-11	Passed	yes
Feb. 26, 2009	S. 160, amendment No. 575	On February 26, the Senate passed a pro-gun amendment offered by Senator John Ensign (R-NV). The Ensign amendment would completely repeal D.C.'s gun ban. The amendment passed as a rider to S. 160, the D.C. Voting Rights Act. That bill that is designed to give Washington, D.C. full voting privileges in the House of Representatives, thus providing one more anti-gun vote in that chamber.	62-36	Passed	yes
April 2, 2009	S.Con.Res. 13, amendment No. 798	Amendment that seeks to reverse a gun prohibition on Amtrak trains. The provision, sponsored by Sen. Roger Wicker (R-MS), passed as part of the annual budget resolution (S. Con. Res. 13). Amtrak regulations prohibit firearms on both checked and carry on baggage, which means that sportsmen who wish to use an Amtrak carrier for a hunting trip cannot take a shotgun even in their checked luggage.	63-35	Passed	yes
May 12, 2009	H.R. 627, amendment No. 1067	The Senate passed a pro-gun amendment – offered by Senator Tom Coburn (R-OK) – that would effectively overturn the gun ban on National Park Service lands. The amendment will in no way change or override state, local or federal law, but will simply allow those laws (enacted by legislation, and not by bureaucrats or judges) to govern firearms possession.	67-29	Passed	yes
July 22, 2009	S. 1390, amendment No. 1618	Vote to pass an amendment allowing individuals who have conceal and carry permits in their home state to carry concealed firearms across state lines.	58-39	Failed	yes
March 25, 2010	H.R. 4872, amendment No. 3700	The U.S. Senate defeated an amendment to repeal the Veterans Disarmament Act on March 25, 2010. During the Clinton Administration, the Department of Veteran Affairs (VA) began sending the names of many of its beneficiaries to the FBI so they could be added to the NICS list, denying these individuals their right to purchase a firearm. To combat this outrage, pro-gun Senator Richard Burr (R-NC) authored S. 669, the Veterans Second Amendment Protection Act, which stipulates that a veteran cannot lose his or her gun rights “without the order or finding of a judge, magistrate, or other judicial authority of competent jurisdiction that such person is a danger to himself or herself or others.”	45-53	Failed	yes

Sources: Website and newsletters of Guns Owners of America (GOA). In the interest of space, some descriptions have been shortened.

Appendix 2 Variables and descriptive statistics

Table A-1: Definition of variables and sources

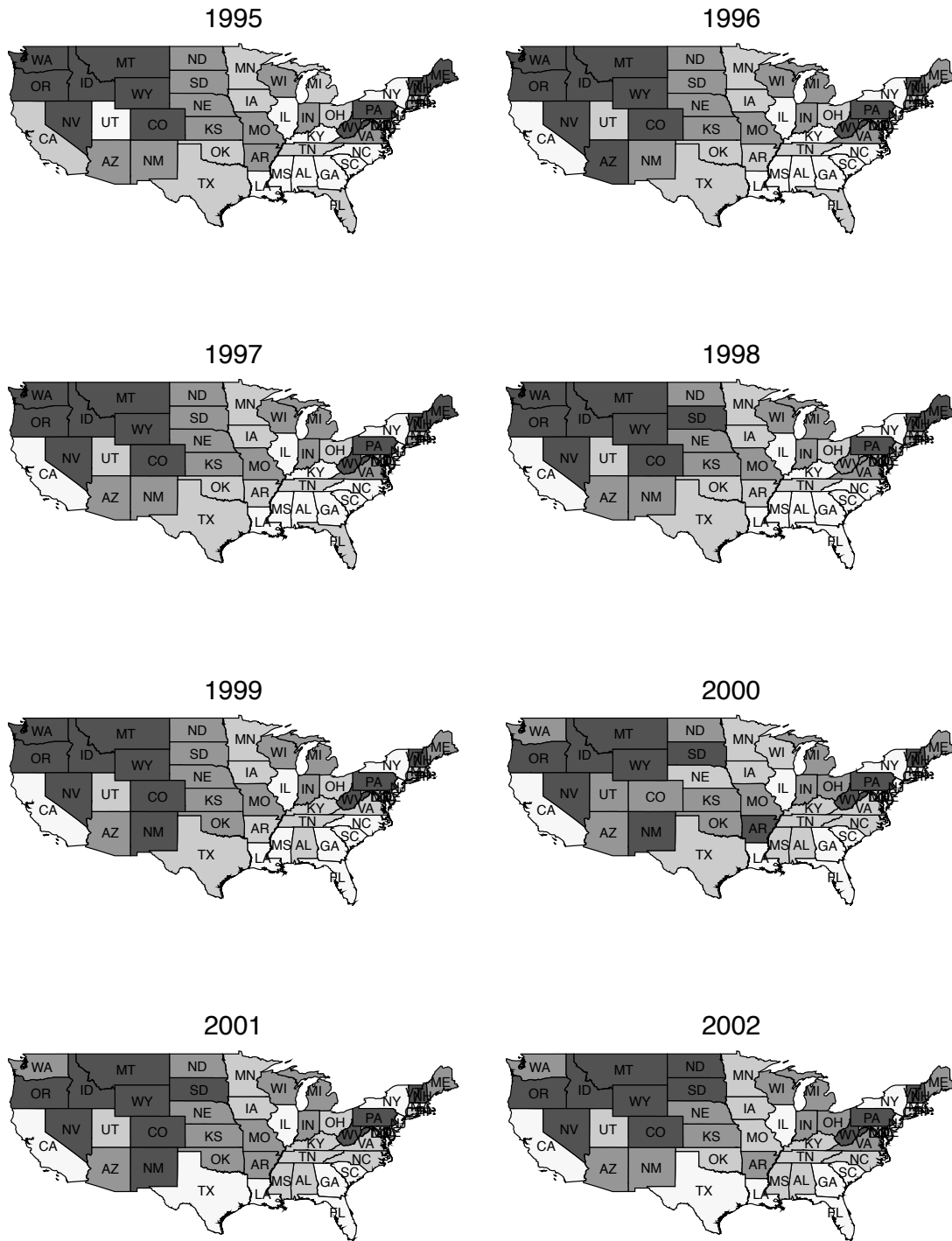
Variable	Definition	Source
Vote_{ijvt}	Dummy equal to 1 if senator i from state j votes “yea” (“nay”) on pro-gun (anti-gun) vote v	GOA (website and newsletters), Voteview and Project Vote Smart
Senate3_{it}	Dummy equal to 1 if senator i is in the last two years of his or her mandate	Congressional Directory
Republican_i	Dummy equal to 1 if congressman i is a Republican	Biographical Directory of the U.S. Congress
Male_i	Dummy equal to 1 if senator i is male	Biographical Directory of the U.S. Congress
Age_{it}	Age of congressman i in year t	Biographical Directory of the U.S. Congress
$\text{Gun-rights contributions}_{it}$	Contributions in thousands US\$ received by senator i in year t from gun-rights lobbies	Center for Responsive Politics
$\text{Gun-control contributions}_{it}$	Contributions in thousands US\$ received by senator i in year t from gun-control lobbies	Center for Responsive Politics
Retiring_{it}	Dummy equal to 1 during senator i 's last term, if he/she voluntarily leaves office	Overby and Bell (2004) and http://www.rollcall.com
$\text{Margin of victory}_{it}$	Difference in votes of winner and runner-up in last election	Statistics of the Congressional Elections
Tenure_{it}	Senators' length of service in number of congresses	Biographical Directory of the U.S. Congress
$\text{Gun magazine subscriptions}_{jt}$	Number of subscriptions to American Rifleman per 1,000 inhabitants in state j and year t	American Audited Media (various reports)
$\text{Violent crime rate}_{jt}$	Number of violent crimes per 1 million inhabitants in state j and year t	Federal Bureau of Investigation (FBI)
Education_{jt}	Proportion of the population of state j with a college degree	CPS (1994-2006) and ACS (2007-2010)
Swing state_{jt}	Dummy equal to 1 if in state j the margin of victory in the last presidential election was less than 5%	Leip (2008)
Close vote_v	Dummy equal to 1 if the margin of passage or rejection for vote v was smaller than the median margin	Voteview
Accept_v	Dummy equal to 1 if vote v was to accept pro-gun legislation (rather than to reject gun-control legislation)	GOA (website and newsletters) and Voteview

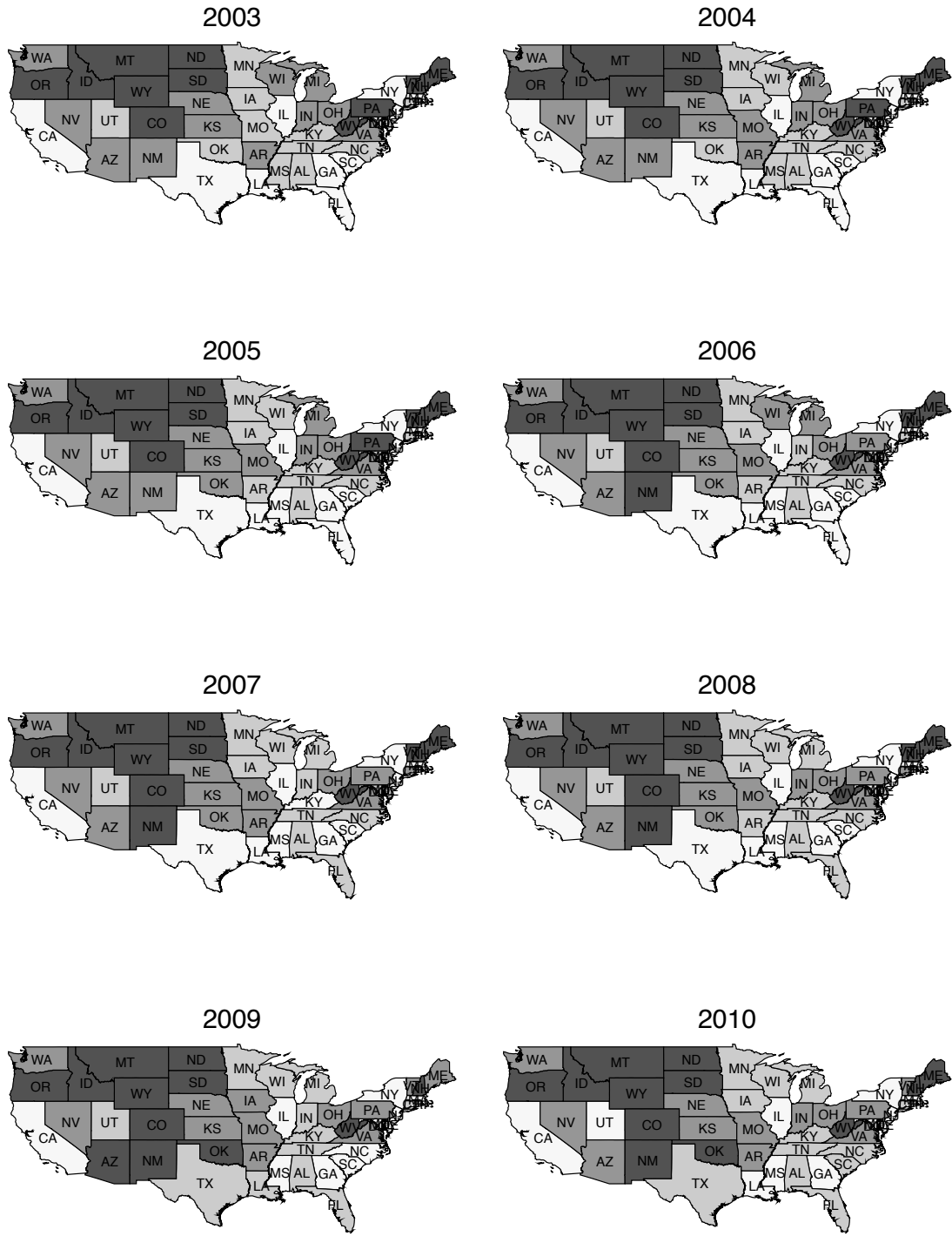
Table A-2: Summary statistics

Variable				
A. Senator-level characteristics				
	Democrats	Republicans	All	
Vote (1= pro gun)	0.300	0.883	0.595	
Senate3	0.323	0.348	0.336	
Male	0.838	0.928	0.883	
Age	60.7	60.8	60.7	
Republican	0	1	0.501	
Gun Rights contributions	0.270	4.712	2.493	
Gun Control contributions	0.414	0.029	0.221	
Retiring	0.151	0.139	0.145	
Margin of victory	0.219	0.247	0.233	
Tenure	7.06	6.21	6.64	
B. State-level characteristics				
	Mean	St. Dev.	Min	Max
Gun magazine subscriptions	6.36	2.78	2.38	22.50
Violent crime rate	44.8	21.8	6.7	121.0
Education	25.0	5.0	11.4	40.4
Swing State	0.227	0.419	0	1
C. Vote-level characteristics				
Close vote	0.53	0.51	0	1
Approve	0.53	0.51	0	1

Notes: See definition of variables in Table A-1. Panel A reports averages of senator-year observations, while Panel B reports averages of state-year observations.

Figure A-1: Subscriptions to *American Rifleman* magazine per 1,000 inhabitants





Notes: The figure shows quartiles of the number of subscriptions to *American Rifleman* magazine per 1,000 inhabitants for each of the 48 contiguous U.S. states. The first quartile is shown in white, while the fourth quartile is shown in dark grey.

Appendix 3 Additional robustness checks

Table A-3: The pro-gun effect of election proximity, linear probability model

Dep. variable:	All			Vote _{ijvt}				
	(1)	(2)	(3)	(4)	Directly gun-related			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Senate3 _{it}	0.060*** (0.021)	0.039** (0.016)	0.036** (0.016)	0.044* (0.023)	0.075** (0.030)	0.048** (0.023)	0.047** (0.023)	0.053* (0.030)
Republican _{it}		0.479*** (0.044)	0.478*** (0.045)	0.480*** (0.065)		0.412*** (0.045)	0.412*** (0.045)	0.423*** (0.065)
Male _i		0.048 (0.045)	0.046 (0.046)	0.033 (0.053)		0.076 (0.051)	0.077 (0.052)	0.052 (0.061)
Age _{it}		-0.003* (0.002)	-0.003* (0.002)	-0.003 (0.002)		-0.003* (0.002)	-0.003* (0.002)	-0.003 (0.002)
Gun-rights contributions _{it}		-0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)		0.000 (0.002)	0.000 (0.002)	0.000 (0.003)
Gun-control contributions _{it}		-0.006 (0.007)	-0.005 (0.007)	0.001 (0.012)		-0.005 (0.007)	-0.005 (0.007)	0.001 (0.011)
Gun Magazine Subscriptions _{jt}		0.027 (0.020)	0.027 (0.020)			0.028 (0.025)	0.028 (0.025)	
Violent Crime Rate _{jt}		0.005*** (0.002)	0.005*** (0.002)			0.004 (0.002)	0.004 (0.002)	
Education _{jt}		-0.007 (0.009)	-0.007 (0.009)			-0.006 (0.010)	-0.006 (0.010)	
Year dummies	yes	yes	no	yes	yes	yes	no	yes
State dummies	yes	yes	yes	yes	yes	yes	yes	yes
Vote dummies	no	no	yes	no	no	no	yes	no
Year × State dummies	no	no	no	yes	no	no	no	yes
Observations	1840	1840	1840	1840	1363	1363	1363	1363
R-squared	0.475	0.593	0.643	0.701	0.502	0.590	0.644	0.692

Notes: The table reports coefficients of a linear probability model, with robust standard errors in parentheses, adjusted for clustering at the state level. The dependent variable $Vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . ***, ** and * indicate statistical significance at 99%, 95% and 90%, respectively.

Table A-4: The pro-gun effect of election proximity, alternative samples

Dep. variable: Model: Sample of votes:	Vote _{ijvt} Probit							
	All GOA + key votes 1993		GOA gun-related + key votes 1993		All GOA + VotSMART		GOA gun-related + VotSMART	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Senate3 _{it}	0.044** (0.019)	0.030** (0.015)	0.054** (0.027)	0.036** (0.017)	0.047*** (0.018)	0.026* (0.014)	0.059** (0.025)	0.034** (0.015)
Republican _{it}		0.362*** (0.029)		0.329*** (0.032)		0.373*** (0.026)		0.350*** (0.029)
Male _i		0.079** (0.038)		0.110* (0.059)		0.081** (0.037)		0.104** (0.049)
Age _{it}		-0.004*** (0.001)		-0.004*** (0.001)		-0.003** (0.001)		-0.003** (0.001)
Gun-rights contributions _{it}		0.003 (0.002)		0.003 (0.003)		0.002 (0.002)		0.002 (0.002)
Gun-control contributions _{it}		-0.027*** (0.007)		-0.024*** (0.008)		0.002 (0.011)		0.002 (0.011)
Gun Magazine Subscriptions _{jt}		0.010 (0.017)		0.009 (0.020)		0.012 (0.013)		0.019 (0.016)
Violent Crime Rate _{jt}		0.004*** (0.001)		0.004*** (0.002)		0.003* (0.001)		0.003* (0.002)
Education _{jt}		-0.008 (0.007)		-0.010 (0.008)		-0.011* (0.006)		-0.013* (0.007)
Predicted Probability	0.597	0.595	0.598	0.596	0.548	0.547	0.545	0.544
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes
State dummies	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1957	1957	1467	1467	2523	2523	2113	2113
Pseudo R-squared	0.411	0.585	0.425	0.582	0.377	0.524	0.389	0.524

Notes: The table reports marginal effects from a probit model, with robust standard errors in parentheses, adjusted for clustering at the state level. The dependent variable $Vote_{ijvt}$ is equal to 1 when senator i from state j voted pro gun on vote v in year t . ***, ** and * indicate statistical significance at 99%, 95% and 90%, respectively.

Table A-5: The pro-gun effect of election proximity, additional controls

Dep. variable: Model: Sample of votes:	Vote _{ijvt}							
	All				Probit			
	All				Directly gun-related			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Senate _{3it}	0.040*** (0.014)	0.047*** (0.017)	0.041*** (0.014)	0.047*** (0.017)	0.050*** (0.016)	0.049*** (0.018)	0.051*** (0.016)	0.051*** (0.017)
Swing State _{jt}	-0.027 (0.029)			-0.016 (0.028)	0.003 (0.043)			0.009 (0.045)
Republican _{it}	0.383*** (0.031)	0.377*** (0.035)	0.386*** (0.032)	0.377*** (0.035)	0.344*** (0.035)	0.344*** (0.036)	0.341*** (0.034)	0.341*** (0.035)
Male _i	0.046 (0.040)	0.066 (0.053)	0.047 (0.040)	0.063 (0.053)	0.063 (0.064)	0.065 (0.069)	0.062 (0.063)	0.064 (0.069)
Age _{it}	-0.004*** (0.001)	-0.003* (0.002)	-0.004*** (0.001)	-0.003* (0.002)	-0.004** (0.002)	-0.003 (0.002)	-0.004*** (0.002)	-0.003 (0.002)
Gun-rights contributions _{it}	0.003* (0.002)	0.003 (0.002)	0.003* (0.002)	0.003 (0.002)	0.003 (0.002)	0.004 (0.003)	0.004 (0.002)	0.004 (0.003)
Gun-control contributions _{it}	-0.024*** (0.009)	-0.028*** (0.010)	-0.025*** (0.009)	-0.028*** (0.010)	-0.023** (0.009)	-0.023** (0.010)	-0.025*** (0.009)	-0.026*** (0.010)
Gun Magazine Subscriptions _{jt}	0.010 (0.019)	0.006 (0.020)	0.012 (0.021)	0.004 (0.019)	0.028 (0.027)	0.020 (0.026)	0.022 (0.028)	0.014 (0.026)
Violent Crime Rate _{jt}	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.002 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Education _{jt}	-0.008 (0.007)	-0.005 (0.008)	-0.008 (0.007)	-0.004 (0.008)	-0.010 (0.009)	-0.008 (0.010)	-0.009 (0.009)	-0.008 (0.009)
Margin of Victory _{it}		0.086 (0.088)		0.088 (0.087)		0.041 (0.103)		0.062 (0.102)
Tenure _{it}		-0.004 (0.004)		-0.004 (0.004)		-0.004 (0.004)		-0.005 (0.004)
Close Vote _v			0.025 (0.025)	0.029 (0.026)			0.160*** (0.027)	0.169*** (0.028)
Accept _v			0.068*** (0.017)	0.081*** (0.020)			0.190*** (0.028)	0.197*** (0.030)
Predicted Probability	0.614	0.625	0.614	0.625	0.621	0.630	0.622	0.631
Year dummies	yes	yes	yes	yes	yes	yes	yes	yes
State dummies	yes	yes	yes	yes	yes	yes	yes	yes
Observations	1767	1624	1767	1624	1281	1225	1281	1225
Pseudo R-squared	0.596	0.574	0.599	0.578	0.594	0.580	0.628	0.617

Notes: Same as in Table A-4.