Legislative Effectiveness, Electoral Anticipation, and Garnering Campaign Advantage in the United States Senate[*]

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October 2024

Abstract

Do U.S. Senators anticipate an electoral cost for legislative ineffectiveness? Do they garner electoral payoffs if they successfully act on this electoral incentive by being more effective prior to re-election? Using original data on Senate primaries since 1980, I find that Senators strategically adjust their effectiveness ahead of an election by becoming more effective: (1) when they are in-cycle; (2) in the two preceding Congresses prior to re-election; and (3) than Senators that choose to voluntarily retire. Given this strategic adjustment, I find that effective Senators can deter intra-party quality challengers and raise their probability of renomination. I also find that the relationship between effectiveness and electoral success to be mediated by a fundraising advantage, with Senators turning strategic effectiveness into a primary election fundraising advantage over challengers that can serve to deter competition and boost re-election prospects. These findings providing insight into how strategic effectiveness translates to electoral advantage.

Key words: Legislative effectiveness, U.S. Senate primary elections, strategic electoral anticipation, campaign fundraising, electoral success

Center for Effective Lawmaking Working Paper 2024-08

During the 2006 midterm elections that ushered in a Democratic Congress for the remaining two years of President George W. Bush's second term, veteran U.S. Sen. Dick Lugar (R-IN) was re-elected to his sixth and final term in the United States Senate completely unopposed by a major party candidate.[1] Highlighting this relatively rare feat, Sen. Lugar's 2006 re-election was just the seventeenth contest in which a non-southern state saw one of the two major party's fail to nominate a challenger to an incumbent out of 1,166 elections since the direct-election of Senators began in 1914.[2] Moreover, not only did Sen. Lugar not attract a Democratic challenger in his 2006 re-election, he also did not attract a single co-partisan Republican challenger in the primary election on his way to becoming the longest-serving U.S. Senator in Indiana history.

In observation of the historic nature of the 2006 election, a local Indiana newspaper mused "how did Lugar get to the point where he is not only unbeatable, but essentially running unopposed."[3] According to an anonymous Lugar aide cited by the paper, the theory is that "his career is crowded with stunning achievement" and that "taking on Lugar was a losing proposition from the start." Indeed, it appears that Sen. Lugar was riding a wave of legislative effectiveness during the 2006 campaign that culminated in securing the second highest Legislative Effectiveness Score of his career spanning over 36 years and 18 Congresses.

However, by his 2012 re-election campaign for a historic seventh term, the political headwinds for Sen. Lugar began to change. Heading into the 112th Congress prior to his re-election bid, Sen. Lugar saw his legislative effectiveness score drop a staggering 93% from where it was in the 109th Congress prior to the 2006 campaign. For the first time since the 104th Congress (1995-1997) over sixteen years prior, Sen. Lugar was rated as being below expectations with respect to legislative effectiveness (Volden & Wiseman, 2018). This decline in effectiveness was also seen in a general decline in productivity, as Sen. Lugar introduced less than a third of the total or substantive bills in the 112th Congress as he did in the 109th. This observed decline in effectiveness and productivity

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[1] I note that Sen. Lugar was re-elected by a margin of about 75% over a token third-party Libertarian challenger.

[2] I omit southern states to make this point given the prevalence of the one-party Democratic dominance in the American South from 1914 to the election of the first popularly elected southern Republican Senator, John Tower of Texas, in 1961.

[3] The Times (Muncie, IN) 8/6/2006: *Lugar Sells Common Ground*

manifested in a dramatically different electoral circumstance than the last time Sen. Lugar was on the ballot. Left without major-party opposition in 2006, Sen. Lugar attracted a Republican primary challenger for the first time as an incumbent and since his initial election to the Senate in 1976. Once more, Sen. Lugar was challenged by a quality candidate with statewide elected experience in Republican State Treasurer Richard Mourdouck. Lacking a candidate just six year prior, Indiana Democrats also saw a change in electoral fortunes as U.S. Rep. Joe Donnelly (D-IN), with a history of winning competitive elections in a traditionally Republican-leaning congressional district, also emerged in the Senate race sensing vulnerability in the other party. Ultimately, Sen. Lugar was unseated in his primary by a 21% margin to Treasurer Mourdock who, in turn, lost the seat in the general to Democratic Congressman Joe Donnelly.

This case study of the last two re-election campaigns of Sen. Dick Lugar highlights a potential way in which legislative effectiveness can translate to electoral success in the upper chamber of Congress. Unlike 2006, Sen. Lugar's decline in effectiveness seemingly invited both an intra-party and opposing-party quality candidate. However, the potential manifestation of Sen. Lugar's ultimate defeat in 2012 was perhaps sewn over the course of his final term in the Senate. Unlike members of Congress, Senators have six years to compile legislative records before having to face voters in a re-election campaign. Indeed, perhaps sensing electoral peril, *The New York Times* reported that Sen. Lugar began assembling his 2012 campaign "a month before the 2010 elections, sending two senior staff members from Washington to Indiana to manage his re-election efforts.[4] Nevertheless, without the electoral incentive of running every two years, Senators are at liberty to potentially be strategic in how they allocate the resources needed to be effective throughout their six year term.

In this article, I depart from the conventional focus on U.S. House elections and focus on how legislative effectiveness translates to electoral success in the more electorally competitive U.S. Senate. I theorize that Senators are aware that their legislative effectiveness carries stark electoral implications and thus strategically ramp up their effectiveness and workload prior to re-election.

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[4]The New York Times (5/14/2011): *Running on Moderation in Immoderate Times*

Unlike in the House where legislators cannot be strategic given the lack of staggered terms and two-year re-election cycles, Senators enjoy the privilege of having a full three congresses to vary their effectiveness prior to re-election. I theorize that Senators polish their legislative effectiveness not only when they are up for re-election, but also in each Congress prior to re-election and notedly more so than their colleagues that choose to forgo re-election.

Leveraging within-legislator variation in legislative effectiveness, I find strong support that Senators robustly respond to the incentive re-election by ramping up their legislative effectiveness later in their term prior to re-election. Given this evidence of strategic effectiveness brought about by re-election, I further theorize that Senators are rational in this behavior given the electoral costs of legislative ineffectiveness. I theorize that legislative effectiveness translates to electoral success since more effective Senators can garner a stark campaign fundraising advantage that can be used to deter would-be challengers from emerging and ultimately electoral victory. Using a novel dataset of 1980-2022 Senate primaries, which allows testing of how effectiveness shapes the re-election campaign *within* a Senator's own party, I find strong support that legislative effectiveness can serve to deter potential intra-party challengers and raise the probability of electoral victory. Furthermore, I find that this relationship between effectiveness and success is mediated by a primary fundraising advantage, with more effective Senators being able to swamp the fundraising competition in the primary which in turn can be used for deterring challengers and winning the primary. By focusing on primaries, where Senators face potentially face bipartisan opposition, I paint a more comprehensive view of how Senators can use their effectiveness to secure re-election long before the general election. I conclude by exploring potential general election outcomes and find that, while the theory does not predict general election victory or deter the opposing party from nominating a quality challenger, it does predict a sustained general election fundraising advantage that is critical towards ultimately securing re-election (and in most cases tips the scales toward serving another term) (Thomsen, 2023).

1 Theoretical Model: Effectiveness, Anticipation, & Success

1.1 Senators as Antelopes: Legislative Effectiveness & Anticipation

In his seminal work *The Responsible Electorate*, Key (1966) argues that electorates behave as "a rational god of vengeance and of reward", rewarding or sanctioning incumbent politicians and parties on retrospective terms over the representation they provide over their time in power. Extending this classical thesis forward, Stimson, MacKuen & Erikson (1995) note that this specter of "vengeance and of reward" provides an incentive for politicians to behave "like antelope in an open field" in their political environment. While the literature debates the extent to which voters are able to fulfill their democratic prerogative of being "rational" principals able to exert retrospective accountability towards their elected agents (i.e., individual legislators, parties) (see Achen & Bartels, 2016, for a broad overview of this debate), the literature on behavior of elected elites is clear that they seek to maximize their chances of re-election while in office (Mayhew, 1974).

Beginning with the classical works of Mayhew (1974) and Fenno (1978), the literature on congressional representation assumes that the activities of members of Congress is gear towards the electoral incentive of re-election. More contemporary scholarship by Grimmer (2013) extends this classical thesis to the context of the U.S. Senate, finding that Senators adjust their representational "home-style" in response to electoral incentives, framing themselves as either ideologues or appropriators based on the electoral incentives provided by their constituents. Indeed, marginal Senators are found to stress appropriations in their "home-style" while safe state Senators are found to stress positions on ideological issues, with subsequent work finding that constituents respond positively to the credit claiming messages of appropriators (Grimmer, Messing & Westwood, 2012). More recently, Dancey, Henderson & Sheagley (2023) find evidence that even during the current partisan polarized environment, legislators can continue to cultivate a personal vote among their constituents based on their effectiveness on district-oriented considerations in office. A contrasting strategy towards garnering electoral support in anticipation of an election, Park

(2023) finds that grandstanding can also lead to greater rewards by members that give political speeches, particularly on high salient items. Beyond individual legislators, even parties anticipate electoral incentives, with parties steering appropriations to vulnerable legislators that they can claim credit on in hopes of bolstering their re-election chances among constituents (Engstrom & Vanberg, 2010; Berry, Burden & Howell, 2010). Taken together, despite the broader debate in the literature as to whether voters can behave rationally as electoral principals (for a theoritical constrast to Achen & Bartels, 2016, see Stone (2017)), contemporary scholarship finds that elites respond to perceived electoral incentives while in office and tailor their office activities towards maximizing their chances of re-election.

While the literature points to elites tailoring their behavior in office towards re-election, the expectation as to whether these activities vary throughout the term of an office. Unlike their colleagues in the U.S. House that are consistently "on-cycle" for re-election, U.S. Senators enjoy the privilege of serving longer six year terms and are unburdened by perpetual re-election every two years. Provided by Article I, Section 3 of the Constitution, Senators have longer term horizons in office that allow them to cultivate electoral terms throughout six years rather. Some of this literature remains mixed as to whether Senators vary in their legislative effort throughout their term and exert more effort in the Congresses preceding a re-election bid. For example, Kaslovsky (2021) finds Senators up for re-election do not increase their constituent travel throughout the state relative to Senators that are not up for re-election. By contrast, work by Shepsle et al. (2009) finds that the Senate electoral cycle "induces a back-loading of benefits to the end of senatorial term", with in-cycle Senators up for re-election being more active in securing appropriations for their states relative to colleagues not up for re-election.

More directly relevant to the argument and in a similar vein to Shepsle et al. (2009), Volden & Wiseman (2018) find Senators up for re-election more legislatively effective than those that are not. I contribute to this discussion by extending this argument by positing that Senators are strategically productive and effective the closer they are to re-election bids. Due to the fact specializing in legislative effectiveness in the U.S. Senate is costly and a function of individualistic

efforts (Volden & Wiseman, 2018), I contend that Senators strategically choose to "turn on the jets" on their legislative effectiveness and productivity in the Congress preceding a re-election bid relative to Congresses prior to a re-election bid. Given that Senators face greater media scrutiny when they are up for re-election "in-cycle" (Gronke, 2001) and, as a consequence, are also better known among their constituents during this period (Sievert & Williamson, 2022). As such, Senators will pay the cost of focusing more office resources towards becoming more legislatively effective and productive while they are "in-cycle" seeking re-election compared to the preceding "non-cycle" Congresses. I contend Senators will focus more office (i.e., staff) resources on becoming more legislatively effective and productive, particularly with respect towards authoring original substantive legislative proposals that they can claim credit on while in an election cycle (Mayhew, 1974). This gives rise to the first hypothesis more formally:

⋆ **H_1 *In-Cycle Anticipation Hypothesis***: Senators are more effective and productive in the Congress preceding re-election (i.e., Senators being "in-cycle") than in Congresses not preceding re-election.

Unlike previous hypotheses in the literature, I contend for a within-Senator estimand rather than comparing differences between Senators seeking re-election and those that choose to retire (e.g., Shepsle et al., 2009; Volden & Wiseman, 2018) in the above *H_1 In-Cycle Anticipation Hypothesis*. Another way to test the theoretical framework is by estimating whether Senators are more effective and productive the closer in temporal proximity to a re-election bid. In other words, empirical support for the theory would be to observe that Senators are more effective and productive in the second and third Congresses of their term relative to the first Congress of their six-year term. This gives rise to the second hypothesis below:

⋆ **H_2 *Electoral Proximity Anticipation Hypothesis***: Senators become more effective and productive the closer in temporal proximity to a re-election bid.

Lastly, I also consider the fact that Senators may not wish to expend the resources needed to cultivate higher effectiveness and productivity in the Congresses preceding the re-election where

they will be subject to judgement by their constituents. Using a falsification test framework, I believe that the theoretical expectation that Senators react like "antelope in an open field" by ramping up effectiveness and productivity ahead of a re-election bid can be inversely tested by investigating the behavior of Senators in their final term ahead of a voluntary retirement. If the anticipation argument is correct, I expect that Senators that voluntarily choose to retire *are not more effective or productive* the closer they are to re-election given their strategic decision to voluntarily retire. H_3 *Retirement Falsification Hypothesis* makes this prediction in more formal terms. Conversely, I also consider support for H_4 *Retirement Anticipation Hypothesis* positing that in-cycle Senators voluntarily seeking re-election are more effective and productive than in-cycle Senators choosing to voluntarily retire as support for the theory. In this hypothesis I compare the behavior of Senators that seek re-election and those that voluntarily in the final Congress of their six-year term (i.e., the in-cycle Congress), thus holding the Congress observed constant, and expect that Senators that choose to voluntarily to be *less* effective and productive than their colleagues gearing up to face voters. Both of these hypotheses, with one evaluating the behavior of retiring Senators and the other comparing the behavior of retiring and non-retiring Senators, provide a more comprehensive test of the theoretical framework arguing that Senators anticipate electoral rewards for being more effective and productive while in office. Given that Senators are under greater scrutiny in the final Congress of their term prior to re-election, I expect greater legislative effectiveness and productive when: (H_1) Senators are "in-cycle" relative to not "in-cycle and (H_2) Senators are closer to their re-election Congress in which they face voters. I further test this framework by arguing: (H_3) that Senators that voluntarily forgo re-election bids are *not* more effective or productive the closer they are to re-election and (H_4) Senators that seek re-election are more effective and productive in their in-cycle term than Senators that voluntarily choose to forgo re-election.

⋆ H_3 **Retirement Falsification Hypothesis**: Senators that voluntarily forgo re-election (i.e., retire) are not more effective and productive in the final Congress of their six-year term relative to the preceding two Congresses.

⋆ **H_4 _Retirement Anticipation Hypothesis_**: In-cycle Senators that choose to seek re-election are more effective and productive than in-cycle Senators that choose to voluntarily retire.

1.2 Translating Effectiveness into Electoral Success

In the preceding section I argue that Senators strategically anticipate electoral rewards, or potential sanctions, by ramping up their legislative effectiveness and productivity ahead of facing voters during a re-election bid. In this section, I build on this anticipation framework by specifying a theoretical framework as to *how* Senators can successfully turn this ramping up of legislative effectiveness into maximizing their likelihood of electoral success. As a starting pointing, I consider the framework by Treul et al. (2022) in specifying the first two hypotheses of how legislative effectiveness can be translated into electoral success. Given the general decline in out-party competitiveness in U.S. Senate elections as congressional contests become more nationalized (Algara, 2019; Amlani & Algara, 2021), I first focus on primary elections to assess how Senators can translate effectiveness into electoral success.[5]

As I articulate in the motivating example of Sen. Lugar, I first focus on the first-stage primary elections as the main accountability mechanism since the brunt of electoral competition has shifted away from second-stage general elections and to the first-stage primary context (Hirano & Snyder, 2019; Treul et al., 2022). The first two baseline hypotheses are straight-forward and are borrowed from Treul et al. (2022). Congruent with their investigation of how U.S. House members can translate effectiveness to electoral success, I concur that Senators can use their legislative effectiveness to deter both intra-party and out-party opponents from emerging, and opposing, their re-election bids during the primary. As I will be clearer during a more in-depth discussion of the potential "scare-off" mechanism, I expand on Treul et al. (2022) by arguing that potential *quality* challengers are dissuaded from challenging more effective Senators given that

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[5]To that point, Algara & Johnston (2022) find that in contemporary Senate elections a state's presidential vote-share is correlated with the U.S. Senate vote-share at over 0.95. In other words, Senate elections mirror those in the lower chamber in the decline of two-party general election competition and thus necessitating investigation of primary elections as the main avenue of electoral accountability (Hirano & Snyder, 2019).

effectiveness serves as an electoral proxy for greater leadership valence (Stone & Simas, 2010). Unlike amateur challengers without prior elected experience, electoral loses are particularly costly for quality challengers with prior elected experience (Jacobson, 1989). Fearing an electoral loss could dampen future prospects at a promotion, quality challengers are strategic and emerge to challenge vulnerable incumbents, forging challenging strong incumbents (Jacobson, 1989). I contend that given this risk averse nature of potential quality challengers, more effective Senators are able to deter quality challengers of both parties in their pursuit of re-election. As Stone & Simas (2010) finds using expert ratings of the valence of incumbents and challengers, incumbents with greater leadership valence advantages over their challengers are more likely to carry the general election. As potential challengers have a generally accurate view of the incumbent's effectiveness and the valence this signals to the broader electorate, they are deterred from emerging to contest an incumbent's re-election bid. Since electoral loses are costly, quality challengers with prior elected experience seeking to continue their electoral careers will forgo challenging more effective Senators. In the inverse, I do not expect amateur challengers to be deterred from challenging more effective Senators given that their strategic calculus differs from quality challengers and amateurs may not view an electoral loss as particularly costly given their nonexistent political career. Lastly, I specify the baseline expectation that more effective Senators are also more likely to secure renomination in the primary given these same inherent valence advantage that can also be used to deter potential challengers. This gives rise to the two formal hypotheses below:

- ⋆ **H_{5A} Effectiveness Deterrence Hypothesis**: Senators exhibiting greater legislative effectiveness prior to re-election draw less *intra-party and out-party* quality opponents during the primary election stage of their re-election bids.

- ⋆ **H_{5B} Effectiveness Success Hypothesis**: Senators exhibiting greater legislative effectiveness prior to re-election are more likely to win their primary elections.

One point of departure and expansion from the theory presented by Treul et al. (2022) is that I contend that the relationship between legislative effectiveness and electoral success formalized

in the previous two hypotheses is mediated by a fundraising advantage relative to the field of primary challengers. As Stone (2017, p. 35) notes, "the ability of candidates to attract campaign resources and conduct an effective campaign is related to their leadership skills [valence]." To put a finer point conceptually, I agree with Stone (2017) that leadership valence is the latent aggregation for character-based considerations such as competence and overall strength as a public service; with these skills spilling over and allowing incumbents to excel when procuring campaign resources relative to their emerged opponents. I contend that greater legislative effectiveness reflects greater leadership valence by incumbents, which is supported by Volden & Wiseman (2018) by finding that greater legislative effectiveness among Senators is predicted by access to leadership positions such as formal party or committee leadership positions. This argument can be extended back to the set of rational anticipation hypotheses outlined in the previous section, with Senators ramping up their leadership valence in the Congress prior to facing re-election in order to maximize their likelihood of electoral success. To that point, I contend that the relationship between effectiveness and success is mediated by a greater primary election fundraising advantage enjoyed by Senators relative to the field of challengers, with Senators leveraging their effectiveness to be garner a campaign resource advantage over their opponents which can be used to ultimately achieve electoral success by deterring challengers and securing re-election. The first step towards establishing that expectation of a mediated relationship, I specify the hypothesis more formally below:

> ⋆ H_6 **Effectiveness Fundraising Advantage Hypothesis**: Senators exhibiting greater legislative effectiveness prior to re-election garner a larger fundraising advantage in the primary election stage of their re-election bids.

Since I contend that leadership valence and leadership effectiveness are conceptually similar, I expect that the leadership valence reflected in greater effectiveness should also translate to the campaign arena. Senators with greater effectiveness should be able to translate the intrinsic leadership skills into the campaign domain by exerting a greater advantage in campaign resources relative to the primary election field of challengers. Given that strategic challengers in *both* parties,

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particularly those holding prior elected office and progressive ambition (Schlesinger, 1966), could be deterred from challenging incumbents with starker campaign resource advantages over the field of challengers.

In sum, I expect that legislative effectiveness to exert influence in the main arena of electoral competition during the nationalized electoral period, that of the primary election stage. However, this influence is mediated through the ability of Senators to garner a campaign resource advantage relative to their field of challengers. While voters may largely be unaware or even care about the legislative effectiveness of their Senators (Butler et al., 2021), I contend that effectiveness can be translated towards electoral success by allowing Senators to cultivate a campaign resource advantage over their challengers. Since legislative effectiveness reflects greater leadership valence, Senators can leverage their effectiveness to garner a campaign advantage over the primary election field and, in turn, deter challengers and ultimately secure renomination. I state the mediation hypotheses more formally below.

- ⋆ **H_{7A} Fundraising & Deterrence Mediation Hypothesis**: The effect of legislative effectiveness on the predicted number of challengers is mediated through a Senator's primary fundraising advantage.

- ⋆ **H_{7B} Fundraising & Success Mediation Hypothesis**: The effect of legislative effectiveness on the probability of primary election victory is mediated through a Senator's primary fundraising advantage.

2 Evaluating a Model of Rational Anticipation

2.1 Specifying a Model of Rational Anticipation

In the preceding section I derive a set of hypotheses from a theoretical framework arguing that Senators, as rational seekers of re-election, anticipate an electoral cost for a lack of effectiveness on Capitol Hill. Unlike their colleagues in the U.S. House facing voters every two years, Senators may

elect to shirk in the effectiveness and legislative productivity they provide to their constituents early in their six-year term given the costs of pursuing such activities and the fact they do not have to face voters until a few forthcoming Congresses. This point is particularly salient when comparing Senators that voluntary choose to retire relative to those that seek re-election, with the former potentially choosing to shirk on their effectiveness and productivity after making the decision to forgo the judgement of voters by voluntarily retiring at the end of their term.

To test these preceding rational anticipation hypotheses, I require specification of a series of models. I begin with specifying a baseline model that allows for testing how individual Senators potentially shift their effectiveness and productivity in response to a forthcoming re-election bid. To begin, I draw on data by Volden & Wiseman (2018) that measures a Senator's legislative effectiveness and productivity, in addition to a suite of salient control variables, from the 93rd to the 117th Congresses (1973-2022). These data control the key congress-specific outcome variables of the rational anticipation hypotheses consisting of: (1) Senator Legislative Effectiveness Scores; (2) the total number of legislative bills drafted and introduced by the Senator; (3) the number of substantive bills drafted and introduced by the Senator; (4) the number of substantive and significant bills drafted and introduced by the Senator; and (5) the number of commemorative bills drafted and introduced by the Senator. I merge these data with updated electoral data spanning the same time-period from Algara (2019) that tracks when each individual Senate seat is up goes up before voters. These data are particularly helpful given that they identify the temporal progression of Senate seats which may be subject to gubernatorial appointments or special elections outside of the standard six-year term horizon. Thus, the unit of analysis is the observation of a Senator in a given Congress of their tenure in the upper chamber.

Towards evaluation H_1 *In-Cycle Anticipation Hypothesis*, I code the key independent variable as a binary variable coded 0 if the Senator is not up for re-election and 1 if the Senator is up for re-election (i.e., in-cycle). With respect to H_2 *Electoral Proximity Anticipation Hypothesis*, I code the key independent variable as a two dummy variables coded if the (1) the Senator is serving in the second Congress preceding a re-election cycle and (2) the Senator is serving in the immediate

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Congress preceding a re-election bid with the omitted baseline reference category being the Senator is serving in the first Congress of their six-year three-Congress Senate term. In the models evaluating these first two hypotheses which identify *within* Senator electoral effects rather than *between*, I include two-way legislator and Congress fixed-effects which allows accounting for any unobserved legislator attributes that could predict effectiveness and productivity and any unobserved time-variant confounders. Specification of these two-way fixed-effects (TWFE) models allows for identifying how being in-cycle (H_1) or proximity to re-election (H_2) influences the legislative effectiveness of a Senator *relative* to when that same Senator is not in-cycle or further away from re-election. I also include a set of time-varying control variables, in addition to the key independent variables of interest, identified by Volden & Wiseman (2018) in their models predicting legislative effectiveness such as majority partisanship and seniority. I include full description of this vector of control variables in the appendix.[6]

With respect to evaluation of H_3 *Retirement Falsification Hypothesis*, I depart from the two-way fixed-effects approach given that I are focused on identification of variation in the outcome effectiveness and productive variables *between* retiring and non-retiring Senators as opposed to identifying variation *within* Senator. I thus drop the legislator fixed-effects, while keeping Congress fixed-effects, and include additional Senator-level time-invariant control variables that could motivate Senator effectiveness and productivity, such as pre-Senate political experience in Congress or the state legislator.[7] All forthcoming models that evaluate the rational anticipation

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[6]This vector includes: partisan preference of the Senator's state, whether the Senator is a member of the majority party, whether the Senator is a committee chair, whether the Senator is a subcommittee chair, general election vote percentage won by the Senator in the last election, general election vote percentage won by the Senator in the last election squared, whether the Senator is retiring in the current Congress, whether the Senator is in majority-party leadership, whether the Senator is in minority-party leadership, whether the Senator sits on a power committee, the seniority of the Senator during the Congress observed, and ideological extremity relative to the median Senator. Note that given inclusion of Senator fixed-effects in the model, I omit time invariant controls used in the Volden & Wiseman (2018) model such as Senator gender, Senator race, and the pre-Senate political career of the Senator. In the forthcoming Figure 1, I show the model identification produces similar results with respect to an in-cycle effect as direct replication of the Volden & Wiseman (2018) Senate Legislative Effectiveness model.

[7]This is the only departure from the Volden & Wiseman (2018) Senate model of legislative effectiveness. Rather than code pre-Senate state legislator or House service, I code direct pre-Senate political experience using a series of dummy variables capturing whether the Senator was a (1) political amateur, (2) local official, (3) state legislator, (4) member of the U.S. House of Representatives, (5) Governor, (5) former U.S. Senator, and (6) appointed U.S. Senator prior to initial election. I show the distribution of this variable in the appendix. In this model evaluating H_3, I include Senator-level time invariant control variables such as whether the Senator is a woman, whether the Senator is a

hypotheses are specified with robust standard errors clustered by individual legislator given the panel nature of the data.

## 2.2   Results: Senators Respond to Incentives With Greater Effectiveness

I begin the investigation of whether Senators adjust their effectiveness and productivity in anticipation of being "in-cycle" facing voters with evaluation of H_1 *In-Cycle Anticipation Hypothesis*. Recall that I expect Senators to be more legislatively effective and productive in the "in-cycle" Congress preceding when their seat is up for re-election relative to the Congresses not preceding a re-election.[8] As mentioned earlier, I validate the TWFE approach by comparing the model to a replication of Volden & Wiseman's (2018) model of Senate Legislative Effectiveness. As Figure 1 shows, the relationship between being up for re-election (i.e., "being in-cycle") and Senator legislative effectiveness are nearly identical between both models. Indeed, Volden & Wiseman (2018) model shows that Senators in-cycle are 0.08 more legislatively effective relative to Senators not in-cycle. By contrast, the TWFE model shows that when an individual Senator goes from being not in-cycle to being in-cycle, they are 0.11 more legislatively effective. For reference, the first quartile, median, and third quartile of Senate Legislative Effectiveness is 0.34, 0.70, and 1.01, respectively. This translates to about a 1.08% increase in their legislative effectiveness or a tenth of a standard deviation. In terms of magnitude of the relationship between in-cycle and Senate Legislative Effectiveness Score, note that the replication and the TWFE model finds a comparable significant positive relationship with the 0.06 presented by Volden & Wiseman (2018) in their assessment from 1973-2015. Taken together, I find evidence that validates the TWFE approach and also provides one set of empirical evidence that Senators do adjust their legislative effectiveness prior to being in-cycle.

I turn to Figure 2 to evaluate whether Senators are not only more effective when they are

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Latino, whether the Senator is African-American, and an interaction term between southern Senator and Democratic Senator.

[8]In the forthcoming results, I drop the small handful of cases of Senators that die and do not complete their tenure within a given Congress. Note that only 20 such observations out of 2,533 are in which a Senator dies in office.

Figure 1: The Marginal Effect of Being In-Cycle on Senator Legislative Effectiveness, 1974-2022
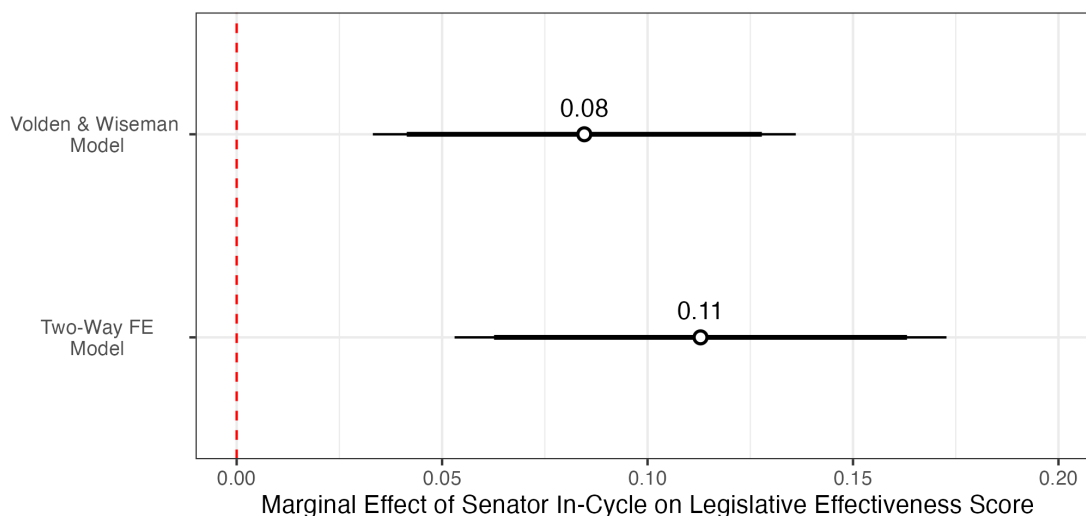
Note: The outcome variable in the models are a Senator's Legislative Effectiveness Score in a given Congress. The first marginal effect is derived from a model replication of Volden & Wiseman (2018) using an almost identical set of control variables. The second marginal effect is derived from a two-way member and Congress fixed-effects (TWFE) model providing for identification of the *within* Senator effect of being in-cycle on legislative effectiveness.

in-cycle but also more legislatively productive. The results of the TWFE model finds a similar result, with Senators in a re-election cycle introducing significantly more pieces of legislation than when they are not in-cycle across different bill types. Relative to being out-of-cycle, being in-cycle motivates Senators to introduce 0.30 substantive & significant bills, 0.35 commemorative bills, 5.78 total bills, and 5.08 substantive bills. Taken together, I find strong evidence for H_1 that Senators are more effective and productive in the Congress prior to re-election.

The preceding evaluation of H_1 replicates and further evaluates traditional arguments in the literature that the electoral life-cycle provided by staggered six-year terms allows Senators to shirk on effectiveness and productivity up until the Congress preceding a judgement by voters (Shepsle et al., 2009; Volden & Wiseman, 2018). However, these prior arguments focus on a simple binary treatment of being "out-of-cycle" or "in-cycle", potentially missing the nuance in how Senators ramp up their resumes throughout their staggered six-year term. As such, I formulate the H_2 *Electoral Proximity Anticipation Hypothesis* to test the dynamics of rational anticipation within a given Senator's six-year term. Recall that I expect Senators to become more effective

Figure 2: The Marginal Effect of Being In-Cycle on Senator Legislative Productivity, 1974-2022
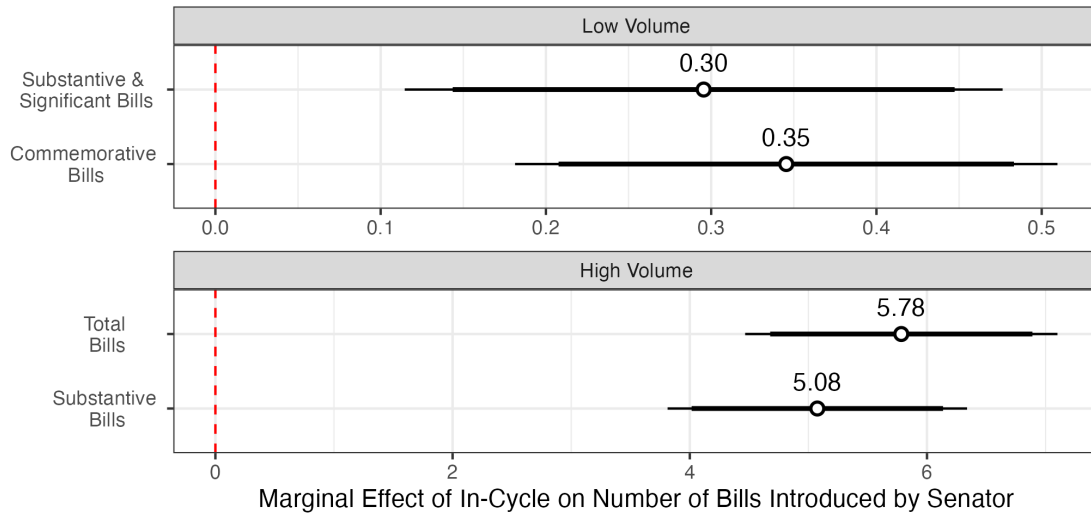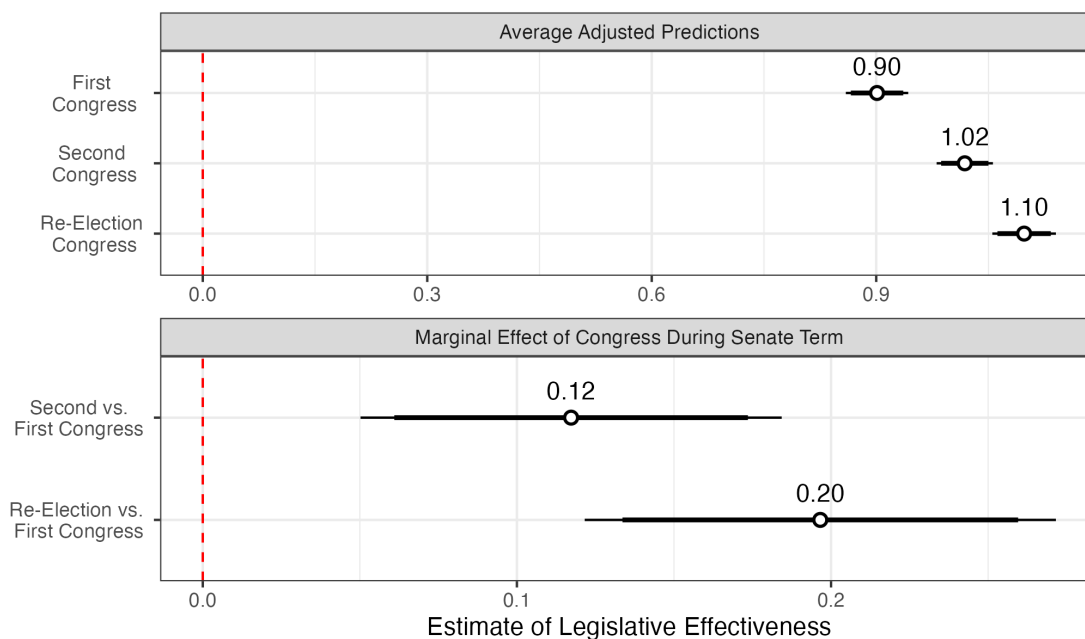
Note: The outcome variable in the models are the number of bills being introduced by a Senator in a given Congress for (1) substantive & significant bills, (2) commemorative bills, (3) total number of bills, and (4) only substantive bills. Each row articulates the results for a given model evaluating a different outcome variable. For ease of interpretation in the figure, I group the models by "low" and "high" volume bills. TWFE poisson regression estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

and productive the closer in proximity they are to their re-election cycle. As such, in this model specification, I only consider Senators that sought re-election and drop those that are in their final six-year term due to voluntary retirement.[9] The bottom panel of Figure 3 provides evidence of this hypothesis, with Senators in their second Congress and re-election Congress being 0.12 (moving from 0.90 to 1.02) and 0.20 (moving from 0.90 to 1.10) more effective relative to the first Congress of their six-year term. These marginal effects translates to about a 1.18% and 1.96% increase in legislative effectiveness in the second and re-election Congresses relative to the first Congress of their term. I also note that the marginal effects between the second and re-election in-cycle Congresses are significantly different from each other ($\rho = 0.024$), providing evidence that Senators are significantly more effective in their re-election Congress relative to the second Congress of their term.

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[9]This analytical decision does not alter the substantive conclusions of the forthcoming evaluations of H_2 *Electoral Proximity Anticipation Hypothesis* and the results are robust to pooling both retiring and non-retiring Senators.

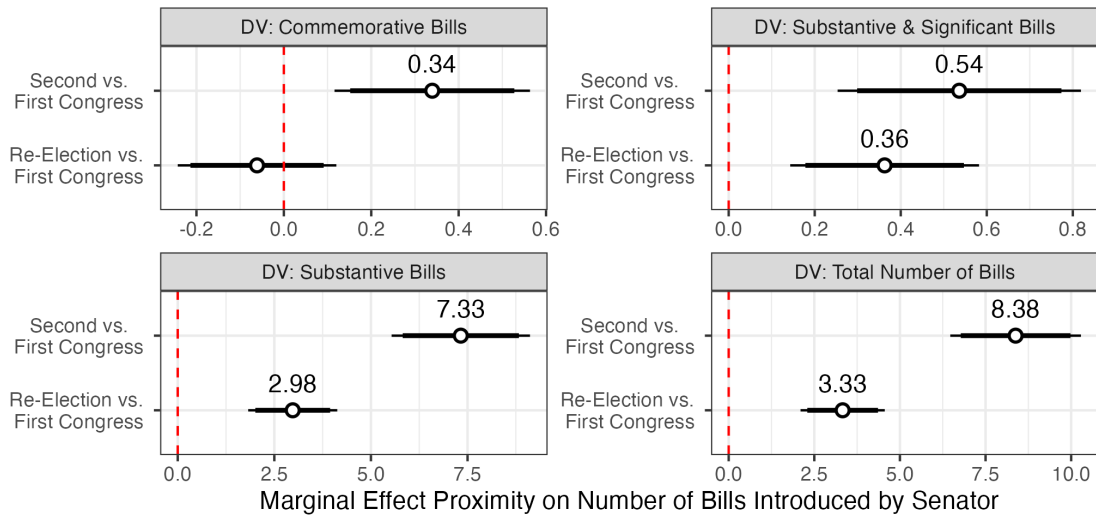Figure 3: The Marginal Effect of Electoral Proximity on Senator Legislative Effectiveness, 1974-2022

Note: The outcome variable in the models are a Senator's Legislative Effectiveness Score in a given Congress. The marginal effects are derived from a two-way member and Congress fixed-effects (FEs) model providing for identification of the within Senator effect of electoral proximity on legislative effectiveness. OLS estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

Turning to Figure 4, I find more evidence for H_3. Each panel of Figure 4 shows the marginal effect of electoral proximity relative to the first Congress of a Senator's term on a given outcome variable measuring legislative productivity. With the exception of commemorative bills, each marginal effect is significant, indicating that Senators are more legislatively productive in the second and re-election Congress relative to the first Congress of their term. However, perhaps owing to the campaign pressures of a re-election bid in the last Congress of their sexennial term, I find that relative to the first Congress of their term, Senators are more productive in the second Congress of their term as opposed to the re-election Congress. Indeed, I find Senator legislative productivity increases 0.34 commemorative bills, 0.54 substantive & significant bills, 7.33 substantive bills, and 8.38 total bills when they are one Congress closer to re-election relative to the first Congress of their term. By contrast, I observe that being in their re-election Congress

only raises legislative productivity 0.36 substantive & significant bills, 2.98 substantive bills, and 3.33 total bills. With the exception of the finding that Senators are no more productive on commemorative bills in their re-election Congress relative to the first Congress of their term, I find Senators are more legislatively productive by drafting and introducing more legislation after the first Congress of their term as they approach re-election. However, as opposed to effectiveness, I find that this spike in legislative productivity is greatest in the Congress preceding the re-election Congress. Thus, I find additional evidence in H_2 that there is variation in the rational anticipation of electoral costs of representation for Senators, with Senators increasing their effectiveness monotonically in the Congresses preceding a re-election bid while Senators are generally more legislatively productive in the two Congresses prior to re-election.

Figure 4: The Marginal Effect of Electoral Proximity on Senator Legislative Productivity, 1974-2022

Note: The outcome variable in the models are the number of bills being introduced by a Senator in a given Congress for (1) substantive & significant bills, (2) commemorative bills, (3) total number of bills, and (4) only substantive bills. Each row articulates the results for a given model evaluating a different outcome variable. The marginal effects are derived from a two-way member and Congress fixed-effects (FEs) model providing for identification of the within Senator effect of electoral proximity on legislative productivity. Poisson regression estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

In the two preceding hypothesis tests, I find that Senators react to being in-cycle and closer proximity to re-election by increasing their legislative effectiveness and productivity. This is

especially noteworthy given that the preceding model evaluating H_1 controls for the decision by a Senator to retire in the Congress preceding re-election. However, the possibility remains that the findings of greater effectiveness and productivity can be endogenous to the decision to seek re-election itself. To fully test this assumption, I provide an additional test of H_2 by considering the legislative effectiveness of *Senators that choose to voluntarily retire and serving in their final term.* As I assert in H_3 *Retirement Falsification Hypothesis*, I argue that Senators voluntarily forgoing re-election are not more effective and productive in their final term as they approach re-election. This provides for falsification testing by assessing variation in legislative effectiveness over the last term of 164 voluntarily retiring Senators. For the falsification to address endogeneity concerns, I expect to not replicate the finding that retiring Senators are more legislatively effective close in electoral proximity since these Senators made the decision to retire from the upper chamber at some point during their last term. Figure 5 presents results of this falsification test. As one can see, I find no evidence that Senators who choose to retire at some point in their final term are more legislatively effective closer to the election in which their seat is up before voters. In fact, I find suggestive evidence at $\rho < 0.10$ that retiring Senators are *less* effective in the last Congress of their retiring term (i.e., the "re-election" Congress before they voluntarily retire), with retiring Senators being 1.32 less effective in the last Congress of their final voluntarily retiring term than in the first Congress. This translates to a *pronounced* decline of 12.95% in the legislative effectiveness of a retiring Senator in the last Congress of their retiring term relative to the first two years of the six-year term.

Figure 5: Falsification Test of Electoral Proximity on Retiring Senator Legislative Effectiveness
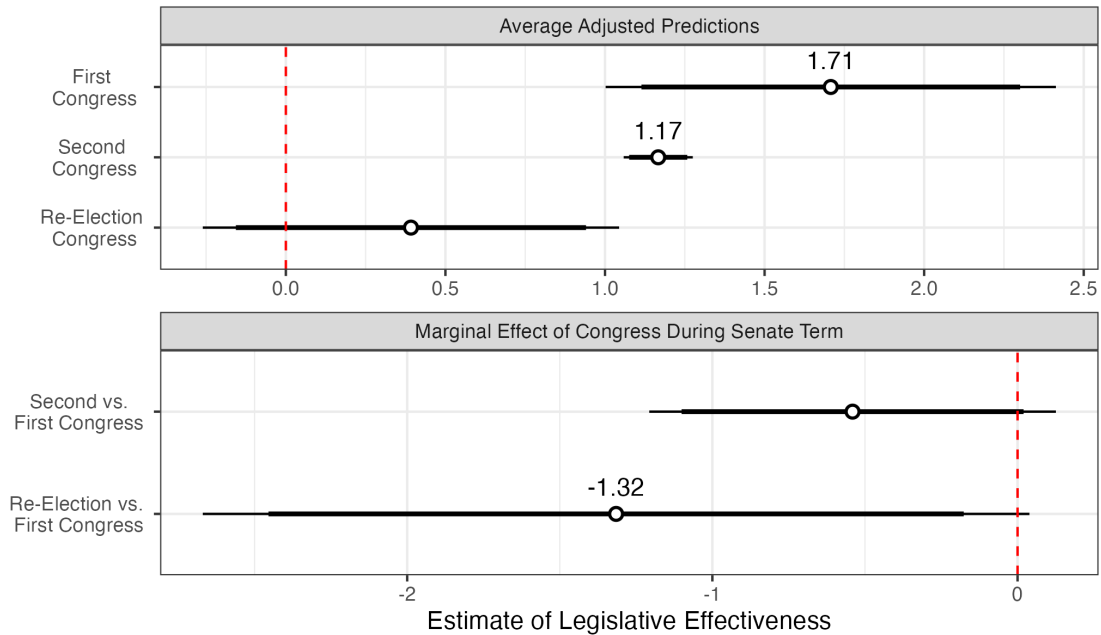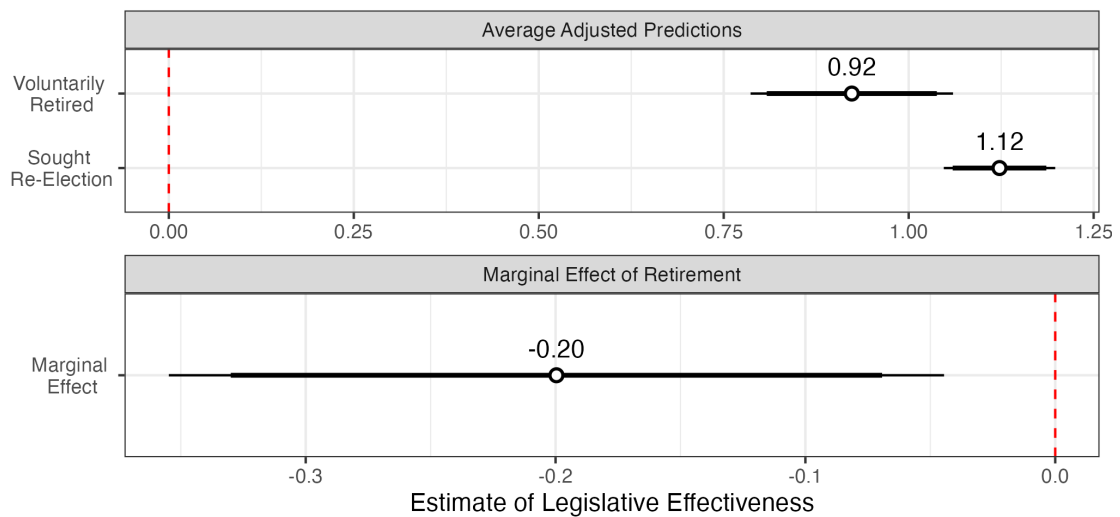

Note: The outcome variable in the models are a retiring Senator's Legislative Effectiveness Score by Congress in their final term. The marginal effects are derived from a two-way member and Congress fixed-effects (FEs) model providing for identification of the within Senator effect of electoral proximity on legislative effectiveness. OLS estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.10$ are labelled.

To further elaborate on this suggestive implication found in the falsification test, I evaluate H_5 **Retirement Anticipation Hypothesis**. Figure 6 presents results of this model. I find strong support that Senators that voluntarily retire are less effective in the Congress prior to when their seat is up for election compared to their colleagues that seek re-election in the same cycle. The marginal effect of retirement on legislative effectiveness is -0.20, which translates to about a 1.96% decline in effectiveness between retiring and non-retiring Senators. Figure 7 provides additional support for H_4 within the context of legislative productivity. While retiring Senators are no less productive on small volume legislation such as substantive & significant and commemorative bills as their re-election seeking colleagues, they are far less productive in terms of producing the total number of legislative pieces and substantive policy bills. As Figure 7 shows, retiring Senators produce about 9.20 (8.67) less total (substantive) pieces of legislation than their colleagues that
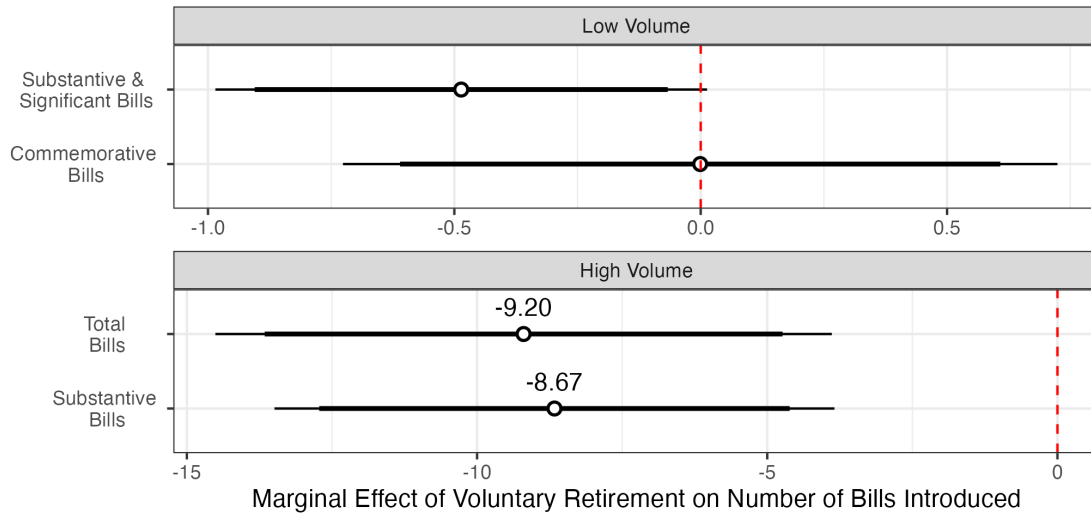
seek re-election.

Figure 6: The Marginal Effect of Retirement on Senator Legislative Effectiveness, 1974-2022

Note: The outcome variable in the models are a Senator's Legislative Effectiveness Score in the Congress in which their seat is up for election. The marginal effects are derived from a model holding in-cycle constant to evaluate differences in legislative effectiveness between legislators that voluntarily retire and those that seek re-election, thus dropping legislator fixed-effects. OLS estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

Figure 7: The Marginal Effect of Retirement on Senator Legislative Productivity, 1974-2022

Note: The outcome variable in the models are the number of bills being introduced by a Senator in a given in-cycle Congress for (1) substantive & significant bills, (2) commemorative bills, (3) total number of bills, and (4) only substantive bills. Each row articulates the results for a given model evaluating a different outcome variable. The marginal effects are derived from a model holding in-cycle constant to evaluate differences in legislative effectiveness between legislators that voluntarily retire and those that seek re-election, thus dropping legislator fixed-effects. Poisson regression estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

3   Legislative Effectiveness, Success, & Mediating Role of Campaign Resources

3.1   Specifying a Mediation Analysis of Effectiveness, Fundraising Advantage, & Success

In the previous section, I find clear evidence across the rational anticipation hypotheses that Senators shift their legislative effectiveness and productivity in response to the constituency-based incentive of re-election. Not only are Senators more effective and productive when they are in-cycle, they also become *more* effective and productive as their term nears electoral proximity. I do not observe the same behavior over a term among Senators that decide to voluntarily retire at some point during their final term, and I also find in *between* Senator estimation that retiring Senators are *less* productive than their colleagues that seek re-election. Results of this hypothesis

testing naturally leads to the question that if Senators perceive a re-election incentive to be more legislatively effective, are they able to use this effectiveness into electoral success?

In this study, I turn to the specification of models to evaluate hypotheses positing *how* Senators can translate legislative effectiveness into electoral success. As I point out in the theoretical framework, I argue that the ability of Senators to translate legislative effectiveness towards electoral success is mediated by the ability to translate this effectiveness to procure a fundraising resource advantage in the primary. To provide support for this mediation analysis, I must find support for that Senator legislative effectiveness *directly* deters candidates and raises the probability of a primary victor as I argue in H_{5A} and H_{5B}.

Towards that end, I begin by specifying a model towards evaluating H_4 *Effectiveness Deterrence Hypothesis*. As I theorize more effective Senators should be better equipped at deterring challengers, particularly quality candidates with prior elected experience and progressive ambition, from opposing them within their primary and in the opposing party's primary. Fearing the potential crushing loss of an electoral defeat at the primary or general election stage, quality candidates with prior elected experience might be more willing to forgo emerging in races to oppose effective incumbents relative to less effective incumbents. However, I also note that Senate seats are far scarcer commodities than House seats and the risk of potentially deferring the opportunity to unseat an incumbent once every six years could be a tall task for quality candidates within the Senator's party and in the opposing party. To evaluate these two competing arguments, I specify a series of models estimating the number of candidates emerging to challenge an incumbent Senator in the primary election and the number ultimately participating in the primary election proceedings. In total, I leverage 10 outcome variables measuring this candidate opposition in the following manner. For both out-party and intra-party opposition, I measure the number of total and quality candidates that emerged and contested the primary election for a total of 8 models measuring challenger opposition to a Senator's bid within their own party or in the opposing party respectively. By taking this approach I can evaluate whether more effective Senators can deter the number of candidates that decide to emerge in the primary election in the first place

and also deter the number of candidates contesting the primary *after* making the decision to run.

I measure these key outcome variables by coding the political backgrounds of all U.S. Senate candidates that emerged and filed with the *Federal Election Commission* from 1980-2022.[10] Following Lublin's (1994) convention, I use newspaper archives to code whether a non-incumbent candidate held prior elected office as a local official, state legislator, lower statewide office (i.e., attorney general, treasurer), member of Congress, governor, former U.S. Senator, or an amateur with no prior elected experience. I code quality candidates as a binary variable indicating those with prior elected experience (Jacobson, 1989). I then aggregate up for each political parties' primary to measure the number of candidates that emerge and, specifically, the number of quality candidates that emerge. I repeat these aggregation for candidates that *make it to and contest the primary* to account for the fact that about half of all Senate candidates drop out of the primary prior to the election. On average, about 2.51 candidates emerge to challenge a Senator in their own party's primary while 4.69 candidates emerge to challenge a Senator in the opposing party's primary. In terms of quality candidates, which pose more of an electoral threat to a Senator's re-election relative to an amateur, on average about 1.43 quality candidates emerge in the opposing party's primary while only 0.64 quality candidates on average oppose an incumbent in their own primary.

Now that I oppose the outcome, I can propose a direct test of $H_{4(A\&B)}$ by specifying the right-hand side of the model. the main predictor of interest is a Senator's Legislative Effectiveness Score in the Congress prior to re-election. I also specify a set of control variables consistent with Treul et al.'s (2022) model of U.S. House primary elections by controlling for other known predictors of electoral success, such as ideological extremity, gender, and the partisan preferences of the state among others.[11] I specify the model with Congress-fixed effects and again cluster the standard errors by Senator.

As I note in the theoretical discussion, support for H_{5A} can be taken as evidence of a direct

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[10]Towards that end, I compare the FEC data with data from Bonica (2014) to get a comprehensive roster of candidates that emerged to seek a U.S. Senate. I identify a total of 6,222 candidates that ran for Senate from 1980-2022.

[11]I articulate the control variables of the electoral success models in the appendix. I control for ideological extremity, gender, state's partisan preference relative to the partisanship of the Senator (i.e., higher values indicate more favorable partisan state), membership into a power committee, seniority, member of the majority party, and party leader.

relationship between effectiveness and the deterrence of competition by more effective Senators. To evaluate H_{5B} *Effectiveness Success Hypothesis*, I can simply switch the outcome variable of the previously specified model with a binary outcome variable capturing if a Senator won or lost their primary. For the mediating argument to hold, I must also find support for a direct relationship between legislative effectiveness and campaign resources as argued in H_6 *Effectiveness Fundraising Advantage Hypothesis*. To that end, I specify the baseline model previously described but switch out the outcome variable to a measure capturing the proportion of campaign fundraising procured by the incumbent Senator *during* the primary campaign. To do so, I calculate a proportion where the numerator is the total amount of campaign receipts raised by the Senator during the primary divided by the total amount of all campaign receipts raised by *all* candidates running for the Senate seat. This measure is bounded on a scale of 0 to 1, with Senators on average being responsible for 72% (0.72) of all primary fundraising receipts, showing a pronounced advantage over all their challengers (i.e., both intra-party and opposing party challengers) seeking their seat at the initial stage of the campaign. If there is a direct relationship between a Senator's legislative effectiveness and the proposed mediating variable measuring a Senator's campaign resource advantage, this provides further evidence of the potential that the relationship between legislative effectiveness and electoral success is mediated by a campaign resources advantage.

The last test of the mediating theory is respecifying the models evaluating $H_{4(A\&B)}$ with both legislative effectiveness and the campaign fundraising advantage as predictors of electoral success in the domains of deterrence and primary election victory. Support for the mediation theory articulated in H_{7A} *Fundraising & Deterrence Mediation Hypothesis* and H_{7B} *Fundraising & Success Mediation Hypothesis* would take the form of having legislative effectiveness be an insignificant predictor of the outcome variables while the fundraising advantage would be significant positive predictors. For example, evidence of the hypothesis H_{7B} would require three steps. First, legislative effectiveness must have a direct effect on the probability of winning the primary as I posit in H_{5B}. Second, legislative effectiveness must have a direct effect on a Senator's primary fundraising advantage as I posit in H_5. Lastly, when leveraging effectiveness and fundraising advantage as

predictors of primary victor in the *same* model, legislative effectiveness must be an insignificant predictor while campaign fundraising advantage should be a significant positive predictor. Observing this third step would strongly suggest that the effect of legislative effectiveness on primary victory is mediated through a campaign resource advantage as I argue in H_{7B}.

4 Results: The Mediating Role of Fundraising Advantage

4.1 Translating Effectiveness to Success: The Mediating Role of Resource Advantage

I bring the evaluation of whether Senators can turn their legislative effectiveness into electoral success with testing whether there is a direct relationship between effectiveness and candidate deterrence as I argue in H$_{5A}$ *Effectiveness Deterrence Hypothesis*. Figure 8 finds evidence consistent with Treul et al.'s (2022) investigation of U.S. House primaries, more effective Senators being able to deter intra-party quality challengers but *not* challengers of the opposing party or amateur challengers within their own party. This suggests that more effective Senators are able to consolidate intra-party support and deter ambitious quality challengers with prior elected experience. Perhaps owing to the scarcity of a U.S. Senate seat (Gronke, 2001), I find that more effective Senators draw just as many out-party challengers and out-party quality challengers as less effective Senators, with these opposing partisans not deterred due to incumbent legislative effectiveness. As Figure 8 shows, going from the minimum to maximum value of legislative effectiveness results in a significant decline of 0.40 and 0.67 in the total number of quality challengers that *emerge* and ultimately *contest* the primary stage. In terms of the total amount of competition between both party's primaries, I find that more effective Senators deter the number of quality challengers emerging and contesting a Senators' re-election. Turning to intra-party competition, going from the minimum to maximum value of legislative effectiveness results in a significant decline of 0.23 and 0.12 in the total number of quality challengers that emerge, and ultimately contest, a Senator's re-election in their primary. Taken together, I find clear evidence of a direct relationship between effectiveness and deterrence of potential challengers that emerge and contest primaries, but with this deterrence dynamic being concentrated in intra-party competition.

Turning to the evaluation of *H$_6$ Effectiveness Fundraising Advantage Hypothesis*, which would show a relationship between effectiveness and the proposed mediator of campaign fundraising advantage, I find clear evidence of the hypothesis in Figure 9. As Figure 9A shows, the predicted
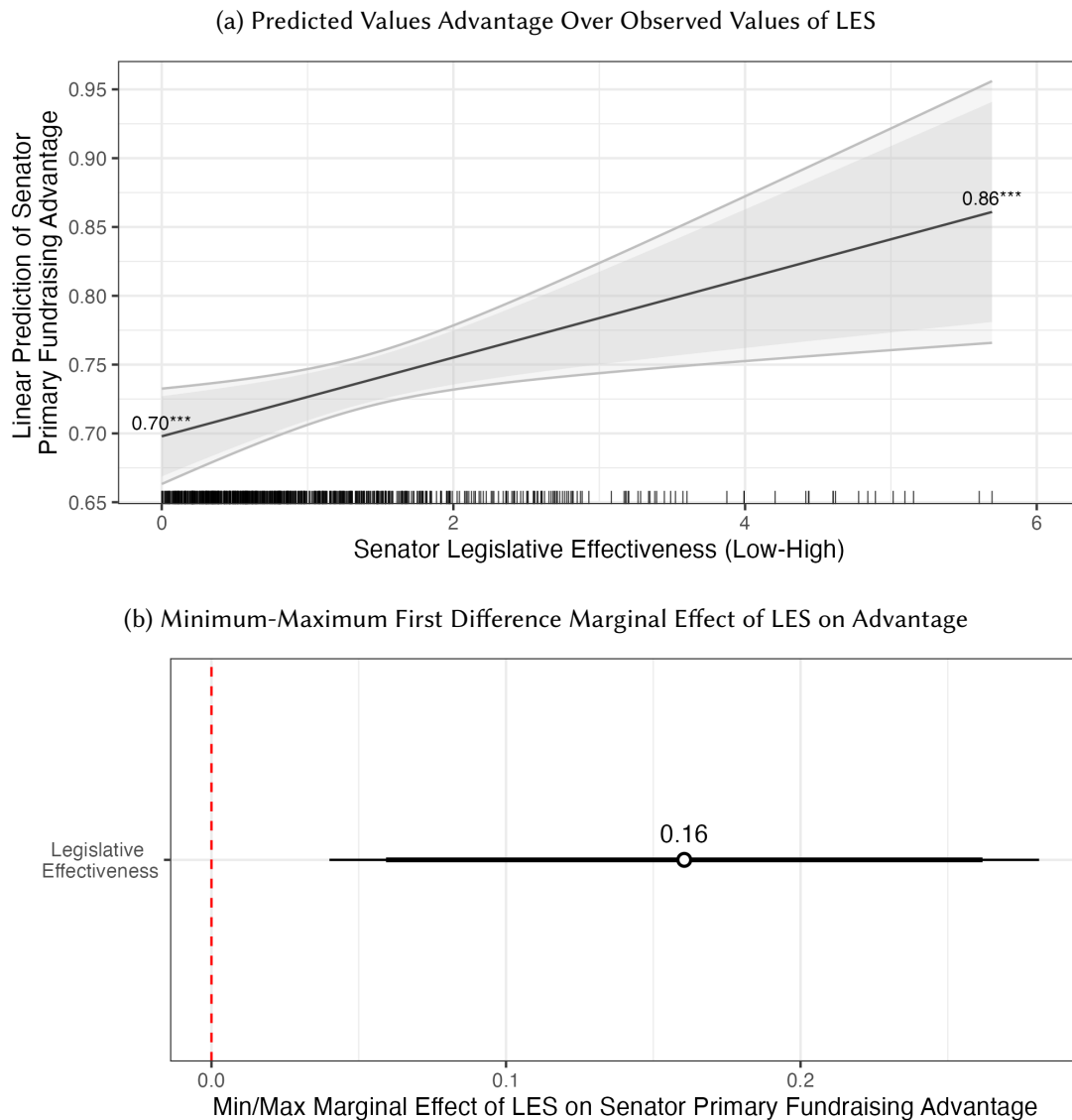
Figure 8: The Direct Marginal Effect of Effectiveness on Deterring Primary Election Candidates, 1980-2022
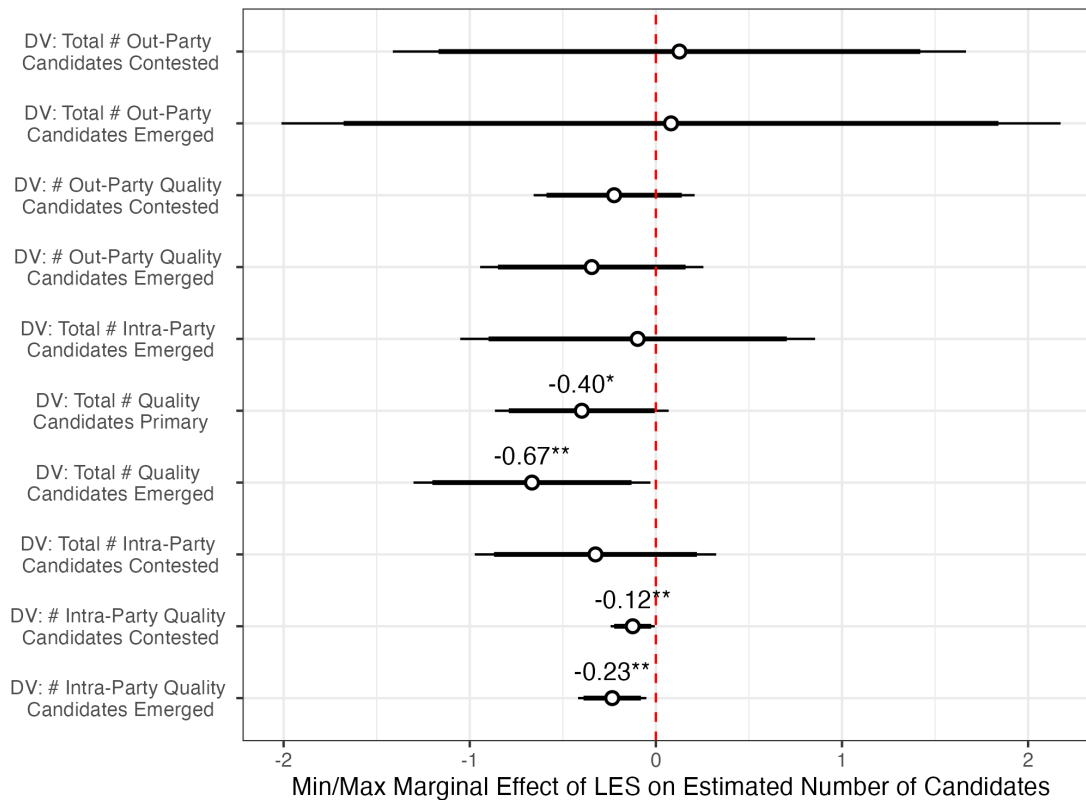
Note: Each row articulates a different outcome variable measuring an amount of candidate competition within each party and across the entire primary race. The marginal effects are derived from a model considering incumbents that sought re-election and a vector of control variables with Congress fixed-effects. Poisson regression estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.10$ are labelled.

value of Senator primary fundraising advantage at the minimum value of effectiveness is 0.70 while this predicted value is 0.86 at the maximum observed value of effectiveness. Figure 9B shows that this marginal increase 0f 0.16 in campaign fundraising advantage is statistically significant, suggesting that the least effective Senators garner a 69% fundraising advantage during the primary campaign while the most effective Senators garner a stark 85% advantage. Indeed, I show that effective Senators can also translate this success to the campaign front, with these Senators being able to out fundraise the field of challengers in the primary, thus enabled to build robust campaign organizations that can be used to advance their electoral success.

Figure 9: The Direct Marginal Effect of Effectiveness on Primary Fundraising Advantage, 1980-2022

(a) Predicted Values Advantage Over Observed Values of LES

(b) Minimum-Maximum First Difference Marginal Effect of LES on Advantage

Note: The outcome variable is Senator's primary fundraising advantage over all challengers that emerged in the race. The marginal effects are derived from a model considering incumbents that sought re-election and a vector of control variables with Congress fixed-effects. OLS regression estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

Thus far I have established a direct link between effectiveness and; (1) challenger deterrence and (2) primary campaign resource advantage. As I argue in H_{7B} *Fundraising & Success Mediation Hypothesis*, the relationship between effectiveness and deterrence is mediated by a campaign fundraising advantage that effective incumbents hold over their challengers. To test this hypothe-

sis, I turn to Figure 10, where I expect the direct relationship between effectiveness and deterrence to cease once adding primary fundraising advantage as a predictor in the model. I find robust evidence of the mediation hypothesis posited in H_{7B}. Taking the four outcome variables that were directly predicted by legislative effectiveness, I find that legislative effectiveness ceases to be a predictor after accounting for a Senator's primary fundraising advantage as a predictor. Indeed, across all four models in Figure 10, I find that effectiveness no longer significantly predicts deterrence while the primary fundraising advantage is strongly predictive of this deterrence. For example, going from the minimum value of campaign fundraising advantage at 0 to the maximum value of 1 decreases the number of intra-party quality challengers that emerged (contested) the primary by 0.77 (0.88). Across both primaries (i.e., both intra-party and out-party primaries), this minimum-maximum first difference marginal effect of primary fundraising advantage results in a decline of 3.33 (2.59) in the total number of quality candidates that emerge (participate) in the Senate race at the primary stage.

Figure 10: Mediation Analysis of Effectiveness, Fundraising Advantage & Candidate Deterrence
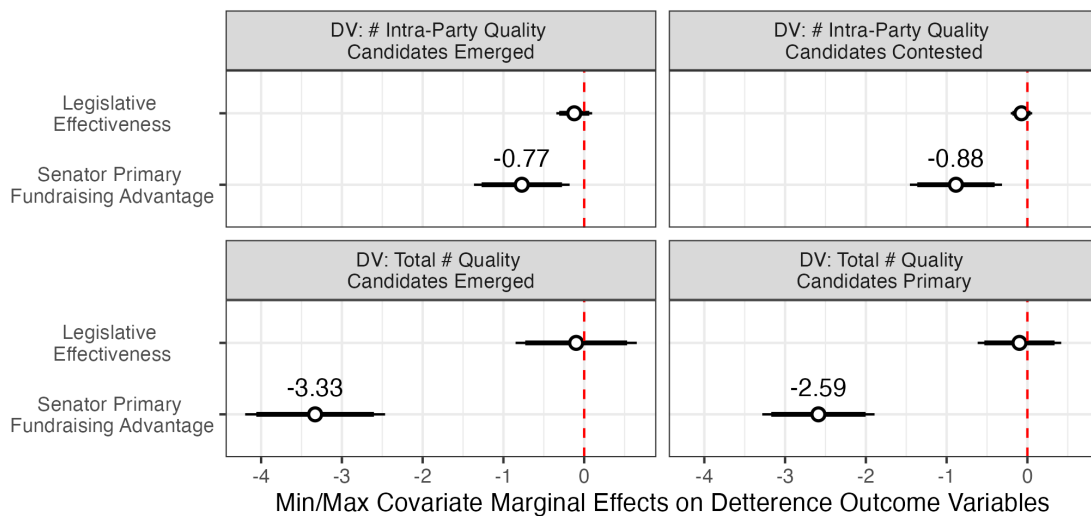
Note: Each panel articulates a different outcome variable measuring an amount of candidate competition within each party and across the entire primary race. The marginal effects are derived from a model considering incumbents that sought re-election and a vector of control variables with Congress fixed-effects. Poisson regression estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

To further assess the mediation theory, I leverage an outcome variable measuring whether or not a Senator won the primary and renomination. I hypothesize in H_{5B} **Effectiveness Success Hypothesis** that more effective Senators are more likely to win the primary (i.e., evidence of a direct relationship between effectiveness and success) and, subsequently, I posit in H_{7B} **Fundraising & Success Mediation Hypothesis** that this relationship between effectiveness and success to be again mediated by a campaign fundraising advantage. Figure 11 replicates the mediation finding within the context of primary victory. The first panel of Figure 11 evaluates H_{5B} while the second panel evaluates the mediation hypothesis H_{7B}. As I see in the first panel, going from the minimum to the maximum value of legislative effectiveness results in a 6% increase ($\rho = 0.08$) in the probability of winning the primary for an incumbent Senator. In the second panel, I observe that legislative effectiveness ceases to be a significant predictor of winning the primary when specifying the model with Senator primary fundraising advantage, with going from the minimum to maximum value of this variable resulting in an 8% increase in the probability of winning the primary. Congruent with the preceding analysis in the domain of challenger deterrence, here too I find that the relationship between effectiveness and likelihood of winning the primary is mediated by a campaign fundraising advantage over challengers in the primary election.

Figure 11: Mediation Analysis of Effectiveness, Fundraising Advantage & Primary Success
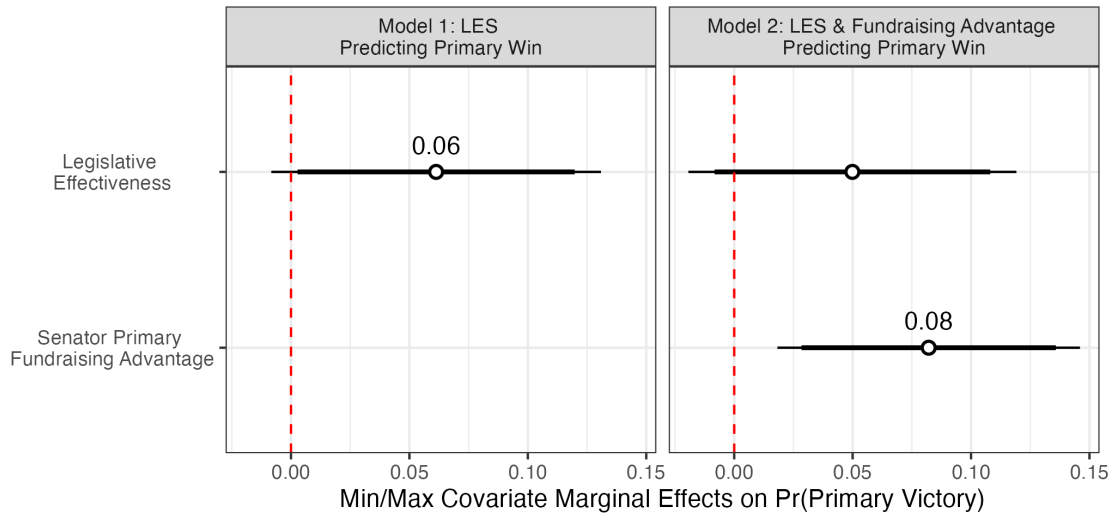
Note: Each panel articulates a different model, with the first model modeling testing the direct effect of effectiveness on probability of primary win and the second model testing whether the effectiveness effect on primary win is mediated by Senator primary fundraising advantage. The marginal effects are derived from a model considering incumbents that sought re-election and a vector of control variables with Congress fixed-effects. Linear probability model estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.10$ are labelled.

5 Exploring Downstream General Election Implications

Thus far, I assess the theory within the context of first-stage primary elections. the focus on the dynamics apparent in both a Senator's primary and the opposing party's primary centers on the fact that opposition to an incumbent's re-election takes shape long before the general election. As I motivate in the introductory case study of Sen. Dick Lugar, potential challengers target Senators that fail to ramp up effectiveness prior to a re-election bid at the primary stage rather than manifesting itself during the general election campaign. I show less effective Senators are more likely to draw intra-party quality challengers with this relationship being mediated by a campaign fundraising advantage. However, does the theory of how effectiveness translates to success carry downstream implications for the general election campaign?

To explore these potential downstream implications, I apply the mediation analysis to three outcome variables measuring electoral success in the general election: (1) deterring the nomination of a general election quality challenger; (2) a general election fundraising advantage over a challenger (i.e., an advantage in campaign fundraising *after* completion of the primary); and (3) likelihood of a general-election victory. Figure 12 conveys this exploration, with the first panel testing the direct relationship between legislative effectiveness and each of these outcomes and the second panel testing whether this relationship is mediated by a Senator's primary fundraising advantage. As the first panel of Figure 12 shows, there is no direct relationship between legislative effectiveness and the probability of drawing a quality challenger and general election victory. The latter finding within the Senate context replicates the finding presented by Butler et al. (2021) that there is no significant difference in the electoral success of members of Congress on the basis of legislative effectiveness. By contrast, however, I do find that legislative effectiveness *does* translate in a greater general election fundraising advantage after completion of the partisan primary. In Figure 12 Panel 2 I find that this direct relationship between effectiveness and a general election fundraising advantage is mediated by a primary advantage, with primary fundraising advantage being strongly predictive of a general election fundraising advantage. Going from the minimum

to maximum value of Senatorial primary fundraising advantage is associated with a 73% increase in general election fundraising advantage. While the second panel of Figure 12 shows a significant negative relationship between a primary fundraising advantage and nomination of a quality challenger and a significant positive relationship with the probability of winning the general election campaign, this relationship is independent of a Senator's legislative effectiveness. Taken holistically, I find exploratory evidence that the mediated relationship between effectiveness and electoral success is sustained as one moves from the primary to general election campaigns. While I find no evidence that legislative effectiveness plays a role in deterring the opposing party from nominating a quality challenger or the likelihood of re-election, I do find that this effectiveness does play a role in garnering a general election fundraising advantage which is critical towards increasing the likelihood of a Senator's successful re-election (Gerber, 1998).

6   Discussion: Effective Senators & Specter of Electoral Costs

Unlike their counterparts in the lower chamber, U.S. Senators do not face the constant pressures of two-year re-election cycles. Provided six full-year terms, on the surface, U.S. Senators seem to have the luxury of time to strategically shift their legislative effectiveness prior to re-election. Given that legislative effectiveness and productivity requires an expense of resources by individual legislators, I argue that Senators strategically expend the resources to become more effective and productive prior to re-election. I find strong support, leveraging *within* Senator variation in effectiveness, that Senators are aware of this electoral incentive and systematically shift their behavior toward being more effective and productive prior to re-election. I also find in a model assessing variation *between* Senators that retiring Senators are less effective and productive than their colleagues seeking re-election before voters.

As subsequent assessments show, this strategic increase in effectiveness ahead of a re-election bid by individual Senators is well warranted. Focusing on first-stage primary elections, which are increasingly the competitive contest as states become more nationalized and electorally "safe"

Figure 12: Mediation Analysis of Effectiveness, Fundraising Advantage & General Election Success
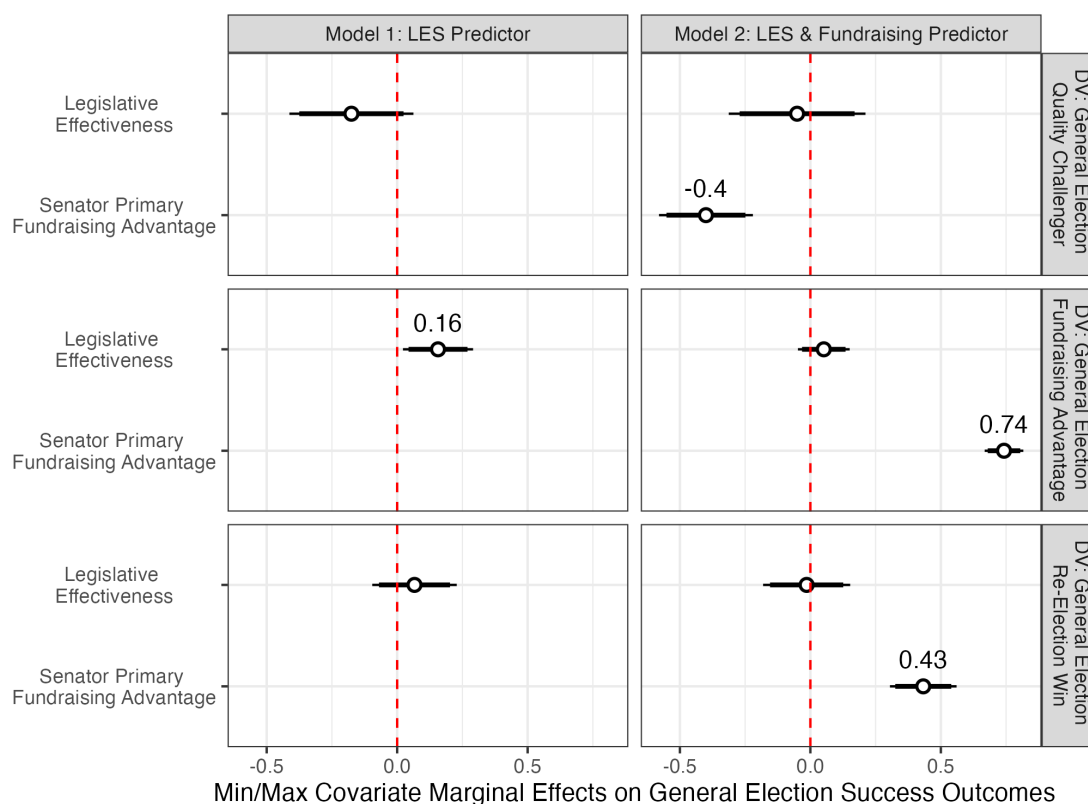
Note: Each panel column shows a different model, with the first model modeling testing the direct effect of effectiveness on the outcome and the second model testing whether the effectiveness effect on the outcome is mediated by Senator primary fundraising advantage. Each panel row shows a given outcome variable being assess of either (1) drawing a nominated opposing party quality challenger, (2) garnering a fundraising advantage, and (3) winning the general election campaign. The marginal effects are derived from a model considering primary election winning incumbents and a vector of control variables with Congress fixed-effects. Linear probability model estimation with 90% (thick lines) and 95% (thin lines) confidence intervals of both models being derived from robust standard errors clustered by Senator. Significant marginal effects at $\rho < 0.05$ are labelled.

for parties (Hopkins, 2017), I find clear evidence that legislative effectiveness can be used toward an electoral end. Indeed, greater effectiveness prior to a re-election bid allows Senators to garner a fundraising advantage relative to challengers that emerge at the primary election stage, which can then be used to deter intra-party challengers and ultimately win renomination by their party. I find that this theoretical framework extends to the general election stage, with this primary election fundraising advantage carrying over to a general election fundraising advantage. While I replicate previous findings that effectiveness does not correlate with the propensity of a general

election victory (Butler et al., 2021) or deterring the opposing party from nominating a quality challenger, I do find that effectiveness does provide Senators with the critical campaign resource advantage needed to mount credible potentially successful campaigns.

I motivated this paper by focusing on the ultimately unsuccessful re-election campaign of Sen. Dick Lugar (R-IN) during the 2012 election cycle and attempted to draw a connection between the lack of legislative effectiveness and electoral costs. Heading into his 2012 re-election campaign, Sen. Lugar encountered a decline in legislative effectiveness that ultimately drew a quality intra-party challenger that unseated him in the primary. This case study highlights the two contributions to the literature on representation and electoral accountability by showing that (1) legislators respond to re-election incentives by being more effective and productive and (2) failure to respond to these incentives ultimately invites strong intra-party quality challengers and a declining probability of electoral success.

Future work should assess *how* Senators can strategically shift their effectiveness prior to re-election and what the role of party leaders could be in facilitating this increased effectiveness. This is of particular concern for leaders of the majority party tasked with boosting the re-election chances of their individual members (Cox & McCubbins, 2005). Since effectiveness can translate to greater electoral success, the work suggests that party leaders have a strong incentive to provide avenues for their members to be more effective in the eyes of their constituents. As Volden & Wiseman (2018) note, committee membership plays a large role in shaping legislative effectiveness, perhaps party leaders can strategically place vulnerable Senators on power committees to boost their perceived effectiveness prior to a re-election bid. In totality, the work here builds on prior work by Treul et al. (2022) showing that within the context of the more high profile and competitive U.S. Senate, legislators can use effectiveness towards an electoral advantage. I concur that future work should leverage primary elections, particularly given the rise of nationalized partisan elections and a shrinking of competitive two-party elections, as a context to answer further questions regarding how legislators anticipate electoral costs within their party.

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