European Journal of Political Economy 40 (2015) 42–56

Contents lists available at ScienceDirect

European Journal of Political Economy

journal homepage: www.elsevier.com/locate/ejpe

Congressional seniority and pork: A pig fat myth?

Anthony Fowler [a,*], Andrew B. Hall [b]

[a] Harris School, University of Chicago, United States
[b] Stanford University, United States

ARTICLE INFO

Article history:
Received 20 April 2015
Received in revised form 7 July 2015
Accepted 27 July 2015
Available online 11 August 2015

Keywords:
Elections
Legislatures
Distributive politics

ABSTRACT

Representatives in American legislatures win reelection at astounding rates, even when they fail to represent the median voter in their districts closely. One popular explanation for this puzzle is that incumbents deliver non-ideological benefits to the district through "pork-barrel politics," i.e., the distribution of federal spending. We put this explanation to the test by measuring the causal link between senior representation and pork. In short, we find no such link (sausage or otherwise). Employing both differences-in-differences and regression discontinuity designs, we find that a senior member of Congress, on average, brings no more pork to her district than the counterfactual freshman representing the same district at the same time. As a result, voters have no pork-based incentive to reelect their experienced incumbents, and pork-barrel politics cannot explain the incumbency advantage.

More than nine out of ten members of Congress seeking reelection win.[1] At the same time, American legislators often vote contrary to the preferences of their constituents. For example, Democrats and Republicans do not converge to the preferences of the median voter in their district (Ansolabehere et al., 2001; Bafumi and Herron, 2010; Lee et al., 2004) and this representational gap does not improve with legislator seniority (Fowler and Hall, in press) or for narrow issues where the district has strong preferences (Fowler and Hall, 2015).[2] How can incumbent legislators enjoy such electoral success even when they represent the policy interests of their constituents poorly? In this paper, we consider one common explanation for this puzzle: the vaunted ability for incumbents to "bring home the bacon." We demonstrate that a senior member of Congress brings home no more pork than would a counterfactual freshman legislator newly elected to serve the same district at the same time.

Isolating the causal link between seniority and pork is difficult. A host of hard-to-observe factors influence incumbent success (and hence, seniority) while also affecting how much pork districts receive. To pick just a few examples that are salient in many democratic settings, turnout (e.g., Martins and Veiga, 2014), pro-incumbent election laws (e.g., Stratmann, 2005), scandals (e.g., Costas-Pérez et al., 2012), natural disasters (e.g., Healy and Malhotra, 2009), party match and strategy across levels of the government (e.g., Ade et al., 2014; Ansolabehere and Snyder, 2006; Dahlberg and Johansson, 2002; Fouirnaies and Mutlu-Eren, 2015), and incumbent effort and quality (e.g., Alt et al., 2011; Anzia and Berry, 2011; Bechtel and Hainmueller, 2011; Fowler, 2015; Jacobson, 1989) are all factors the political economy literature identifies as being important for sustained incumbent electoral success and as being possibly linked to outlays. To address these issues of omitted variables and selection, we need a design-based identification strategy.

We employ two independent, design-based empirical strategies to estimate the effect of a district having a senior vs. freshman representative on the level of discretionary spending going to the district. The first, a differences-in-differences (DD) design, examines

* Corresponding author at: 1155 East 60th St., Room 165, Chicago, IL 60637, United States.
E-mail addresses: anthony.fowler@uchicago.edu (A. Fowler), andrewbhall@stanford.edu (A.B. Hall).

[1] This figure can be deduced from official election returns. Or see, for example, Jacobson (2001).

[2] Such questions of representational "fit" or "quality" are hardly limited to the U.S. context. Stadelmann et al. (2014), for example, studies similar questions in the Swiss setting. Freier and Odendahl (2012) similarly look at policy differences (i.e., divergence) between parties in Bavarian municipalities, and Fiva et al. (2014) does likewise in the Norwegian context.

http://dx.doi.org/10.1016/j.ejpoleco.2015.07.006
0176-2680/

changes in spending in districts that switch from having a senior legislator to a first-term representative (or vice versa) and compares these changes to those in other districts where such a switch did not take place.[3] The second is a regression discontinuity design (RD) that exploits the quasi-random outcomes of very close elections between an incumbent and challenger. Both designs estimate the effect of electing a senior vs. freshman representative from a district's perspective.[4] These design-based inferential strategies are necessary because simple correlations between pork and seniority within a legislature do not address the question of interest. For example, senior members of Congress typically represent different types of districts than junior members. Therefore, finding that senior members typically bring home more pork than junior members would not tell us whether an individual district would receive less pork if it replaced its senior representative with a rookie.

In the U.S. House of Representatives (1984–2007), we estimate that the effect of electing a senior representative as opposed to a freshman is substantively negligible and statistically indistinguishable from zero. This null result is not a product of noise; we report confidence intervals that reject any substantively large positive effect. Interpreting the upper bounds of our estimates, we can statistically reject any effects greater than $60 per person per year, and the real effect is likely to be far smaller than this bound. While some readers may be frustrated by our lack of non-zero estimates, we believe our null results represent a significant contribution for several reasons. First, scholars typically assume that seniority is important for distributive politics, and they often assert that pork-barreling is an explanation for the incumbency advantage. We demonstrate that there is little evidence for these assertions, ruling out several popular theories but opening the door to new theories. Second, publication bias skews the reporting of empirical results, leading to many false positive results which are rarely overturned (Franco et al., 2014; Gerber and Malhotra, 2008). The only way to counteract this bias is to report and publish null results.

Although a rich literature on the distribution of federal funds exists, its focus is not usually on the effect of legislator seniority.[5] When it does consider issues of seniority, findings are decidedly mixed, likely due in some part to differences in data and time periods analyzed, but more importantly because of a lack of clean causal identification. Examining the cross-sectional relationship between seniority and pork, Moore and Hibbing (1996) find a positive association for the U.S. House but not the Senate, Alvarez and Saving (1997) find no significant relationship, and Arnold (1979) finds, if anything, a *negative* relationship. Levitt and Poterba (1999) study state delegation seniority with an eye towards economic outcomes and find positive results, but the identifying assumptions are strong. Using weaker assumptions but studying a slightly different question, Knight (2005) finds a link between committee membership and transportation pork, and Berry and Fowler (in press) find that chairs of Appropriations subcommittees deliver more pork within their policy domains. In an identification strategy close in spirit to our own, but applied to a different setting, Roberts (1990) finds that the exogenous switch from a senior senator to a freshman causes a decrease in stock market valuations of firms connected to the incumbent politically.

Finally, using a regression with district and time fixed effects, DeBacker (2011) reports a small, statistically insignificant association between seniority and pork. While DeBacker's design and data are similar to our own, this approach also involves a highly parametric specification embedded in a more complex structural model. We take advantage of current data and simple research designs to more directly assess the effect of seniority for pork. We focus on simple, binary comparisons of more and less senior incumbents using DD and RD designs to extract causal estimates with relatively weak assumptions.

Measuring the link between seniority and pork informs theories of representation. Voters care about distributive benefits. Increases in pork in various forms lead to higher vote shares for incumbents (Levitt and Snyder, 1997; Stratmann, 2013), and voters respond positively to legislators' "credit claims" about pork (Grimmer et al., 2012b). By determining the extent to which reelecting incumbents brings voters more pork, we can assess whether incumbents perform well in elections because voters have pork-based incentives to reelect them, and we can determine whether the U.S. House is institutionally arranged to ensure that senior members can bring home more pork.

Three factors confine our analysis. First, our econometric identification strategies leverage districts that switch representatives or have close elections, which are by nature districts with vulnerable or retiring incumbents—an external validity challenge.[6] Nevertheless, seniority theories clearly predict that these legislators should reap the benefits of their seniority. Indeed, an important feature of seniority theories is that members enjoy benefits based purely on seniority, regardless of any other factors. McKelvey and Riezman (1992), for example, view seniority as a shift in recognition probability for all senior members in the context of a divide-the-dollar game. One might even predict that more vulnerable incumbents should in fact receive *more* pork, to prop up the party's chances in its most tenuous districts (see for example Berry et al., 2010). In this vein, Grimmer (2013) shows that marginal senators are much more likely to focus their "home style" on appropriations. Our study is therefore meaningful despite this specialized sample.

Second, we can only measure observed pork. We do not speak to other forms of unobservable or unquantifiable goods that senior members may offer to their districts. Discretionary spending is itself an important issue, and many theories single it out for scrutiny. We are therefore comfortable confining our findings to this form of pork.

Third, the institutional value of seniority is *variable* and our study may be focusing on an era in which partisan politics have supplanted the seniority system in the U.S. House (e.g., Hall and Shepsle, 2014). While the data needed to test the value of seniority in the heyday of the "textbook" congress does not exist, there is no doubt that the seniority system continues to be a source of

[3] First we compare experienced legislators with any amount of seniority to freshmen legislators. In case this is too weak a "treatment" group, we then perform a series of tests comparing increasingly senior members against freshmen, excluding the "in-between" group of junior non-freshmen legislators. Results are consistent across all tests.

[4] We are not interested in the hypothetical (and practically irrelevant) effect of altering the seniority of a legislator while holding all else equal. Senior legislators differ from freshmen in many ways, and all of those differences are part of the effect of interest.

[5] For other questions, see for example Balla et al. (2002), Bickers and Stein (1991), Levitt and Snyder (1995), Levitt and Snyder (1997), and Stein and Bickers (1994), among many others.

[6] This problem is less severe for the DD design, because 92% of districts see both senior and freshman representatives at some point during the period of study.

consternation for observers of American politics. Our findings have direct policy relevance for proposed interventions like term limits, which have lost none of their popularity in recent years. Also, the modern period analyzed here is most relevant for assessing potential explanations for the incumbency advantage, since this advantage has been greatest during this era (Ansolabehere and Snyder, 2002; Cox and Katz, 1996; Cox and Morgenstern, 1993; Gelman and Huang, 2008; Gelman and King, 1990). Moreover, we also demonstrate that majority-party status does not bring a district more pork, either, casting doubt on alternative institutional explanations for pork that are based on theories of partisan agenda power.

1. Theoretical expectations about seniority and pork

Despite arguments that senior members of Congress should be advantaged in policymaking and distributive politics (McKelvey and Riezman, 1992)[7] and despite arguments that incumbent members of Congress maintain an electoral advantage through pork barreling and constituency service (Fiorina, 1977, 1989) we believe the links between seniority and pork are theoretically ambiguous. Ashworth (2005) presents a model of electoral selection and accountability which illustrates this ambiguity. While the model is not specifically about distributive politics, we repurpose it and relabel some of the variables to provide theoretical expectations about seniority and pork.

Ashworth studies a model with three electoral periods. The incumbent's ability is unknown, and the voter receives a signal of ability which is contaminated by incumbent effort and random noise. The voter would like to decide whether to retain the incumbent according to only her ability, because the incumbent will exert no effort in the last period. Incumbents exert effort in order to "jam the signal" and convince the voter that her ability is high. Because of the three-period nature of the model, comparisons between the first two periods provide predictions about the differences between experienced (senior) incumbents and freshmen.

In the model, voter utility is given by the ability of the incumbent plus the effort of the incumbent plus random noise. Politicians receive positive utility from serving in office but their utility is decreasing in effort. Several comparative statics are relevant for the purposes of the study. Because of electoral selection, experienced incumbents are of higher ability than freshmen, in expectation. Those who have won multiple elections are better, on average, than those who have only won one election. Because of this selection effect, experienced incumbents exert less effort, on average, than freshmen. This is because high-ability incumbents can afford to exert less effort without significantly sacrificing their chances of reelection. This difference in expected effort is not enough to counteract the difference in expected ability, so the combination of ability and effort (and in turn voter utility) is higher, in expectation, under experienced incumbents.

These results suggest to us that the theoretical expectations about seniority and pork are ambiguous. If pork is a function of ability plus effort, then we would expect senior representatives to provide more pork. However, if pork is a function of effort alone, then we would expect senior representatives to provide less pork. In the first scenario, voters care only about pork and high-ability members procure a lot of pork even without effort. In the second scenario, voters value ability for reasons unrelated to pork and high-ability members procure no pork without effort. Without clear reasons to prefer one model of distributive politics over another, the relationship between seniority and pork is ambiguous.

In the model described above, there are no institutional advantages of seniority built into the system. Differences between senior and junior representatives arise entirely from electoral selection, a crucial component of our quantity of interest. However, scholars of Congress expect seniority to matter precisely because the rules and constraints are different for senior members (McKelvey and Riezman, 1992). Further comparative statics in Ashworth's model allow us to explore these possibilities as well. All else equal, effort increases as the cost of effort decreases. Therefore, if the cost of effort is exogenously decreased for senior representatives (perhaps because institutional rules make it easier for senior members to procure pork), then senior representatives will exert more effort than in the previous case, but this effect may or may not outweigh the decrease in effort that comes from electoral selection. Furthermore, increases in incumbent ability will typically reduce effort. Therefore, if the seniority system provides an exogenous increase in ability to all senior representatives, this will reduce the average effort of senior representatives. If the seniority system simultaneously increases the ability of members and reduces their cost of effort, this will have ambiguous implications for effort.

In expectation, senior members should be higher quality in terms of their fixed characteristics but they will exert less effort in the pork barreling process. Whether this leads to more or less distributive benefits for voters is an open empirical question. In the Appendix A, we provide an ancillary analysis demonstrating that, indeed, senior members of Congress exert less effort relative to rookies. Specifically, we examine abstentions on roll-call votes, which is a proxy for time spent in Washington, time spent on legislation, and policy effort. After accounting for member and time-specific factors, members appear to abstain much more frequently as their seniority increases. Furthermore, replicating our DD analyses below, we show that when voters reelect their senior incumbents, they can expect significantly less effort than if they elected a rookie, and the extent of this effect increases with the seniority of the incumbent. Therefore, if we indeed find that seniority has little effect on pork or even a negative effect, the effect of seniority on effort could help to explain this counterintuitive result.

2. Empirical results

Data on discretionary spending in inflation-adjusted dollars for the U.S. House, 1984–2007, comes from Berry et al. (2010). The authors of that study collected and cleaned district-level data from the Federal Assistance Award Data System (FAADS). In keeping

[7] The main result presented in McKelvey and Riezman (1992) establishes an equilibrium in which incumbents will vote to institute a seniority system, the end result of which is an incumbency advantage induced by the higher levels of pork that voters expect to receive by reelecting their incumbents and maintaining their spot in the "seniority queue". However, we should note that one extension of the model—in which the seniority system affects not only initial recognition probabilities but also recognition probabilities in subsequent stages if the initial divide-the-dollar proposal is rejected—predictions are somewhat different (p.958).

with previous literature, this dataset does not include defense spending (Bickers and Stein, 1991; Stein and Bickers, 1994) or "low-variance spending" (Levitt and Snyder, 1995, 1997).[8] Low-variance spending includes large programs like Medicaid and Social Security, along with other entitlements that legislators have little discretion over.[9] We merge this data with U.S. House election returns available through ICPSR and maintained and updated for many studies including Ansolabehere et al. (2010).[10] We generate our seniority variable by tracking individuals over time in the election data. We also include data on state population from the U.S. Census, which we use to estimate district population. Finally, we keep track of redistricting years so that we do not improperly match outlays in a new district to the incumbent of the old district that shared the same district number.

In all, we have 8687 district-year observations in which the average per-capita per-year outlay in inflation-adjusted U.S. dollars is $946. The standard deviation of this variable is $1708, and its maximum is $26,166.[11] To give a sense of the magnitude of these outlays, the total value of pork in our data set for the fiscal year 2007 is $357 billion, which represents approximately 13% of total federal spending for that fiscal year.[12]

Of these 8687 district-year observations, 7748 correspond to elections in which an incumbent is running for reelection (i.e., non-open-seat races). Among these incumbent-contested observations, 6528 (roughly 84%) are ones in which the incumbent was challenged, and 1720 (roughly 22%) are ones in which the winning candidate's margin of victory is less than 10 percentage points. There are 821 district-year observations (roughly 11%) corresponding to elections where the winning candidate's margin of victory is less than 5 percentage points. Thus, we have a surprisingly large amount of data covering district outlays after closely contested races featuring an incumbent.

One concern with the spending data is that it is measured with error. To be sure, the FAADS codings may not perfectly identify spending to districts, and researcher choices over what constitutes "high variance spending" are necessarily arbitrary. Because this spending variable is our outcome, this measurement error may add *noise* to our estimates, but it will not produce a negative (or positive) bias in our estimates. Despite this potential concern, our estimates remain precise, as will be seen below.

Another concern is that *committee* seniority, rather than chamber seniority, might be the real source of pork. Following previous literature, we have principled reasons for focusing on the latter rather than the former, though of course the two are highly correlated. First, remember that our goal is to compare experienced members of Congress to the counterfactual first-term legislators who would have served the same district at the same time, so this distinction is largely irrelevant—experienced legislators have more chamber seniority and committee seniority. Second, policies like term limits that remove senior members, which we are interested in evaluating, do so based on chamber seniority, not committee seniority. Lastly, our focus is on overall pork, not just pork from a particular committee.[13]

3. Differences-in-differences

First, we estimate the returns to electing a senior representative using a regression of the form

$$Pork\ Per\ Capita_{it} = \beta Senior_{it} + \gamma_i + \delta_t + \epsilon_{it}, \tag{1}$$

where $Pork\ Per\ Capita_{it}$ is the per-capita discretionary spending in district i resulting from federal outlays in a particular year t. In each congressional term, a member of Congress is responsible for two budgets. For example, those elected in 1992 serve in the legislature in 1993 and 1994 and are responsible for the budgets in 1994 and 1995. We include outlays from both budgets and we cluster standard errors by district to account for this structure.[14] The variable $Senior_{it}$ is a binary variable indicating whether the district has a senior or freshman legislator who was responsible for that budget, and γ_i and δ_t represent district and year fixed effects, respectively, which account for year-to-year changes in the level of federal outlays and the fact that some districts are bound to receive more outlays than others for reasons unrelated to the seniority of their legislator.[15]

This setup makes the estimation strategy a *differences-in-differences* design, where we compare the *change* in pork within a district as it switches from a senior to a freshman legislator (or vice versa) to the same change in districts that do not switch. For this design to provide the effect of having a senior vs. freshman legislator, the change in the "control" districts must provide an accurate picture, on average, of how the "treated" districts would have changed, had they not switched their representative. This parallel trends assumption is substantively defensible and far weaker than the assumptions required for cross-sectional comparisons between districts or over-time analyses

[8] We have considered attempting to add in data on defense spending, but it is likely impossible to match most of defense spending to particular districts. While some spending does flow to bases which are located entirely within a single congressional district, most spending is far more diffuse, and so could not be used for our analysis in any event.

[9] For more details, see Berry et al. (2010).

[10] A legislator elected in year t does not serve until year $t+1$, and therefore does not formulate a budget until year $t+2$. We merge the datasets accordingly.

[11] We will have more to say about this maximal value later. It comes from Louisiana in the aftermath of Hurricane Katrina. Readers will notice from these summary statistics that our dependent variable is not normally or symmetrically distributed; it is skewed to the right. This does not pose a problem for any of our subsequent analyses. The reliability of our point estimates does not depend on the distribution of the outcome variable (just as a difference-in-means provides an unbiased estimate of an experimental effect regardless of the distribution of the outcome variable) and our standard errors are unbiased even in the presence of heteroskedasticity, serial correlation, and district-specific clustering.

[12] Total federal spending in 2007 was approximately $2.7 trillion (http://www.usgovernmentspending.com/total_2007USrt_16rs5n, accessed July 6, 2015).

[13] An alternative strategy would be to collect committee-specific pork data, following Berry and Fowler (in press). This is less fruitful for our purposes because it no longer speaks to the broader questions of seniority and related policy interventions. As Moore and Hibbing (1996) explain, the primary focus in this literature "is usually not on goodies traceable to one particular committee, because a gain in one issue area…may be counterbalanced by a loss in other areas…Rather, the focus is usually on the fear that constituents would lose out in a general way if legislators were junior" (134).

[14] We have also run the regression where we use the average, maximum, or minimum of the two outlays per Congress. Results are extremely similar.

[15] Every time a district is changed as a result of redistricting, we code this as a new district so that the changing geography or composition of a district after redistricting cannot plague our results. This explains why the number of unique districts, as indicated by Table 1, is more than 435.

Table 1
DD results: seniority and pork. Re-electing an incumbent does not appear to bring the district more pork than electing a new legislator.

	Pork ($ per constituent per year)	
Incumbent over freshman	21.58 [−14.38, 57.53]	21.03 [−16.35, 58.42]
District fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Controls	No	Yes
N	8687	8687
# unique districts	1591	1591

95% confidence intervals from robust standard errors clustered by district in brackets. Controls in second column are: indicator for majority party; indicator for party-match with the president; indicators for the representative holding any committee chairmanship and any committee rank; and party size.

within districts that fail to account for time effects. The within-district variation in seniority arises from retirements and incumbent's electoral losses. If incumbents retire strategically when they expect that the pork flowing to their district is changing or if voters tend to strategically replace incumbents at these same times, then our parallel trends assumption would be violated. However, most of the variation in seniority appears to arise from non-strategic retirement of old members and from electoral losses that coincide with national wave elections (e.g., Democrats losing in 1994 and Republicans losing in 2006), so the parallel trends assumption appears to be justified on substantive grounds. Nonetheless, we later present a second battery of tests employing an RD design which requires a separate and even weaker identifying assumption. In addition, in the Appendix A we probe the validity of the parallel trends assumption by including leads of the treatment indicator in the regression. We find no evidence for a parallel trends violation.

Table 1 presents the results of this analysis. The row labeled "Incumbent Over Freshman" presents the estimate for β, the causal effect of electing a senior (incumbent) candidate instead of a challenger with no previous experience in Congress. In the first column, we employ the standard DD regression as presented in Eq. (1). In the second column, we add controls for majority party, party match with the president (Berry et al., 2010), indicators for the representative holding any committee chairmanship and any committee rank, and a variable measuring party size.[16] These controls are not necessary for causal identification, but they help to demonstrate the robustness of the finding. Our finding is insensitive to the inclusion or exclusion of any pre-treatment covariates, which bolsters our confidence in the design and results.

We cannot reject the null hypothesis that senior incumbents bring home the same amount of bacon, on average, as freshmen. Reelecting the incumbent instead of choosing the challenger results in an estimated gain of about $20 per constituent, on average—about one percent of one standard deviation in pork, less than a tank of gas for most automobiles in the U.S., and according to one referee, barely enough to buy a beer in Oslo. This small effect is not statistically distinguishable from zero, even though the confidence intervals are quite tight.[17]

This null result is not the result of an underpowered statistical test. The confidence intervals, provided in the table, show that we can reject any positive effect above $60 per constituent per year. Even this upper bound would represent a substantively small effect–only 3.5% of the standard deviation in the outcome variable and 5.5% of the average American's annual coffee budget,[18] Senior legislators, it appears, are no different than junior replacements when it comes to pork-barrel politics.

Another way to interpret the substantive size of our estimates is to ask how our estimated effect on federal spending might translate into votes. Levitt and Snyder (1997) estimate that an additional 100 dollars per capita in pork produces an extra 2 percentage points of support for the incumbent, so our point estimate of 20 dollars per capita would be enough to increase incumbent vote share by 0.4 percentage points. In other words, we would expect only 1 in 500 voters to change their vote choice from the challenger to the incumbent in response to a spending increase of 20 dollars per capita. Incumbents receive an additional 7–9 percentage points of electoral support just because of their status as incumbents (e.g., Ansolabehere and Snyder, 2002), and our results suggest that pork-barreling is unlikely to explain a meaningful fraction of this advantage.[19]

Perhaps we find no overall effect because the benefits of seniority only come above some number of terms. Next, we estimate the effect for higher levels of seniority. To do so, we run a series of DD regressions in which we change the definition of the "treatment" variable to make it progressively more drastic. First, we redefine the treatment to mean reelecting an incumbent with at least two terms of seniority, instead of reelecting any incumbent like in Table 1. Then, we redefine it to mean reelecting an incumbent with three terms of seniority, and so on. This approach ensures that we have not biased ourselves against finding an effect by pooling less effective young incumbents with more effective senior incumbents, and it allows us to non-parametrically investigate the way the effect changes across different levels of seniority.

[16] These controls variables also come from Berry et al. (2010).
[17] We have also investigated the effect using logged pork rather than per capita pork. In our baseline specification, like in Column 1 in Table 1, we find an effect of 0.013 log points with a 95% confidence interval of [−0.014, 0.039]. Thus, our precisely estimated null result is consistent across both measurement approaches.
[18] A 2012 survey by Accounting Principals found that the average American spends $1100 per year on coffee.
[19] Significant caution is required in assessing the extent of the incumbency advantage that might be attributed to pork-barreling. Levitt and Snyder estimate the effect of exogenous increases in federal spending on incumbent support, which could be significantly smaller than the electoral effects of a pork-barreling advantage that senior representatives hold in equilibrium. Therefore, we cannot rescale our empirical results to say that X percent of the incumbency advantage is attributable to pork barreling. However, because we find no statistically or substantively significant spending advantage for senior members, we conclude that pork-barreling does not meaningfully explain the incumbency advantage.

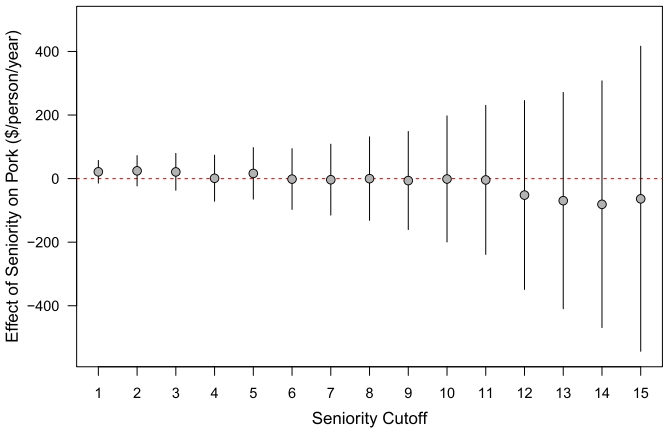

Fig. 1. DD estimates for the effect of seniority on pork. *Note*: Each point results from estimating Eq. (1) using a different threshold to define seniority. For a seniority level of 2, we remove all observations where the representative had 1 term of experience, allowing us to estimate the effect of having a representative with at least 2 terms of experience as opposed to another representative with none. For a seniority level of 3, we remove observations where the representative had 1 or 2 terms of seniority, and so on. We find no effect of seniority at any threshold. Vertical lines are 95% confidence intervals from robust standard errors clustered by district.

Fig. 1 graphs the resulting estimates. For each value of seniority on the horizontal axis, we reestimate Eq. (1) excluding all observations where the representative had more than zero but less than the specified threshold of previous experience. This allows us to estimate the effect of electing a representative with some minimal level of experience relative to a freshman. For example, the point where the horizontal axis equals 2 indicates the effect of electing a representative with at least 2 terms of experience as opposed to a representative with no experience. The estimates remain remarkably flat across all levels of seniority. The 95% confidence intervals, indicated by the vertical lines, show that we continue to obtain precise estimates near zero.[20]

4. Regression discontinuity

To reinforce the findings, we estimate the same quantities using a regression discontinuity (RD) design. Paralleling the DD results, we again find no link between seniority and pork.

Here we assume that extremely close elections provide "as if" random assignment of a senior or freshman incumbent. Recent work has challenged this assumption in the post-war U.S. House (Caughey and Sekhon, 2011; Grimmer et al., 2012a; Snyder, 2005), presenting evidence that incumbents disproportionately win close elections. However, Eggers et al. (2015) presents evidence and arguments that the RD design is valid in many electoral settings and that the observed imbalances in incumbency status around the discontinuity are likely due to chance rather than a systematic violation of the assumption. Aware of this imbalance, we address it in several ways in the Appendix A. First, we present McCrary tests (McCrary, 2008) to probe the size and frequency of possible bunching of incumbents to the right of the discontinuity, concluding that it is not nearly so sharp in our sample as in the Caughey and Sekhon (2011) sample. Second, we look at balance on pre-treatment pork. Across all seniority cutoffs, we find no evidence for any such imbalance on our most important variable. Third and finally, we also perform a "donut" RD (e.g., Barreca et al., 2011) in which we exclude the very closest races to see if they are driving our estimates (they are not). In addition, in the body of the paper we also show that the estimate is robust across bandwidths and specifications, suggesting that our results are not sensitive to unusual phenomena around very close elections. Two other facts further reassure us. First, our DD results do not suffer from this potential validity concern, so if the results of each design match up we can be somewhat confident in the resulting conclusions. Second, any such imbalance should, if anything, produce an upward bias, opposite from the null findings that we report.

Leaving sorting issues aside, this approach holds one significant limitation relative to the DD approach. The RD design provides estimates of the local average effect of electing a senior vs. rookie representative for the set of elections where there is a virtual tie between an incumbent and a challenger. This local average estimate could be particularly uninteresting if voters care only about pork and if there is no noise in the electoral process, because a tied election would mean that voters expect the exact same level of future pork from both candidates. In this hypothetical scenario, a null result would be expected even if the average effect of electing a senior representative across all elections is not zero.[21] Of course, these concerns about the unrepresentativeness of the local estimates become less relevant if there is noise in the electoral process or if voters care about factors other than pork, so we believe the RD estimates are informative about the question of interest. Furthermore, the local estimates provided by the RD design may be those more relevant for voters or for policy, since competitive elections are those that could be influenced on the margins by policy or by alternative voter behavior.

First, we investigate the effect graphically. Fig. 2 plots the data for elections between an incumbent and a challenger in our dataset. The horizontal axis measures the incumbent's two-party vote share—the "running variable" or "forcing variable" in the RD design—and the

[20] The magnitudes of the confidence intervals increase as the seniority cutoff increases because the sample size becomes smaller and smaller. For example, the cutoff of 8 compares freshmen vs. eight or more term legislators, while the cutoff of 9 compares freshmen to nine or more term legislators. Each lower cutoff therefore contains all of the observations of the higher cutoffs, plus more.

[21] Note that this concern does not apply to the DD design, because all incumbents leave office eventually, and every district will see changes in seniority at some point.

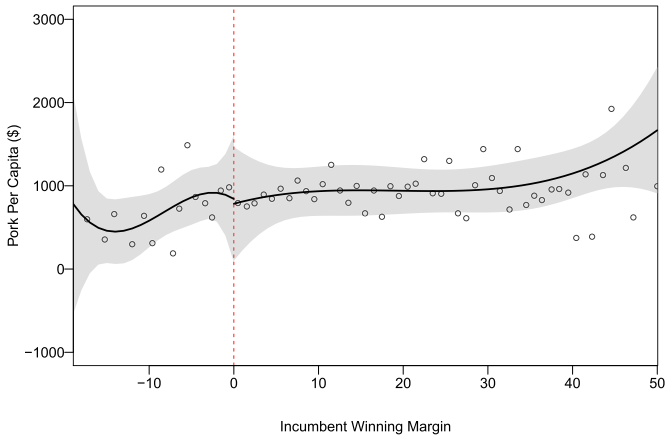

Fig. 2. Pork per capita and incumbent win margin. There is no discontinuous increase in the provision of pork as a district switches from barely replacing its incumbent to barely reelecting her. *Note*: Points are binned averages of pork per capita, with 1 percentage-point bins of incumbent win margin; points are plotted at the average x-value within each bin. Fitted lines with 95% confidence interval result from regressing pork per capita on a third-order polynomial in incumbent winning margin separately on each side of the discontinuity. A single outlying bin (when incumbent's win margin is 45 percentage points) is omitted from the plot for presentational purposes; no such omission occurs in the formal analyses. Note that plot is not symmetric around the discontinuity because no incumbent in the sample loses by more than 20 percentage points.

vertical axis measures per-capita pork to the district resulting from the subsequent budgets for which the winning candidate is responsible. Points represent binned averages of district pork where each bin contains 1 percentage-point of the running variable.[22] We also overlay the fitted values from a regression of pork on an indicator for the incumbent winning (i.e., for the running variable being greater than .5) and a third-order polynomial of the running variable, estimated separately on each side of the discontinuity.

If incumbents systematically outperform freshmen in obtaining pork, then as the incumbent vote margin goes from just under 0, where a freshman barely wins, to just over 0, where an incumbent barely wins reelection, we should see a pronounced jump in subsequent pork to the district. However, the graph shows no signs of a discontinuity. Pork remains flat as incumbents go from just losing to just winning reelection.

Next, we conduct a more thorough regression analysis. We estimate equations of the form

$$Pork\ Per\ Capita_{it} = \beta Senior_{it} + f(V_{it}) + \gamma_i + \epsilon_{it}, \tag{2}$$

where variables are defined as before,[23] and V_{it} represents the "running variable," the incumbent's share of the two party vote, included as a polynomial function.

Table 2 presents results for 5 and 10% bandwidths, along with the full sample, using either a first- or third-order polynomial of the running variable. The results tell the same story as the previous DD results; the random assignment of an incumbent, rather than a freshman, does not cause a meaningful increase in pork for the district. Using the full sample, we estimate that the random assignment of a senior rather than freshman legislator causes a 2 dollar decrease in pork per capita, a substantively miniscule effect that is not statistically distinguishable from zero.[24]

As before, we also estimate the effect separately by level of seniority. For each level of seniority, we focus only on those close elections between an incumbent with the minimum level of prior service and an inexperienced challenger. If seniority allows legislators to bring home more pork, we should see the estimated effects increase as we focus on higher levels of seniority.

Fig. 3 graphs the results.[25] Again, the line is remarkably flat and the estimates are close to zero at all levels of seniority. These results paint precisely the same picture as the DD design in the previous section. Our results are not sensitive to specification or identification strategy. Senior members of Congress simply do not deliver more pork than the counterfactual first-term legislator representing the same district at the same time.

Like any RD design, Eq. (2) provides a certain amount of flexibility for the researcher, including what bandwidth and specification of the running variable to report. For the sake of efficiency, column 3 in Table 2 includes the full range of the data, controlling for the possible relationship between incumbent vote share and pork using a global third-order polynomial. To ensure that our results do not depend upon this choice, Fig. 4 plots the overall estimated effect across bandwidths and specifications. We consider four possible

[22] One outlying bin, very far from the discontinuity, is omitted from the graph for better visualization; however, it is included in the overlaid regression and in all formal analyses presented below.

[23] As already mentioned, the inclusion of the district fixed effects (γ_i) is not necessary for unbiased estimates, but we increase the precision of our estimate by soaking up some of the variance in pork across districts.

[24] As can be seen from the table, the estimate is unstable across bandwidths, and relatively large and positive at the 5 percentage point bandwidth. The 5 percentage-point estimate, while somewhat large, is noisy, and the varying estimates in the next two columns indicate the instability of the estimate. Due to this instability, we prefer estimates using the full sample. However, we consider estimates across all bandwidths below, none of which support the notion of a large seniority effect.

[25] We only present estimates up through nine terms of seniority; after this the standard errors increase rapidly due to the small sample size. However, point estimates remain small.

Table 2
RD results: seniority and pork. Re-electing an incumbent does not appear to bring the district more pork than electing a new legislator.

	Pork ($ per constituent per year)		
Incumbent over freshman	131.30 [−28.86, 291.4]	−61.60 [−280.0, 156.8]	−2.07 [−107.4, 103.3]
District fixed effects	Yes	Yes	Yes
Bandwith pct.	5	10	50
Polynomial	1	3	3
N	735	1658	6434
# unique districts	287	540	1422

95% confidence intervals from robust standard errors clustered by district in brackets.

specifications: the global cubic polynomial; a "local" cubic polynomial (i.e., a cubic polynomial included on its own and interacted with the treatment indicator); a local linear (i.e., a linear term of the running variable, plus the same term interacted with the treatment indicator); and a local quadratic. For each bandwidth indicated on the horizontal axis, and each of the four possible specifications indicated in the plot legend, we re-estimate the effect of electing a senior vs. freshman on pork. Across all bandwidths and specifications, the effect is *never* substantively meaningful or statistically distinguishable from zero.

5. Does party trump seniority at the feeding trough?

If seniority doesn't bring home the bacon, what does? While identifying the alternate sources of pork is beyond the scope of this paper, it is worth investigating what we call the "partisan hypothesis," the most common counterargument to seniority-based theories of the legislature. In this view, commonly attributed to Aldrich and Rohde (2001), Cox and McCubbins (2005, 2007), and related work, seniority may play a role in organizing the legislature but the majority party and its leadership holds the ultimate power. A close analysis of the House's organization reveals a series of institutional reforms, mostly taking place in the 1970s, that triggered (crudely speaking) a transition from the "Weak Party Era" to the "Strong Party Era" (Hall and Shepsle, 2014). Since reliable pork data is only available in the present era, those who subscribe to a purely partisan theory might not be surprised to hear that freshmen are just as effective at obtaining pork, since freshmen are just as suitable as majority-party foot-soldiers as any other more senior legislator.[26]

To test this alternative theory, we first estimate DD equations like Eq. (1), except testing for the effect of majority-party status. Identification comes from comparing the change in pork in districts that switch majority-party status to the change in pork in districts that do not switch. Table 3 presents the results. With or without control variables, we find that majority-party status has a negligible effect on pork. The absence of a seniority effect is not explained by the presence of a majority-party effect. Indeed, majority-party status is no better an explanation than seniority.

To parallel our previous analysis, we also implement an RD design as in Eq. (2) but examining majority-party candidates instead of senior candidates. The running variable is the vote share of the candidate in the party that will be the majority in the subsequent session, and the "treatment" is electing a majority-party candidate instead of a minority-party candidate. The results are presented in Table 4. Electing a majority-party representative has no detectable effect on pork. Our null results regarding seniority and pork cannot be easily explained away by a new era of strong parties in Congress, because majority-party members bring no more pork to their districts than would minority-party members representing the same district at the same time.

6. Conclusion

Neither dominant theory of pork distribution, either partisan- or seniority-based, explains the actual pork-barrel process we observe. Certainly the colorful anecdotes about incumbents' ability to secure scurrilous earmarks may be true, but on average, senior legislators or majority-party members bring no more pork to their districts than the hypothetical freshman legislator or minority-party member representing the same district at the same time. While pundits and Congressional scholars may be surprised by our null results on seniority and pork, we believe a compelling explanation may lie in models of electoral selection and accountability (e.g., Ashworth, 2005). Senior members, on average, are higher-quality in terms of their fixed abilities, suggesting that voters may expect more pork. At the same time, however, they exert less effort, suggesting that voters may expect less pork. Perhaps these two competing effects approximately cancel out, meaning that voters cannot expect a premium from a senior representative.

One important implication of these results is that pork-barrel politics cannot explain the incumbency advantage, because citizens have no pork-based incentive to reelect their incumbents. If experienced members were more effective in bringing home the bacon, then voters would have an incentive to reelect their incumbents. However, because experienced incumbents are no better than freshmen, voters have no direct, pork-based incentive to support the incumbent over the challenger who, if elected, would become a freshman incumbent, equally effective at directing outlays to the district. Our sample covers a period in which the incumbency advantage was large and growing, but there was no detectable difference in the way that experienced representatives brought

[26] Within our sample of available data, we see no evidence that the returns to seniority were greater in the 1980's than they are in more recent years, suggesting that the returns to seniority have not shrunk over time. Nonetheless, we lack the data necessary for our tests in the earlier era of weak parties.

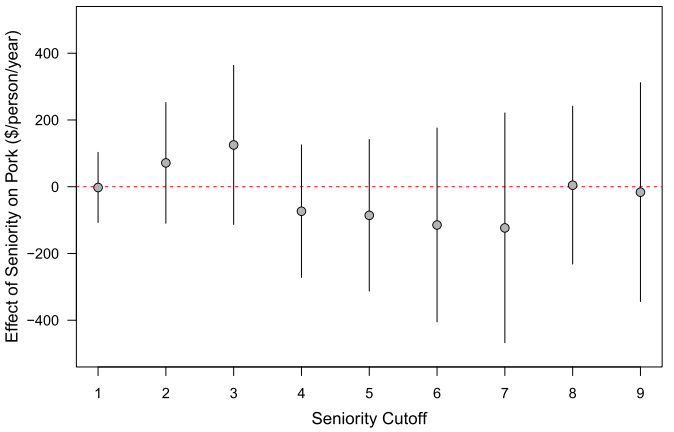

Fig. 3. RD estimates for the effect of seniority on pork. *Note*: Each point results from estimating Eq. (2) only on the subset of elections in which the incumbent has at least the level of seniority indicated on the horizontal axis. We mirror our analysis from column 3 of Table 2, by including all contested elections and a third order polynomial, but the results are insensitive to specification. Vertical lines are 95% confidence intervals from robust standard errors clustered by district.

home the bacon, relative to the counterfactual newcomers representing the same districts at the same times. However, other nuanced stories related to pork and voter psychology may still help to explain the incumbency advantage. For example, voters may incorrectly perceive that an experienced representative will bring them more pork, or voters may reward incumbents for bringing home pork without realizing that a new representative would have brought home just as much. While interesting, the limits of voter cognition are outside the scope of this study. Here, we can say that *pork itself* does not explain the incumbency advantage because rational voters have no pork-based incentive, on average, to favor incumbents.

Another important implication of our findings is that term limits may not have the hypothesized effects of equalizing the distribution of funds across districts. Many scholars and activists have argued that the removal of senior members would disrupt the seniority system and thereby reduce wasteful pork. The Cato Institute Handbook for Policymakers, for example, claims that "[Before term limits], the only way to lose a chair was by death, resignation, retirement, or electoral defeat. The seniority system increased the level of pork-barrel spending and blocked much-needed change" (The Cato Institute, 2009, p. 94). However, our evidence suggests that replacing a senior legislator with a freshman would cause no change in the expected pork to a district, and similarly, replacing all senior legislators with freshmen would likely produce no fundamental change in the distribution of pork across districts.

Our results also speak to the internal dynamics of Congress. Previous theories posit a privileged role in pork-barreling for senior members and/or members of the majority party. Nonetheless, we find that voters have little pork-based incentive to elect incumbents or representatives from the majority party. Why is this the case? One potential explanation is that the internal dynamics of Congress are more complicated and nuanced than we typically appreciate. Cohen et al. (2011) find that the chairs of the most influential committees bring home significantly more spending for their state. Berry and Fowler (in press) find that the leaders of Appropriations subcommittees receive significantly more pork within the policy domain of their subcommittee, but other rank-and-file committee and subcommittee members receive little benefit. Perhaps scholars have focused too much attention on seniority, majority-party

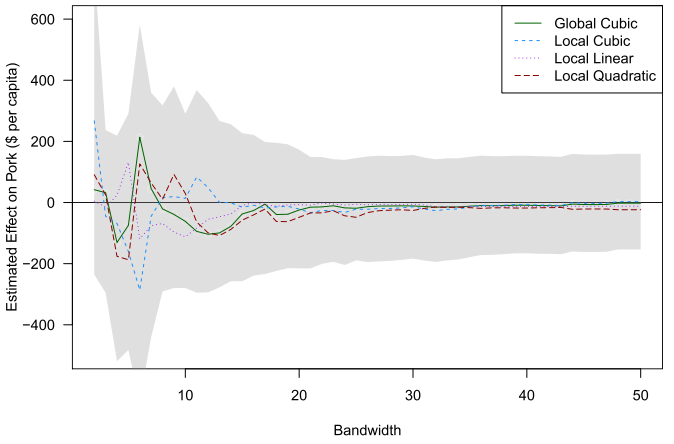

Fig. 4. Robustness of the RD estimate to the choice of bandwidth and specification. *Note*: Each line results from estimating Eq. (2) using the bandwidth indicated on the horizontal axis and the specification indicated in the legend. 95% confidence interval shading indicates maximum and minimum upper and lower bounds for each quadruplet of estimates at a given bandwidth.

Table 3
DD results: majority party status and pork. Majority-party status does not appear to deliver more pork.

	Pork ($ per constituent)	
Majority	26.34 [−32.02, 84.70]	−44.84 [−150.3, 60.63]
District fixed effects	Yes	Yes
Congress fixed effects	Yes	Yes
Controls	No	Yes
N	8687	8687
# unique districts	1591	1591

95% confidence intervals from robust standard errors clustered by district in brackets. Controls in second column are: indicator for majority party; indicator for party-match with the president; indicators for the representative holding any committee chairmanship and any committee rank; and party size.

Table 4
RD results: majority party status and pork. Majority-party status does not appear to deliver more pork.

	Pork ($ per constituent)		
Majority	0.85 [−133.2, 134.9]	−121.10 [−324.6, 82.31]	38.84 [−60.04, 137.7]
District fixed effects	Yes	Yes	Yes
Bandwith pct.	5	10	50
Polynomial	1	3	3
N	1097	2256	7419
# unique districts	338	668	1484

95% confidence intervals from robust standard errors clustered by district in brackets.

status, and rank-and-file members when much of the pork-barreling power lies with a small number of important committee and subcommittee leaders.

If seniority and majority-party status explain little of the observed variation in federal spending, what does? The largest single spending observation in our dataset is the $26,166.16 per constituent in total outlays to Louisiana's 6th district in 2006, in the aftermath of Hurricane Katrina. The third largest was for over $20,000 per constituent to New York's 21st district after September 11th. These are not outlays based purely on political bargaining and institutional power; they are notable first and foremost for their time and location. Necessity, it seems, is the mother of large outlays. Cynics might detect opportunism within the details of these outlays (and they might well be right), but therein lies the key. Pork barreling is a "crime" of opportunity.[27] And, from what we can tell, neither senior nor majority-party incumbents are able to seize these opportunities at an unusually high rate. At the end of the day, the pork barrel may be much like another high-cost activity Americans know all too well. In pork barreling, as in real estate, the first rule is location, location, location.[28]

To our knowledge, this paper provides the best available test of the commonly held view that senior legislators rule the pigsty and reliably bring more pork to their constituents. Multiple independent causal tests precisely demonstrate that the effect of electing a senior representative as opposed to a freshman is substantively negligible and statistically indistinguishable from zero. Although voters may indeed like pork, they cannot expect more of it when they reelect their experienced incumbents. These findings leave us with the same puzzle we introduced at the beginning of the paper. How do incumbents win reelection so often even when the government as a whole is unpopular and the incumbents do not appear to closely represent their constituents? The answer must lie beyond distributive politics.

Appendix A

A.1. Seniority and effort

To empirically assess whether senior members exert less effort, as predicted by theory, we assembled data on the rate of roll-call abstention for every member of the House from the 97th to 113th Congresses, closely mirroring the period of our analysis of pork. Roll-call abstention offers a proxy for the amount of time a member spends in Washing, the amount of time they devote to legislation, and their level of policy effort. If seniority appears to increase abstention, this would suggest that senior members indeed exert less effort and this may help to explain our null results regarding seniority and pork.

Fig. A.1 demonstrates that, indeed, members appear to abstain more often (and presumably exert less effort) as their seniority increases. For each member-congress, we regressed the probability of abstention on dummy variables for the level of seniority,

[27] This is merely a saying rather than a normative judgment. There are good reasons to believe that pork-barreling can facilitate pareto-improving outcomes (e.g., Evans, 2004).
[28] See Arnold (1979) for a particularly forceful argument along these lines.

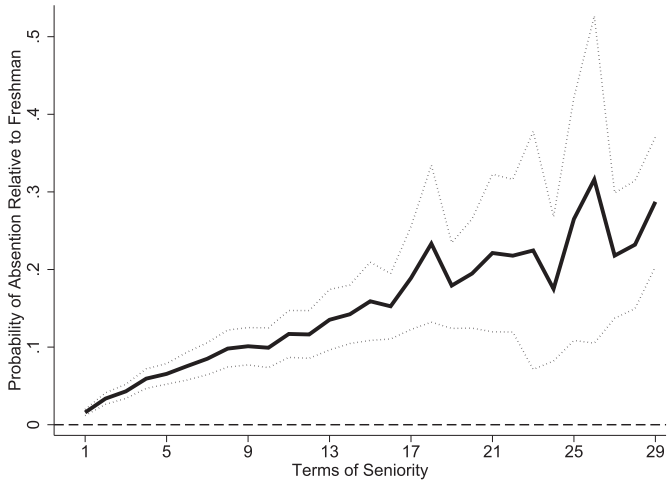

Fig. A.1. Within-member relationship between effort and seniority. We regressed abstention on dummies for different levels of seniority, member fixed effects, and congress fixed effects. Each point represents an estimated coefficient associated with a particular level of seniority. Dotted lines indicate 95% confidence intervals from robust standard errors clustered by member.

member fixed effects, and congress fixed effects. This design accounts for the fact that individual members differ from one another and the overall rates of abstention may have changed over time, and it isolates the within-member relationship between seniority and abstention. Indeed, abstention increases dramatically, in a roughly monotonic fashion as seniority increases. After 10 terms of seniority, members appear to abstain 9.9 percentage points more often than they did as freshmen, and after 20 terms of seniority, this effect is 19.5 percentage points. To a rough approximation, each additional term of seniority appears to increase the probability of abstention by a percentage point, although this effect is actually larger at the beginning of a member's career and then levels off slightly.

Fig. A.2 presents similar results. This time, we mimic our DD analysis from Fig. 1, estimating the effect of electing an experienced representative vs. a rookie on observed effort. This effect is substantively large and statistically significant for all seniority cutoffs, and the effect increases dramatically as the level of seniority increases. In other words, when voters reelect their incumbent, they can expect this incumbent to exert less effort than the challenger, and the extent of this effect increases with the seniority level of their incumbent.

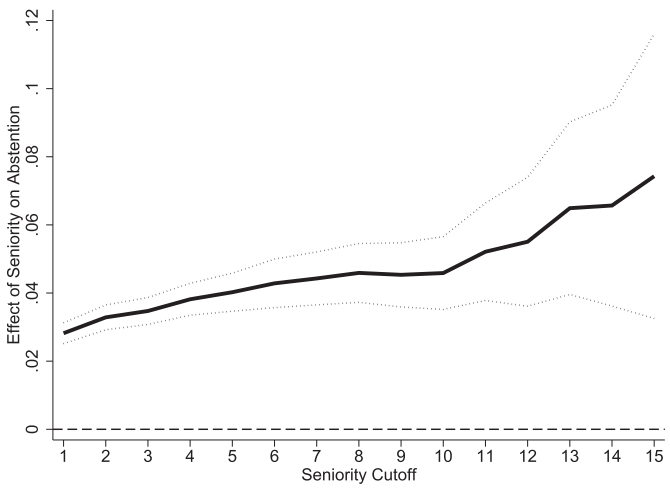

Fig. A.2. DD estimates of the effect of seniority on effort. Each point results from a separate DD regression using a different threshold to define seniority. For a seniority level of 2, we remove all observations where the representative had 1 term of experience, allowing us to estimate the effect of having a representative with at least 2 terms of experience as opposed to another representative with none. For a seniority level of 3, we remove observations where the representative had 1 or 2 terms of seniority, and so on. We find no effect of seniority at any threshold. Vertical lines are 95% confidence intervals from robust standard errors clustered by district.

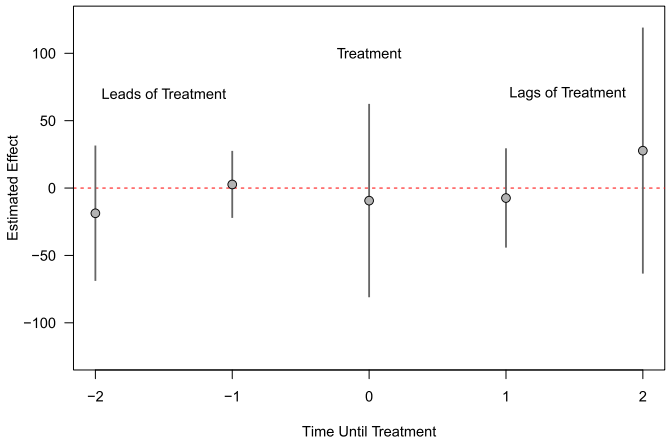

Fig. A.3. Leads and lags of the treatment indicator to test the DD design validity. *Note*: Each point in the graph corresponds to a β_j from Eq. (3). 95% confidence intervals are from robust standard errors clustered by district.

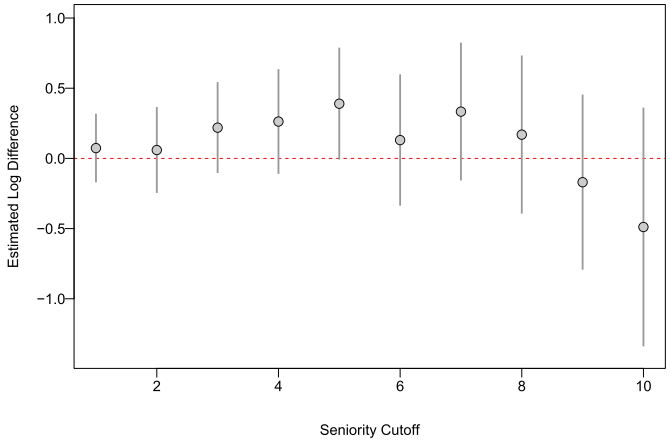

Fig. A.4. McCrary test for sorting in the RD. *Note*: Each point in the graph corresponds to the point estimate from the McCrary test for a given seniority cutoff. 95% confidence intervals constructed from standard errors estimated by the procedure.

A.2. Differences-in-differences robustness check

To check for possible violations of the parallel trends assumption, we re-estimate our main DD design with the addition of leads of the treatment indicator. The coefficient on a lead of the treatment tests for pre-treatment differences between treatment and control units. In addition, to look for robustness to possible changes in the effect post-treatment, we also include lags of the treatment.

Accordingly, we estimate

$$Pork\ Per\ Capita_{it} = \sum_{j=-2}^{2} \beta_j Senior_{i,t+j} + \gamma_i + \delta_t \epsilon_{it} \tag{3}$$

where all variables are defined as before. The summation incorporates the lags ($j = -2, -1$), the leads ($j = 1, 2$) of the treatment as well as the normal treatment indicator ($j = 0$). Fig. A.3 plots the five resulting estimates for β_{-2} through β_2.[29]

As the plot shows, we see no differences in the treatment and control units before, during, or after treatment.

A.3. RD diagnostics

In this section we offer further analysis to justify the use of our RD design in the paper.

First, following standard convention, we perform a series of McCrary tests to investigate the possibility of sorting around the discontinuity. As in the paper, we estimate these tests for each possible seniority cutoff. These estimates are presented in Fig. A.4 The tests tend to be positive (until we get to very high cutoffs where noise grows). This is consistent with previous results on imbalance in the

[29] Note that because the figure plots time until treatment on the horizontal axis, the horizontal axis values are the negation of the index j from Eq. (3).

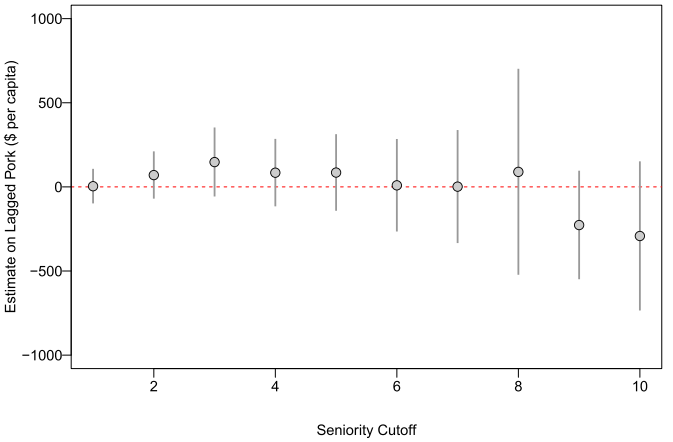

Fig. A.5. RD estimate for balance on lagged pork. *Note*: Each point in the graph corresponds to the point estimate from the RD using a global cubic polynomial for a given seniority cutoff, where the "placebo" outcome is lagged pork (i.e., pre-treatment) to the district. 95% confidence intervals are from robust standard errors clustered by district.

U.S. House. However, despite these generally positive test statistics, we typically cannot reject the null of no sorting. This is driven probably by issues of power since we use fewer observations than previous analyses of U.S. House sorting (we only look at incumbent-contested races). It is also possible that the subset of cases we analyze simply do not exhibit the same fluke imbalance that other House races do.

Next, we perform balance tests on the variable of direct interest for our study: pork. Specifically, we use the same specification as the RD in the paper, but we replace the dependent variable that measures pork per capita by district-year with *lagged* pork per capita by district-year. The resulting "treatment" estimate is thus a placebo test that investigates whether the districts that barely re-elect their incumbents differ from those that just barely kick out their incumbents in the amount of pork they are already receiving, pre-treatment. Again, we plot these resulting tests across seniority cutoffs. Fig. A.5 presents the results. We see no evidence for imbalance. Clearly, the results are somewhat noisier than those on post-treatment pork, but estimates tend to be close to zero and we can never reject the null that there is no imbalance.

Finally, we follow previous work by also re-estimating our main effects excluding especially close races. This "donut" RD can help us to assess whether our estimates are driven by problematic observations close to the threshold. Based on the fact that evidence for imbalance in the House has been documented for races within a quarter of a percentage point, we set our exclusion zone—our "donut hole" to include all races designed by a quarter of a percentage point or less. Using the same format as Fig. 4 in the paper, we show a wide range of resulting donut RD estimates using different bandwidths and specifications in Fig. A.6. As the plot shows, we continue to find no evidence for a pork effect. Excluding hyper-close races does little to change estimates, other than to make small bandwidth estimates noisier and less stable than before (not surprisingly).

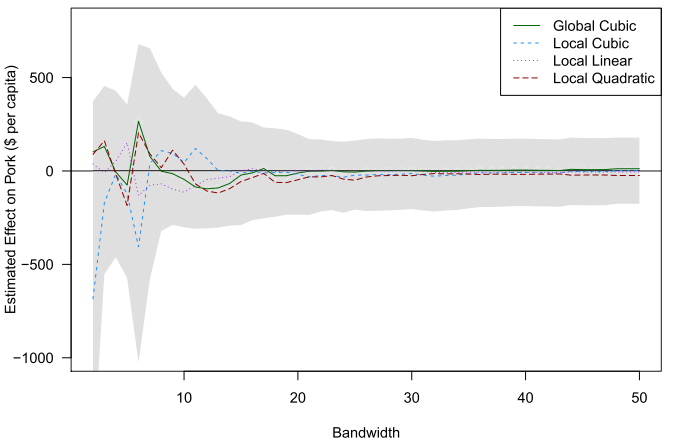

Fig. A.6. RD estimates on pork excluding especially close races (donut RD). *Note*: Each line results from estimating Eq. (2) using the bandwidth indicated on the horizontal axis and the specification indicated in the legend. 95% confidence interval shading indicates maximum and minimum upper and lower bounds for each quadruplet of estimates at a given bandwidth. All estimates exclude races decided by less than one quarter of one percentage point.

References

Ade, Florian, Freier, Ronny, Odendahl, Christian, 2014. Incumbency effects in government and opposition: evidence from Germany. Eur. J. Polit. Econ. 36, 117–134.
Aldrich, John H., Rohde, David W., 2001. The logic of conditional party government: revisiting the electoral connection. Congress Reconsidered, 7 ed. CQ Press, pp. 269–292.
Alt, James, Bueno de Mesquita, Ethan, Rose, Shanna, 2011. Disentangling accountability and competence in elections: evidence from U.S. term limits. J. Polit. 73 (1), 171–186.
Alvarez, R. Michael, Saving, Jason L., 1997. Congressional committees and the political economy of federal outlays. Public Choice 92 (1–2), 55–73.
Ansolabehere, Stephen, Snyder Jr., James M., 2002. The incumbency advantage in US elections: an analysis of state and federal offices, 1942–2000. Election Law J. 1 (3), 315–338.
Ansolabehere, Stephen, Snyder Jr., James M., 2006. Party control of state government and the distribution of public expenditures. Scand. J. Econ. 108 (4), 547–569.
Ansolabehere, Stephen, Snyder Jr., James M., Stewart III, Charles, 2001. Candidate positioning in US House elections. Am. J. Polit. Sci. 45 (1), 136–159.
Ansolabehere, Stephen, Hansen, John Mark, Hirano, Shigeo, Snyder Jr., James M., 2010. More democracy: the direct primary and competition in US elections. Stud. Am. Polit. Dev. 24 (2), 190–205.
Anzia, Sarah F., Berry, Christopher R., 2011. The Jackie (and Jill) Robinson effect: why do congresswomen outperform congressmen? Am. J. Polit. Sci. 55 (3), 478–493.
Arnold, R. Douglas, 1979. Congress and the Bureaucracy: A Theory of Influence vol. 28. Yale University Press.
Ashworth, Scott, 2005. Reputational dynamics and political careers. J. Law Econ. Org. 21 (2), 441–466.
Bafumi, Joseph, Herron, Michael C., 2010. Leapfrog representation and extremism: a study of American voters and their members in congress. Am. Polit. Sci. Rev. 104 (03), 519–542.
Balla, Steven J., Lawrence, Eric D., Maltzman, Forrest, Lee, Sigelman, 2002. Partisanship, blame avoidance, and the distribution of legislative pork. Am. J. Polit. Sci. 46 (3), 515–525.
Barreca, Alan I., Guldi, Melanie, Lindo, Jason M., Waddell, Glen R., 2011. Saving babies? Revisiting the effect of very low birth weight classification. Q. J. Econ. 126 (4), 2117–2123.
Bechtel, Michael M., Hainmueller, Jens, 2011. How lasting is voter gratitude? An analysis of the short-and long-term electoral returns to beneficial policy. Am. J. Polit. Sci. 55 (4), 852–868.
Berry, Christopher R., Fowler, Anthony, 2015. Cardinals or clerics? Congressional committees and the distribution of pork. Am. J. Polit. Sci. http://dx.doi.org/10.1111/ajps.12192 (in press).
Berry, Christopher R., Burden, Barry C., Howell, William G., 2010. The president and the distribution of federal spending. Am. Polit. Sci. Rev. 104 (04), 783–799.
Bickers, Kenneth N., Stein, Robert M., 1991. Federal Domestic Outlays, 1983–1990: A Data Book. ME Sharpe Inc.
Caughey, Devin M., Sekhon, Jasjeet S., 2011. Elections and the regression discontinuity design: lessons from close US House races, 1942–2008. Polit. Anal. 19 (4), 385–408.
Cohen, Lauren, Coval, Joshua, Malloy, Christopher, 2011. Do powerful politicians cause corporate downsizing? J. Polit. Econ. 119 (6), 1015–1060.
Costas-Pérez, Elena, Solé-Ollé, Albert, Sorribans-Navarro, Pilar, 2012. Corruption scandals, voter information, and accountability. Eur. J. Polit. Econ. 28, 469–484.
Cox, Gary W., Katz, Jonathan N., 1996. Why did the incumbency advantage in US House elections grow? Am. J. Polit. Sci. 40 (2), 478–497.
Cox, Gary W., McCubbins, Mathew D., 2005. Setting the Agenda: Responsible Party Government in the US House of Representatives. Cambridge University Press.
Cox, Gary W., McCubbins, Mathew D., 2007. Legislative Leviathan: Party Government in the House. Cambridge University Press.
Cox, Gary W., Morgenstern, Scott, 1993. The increasing advantage of incumbency in the US states. Legis. Stud. Q. 18 (4), 495–514.
Dahlberg, Matz, Johansson, Eva, 2002. On the vote-purchasing behavior of incumbent governments. Am. Polit. Sci. Rev. 96 (1), 27–40.
DeBacker, Jason, 2011. The price of pork: the seniority trap in the U.S. House. J. Public Econ. 95 (1–2), 63–78.
Eggers, Andrew, Fowler, Anthony, Hainmueller, Jens, Hall, Andrew B., Snyder Jr., James M., 2015. On the validity of the regression discontinuity design for estimating electoral effects: evidence from over 40,000 close races. Am. J. Polit. Sci. 59 (1), 259–274.
Evans, Diana, 2004. Greasing the Wheels: Using Pork Barrel Projects to Build Majority Coalitions in Congress. Cambridge University Press.
Fiorina, Morris P., 1977, 1989. Congress, Keystone of the Washington Establishment. Yale University Press.
Fiva, Jon H., Folke, Olle, Sørensen, Rune J., 2014. The power of parties. SSRN Working Paper (http://ssrn.com/abstract=2221882).
Fouirnaies, Alexander, Mutlu-Eren, Hande, 2015. English bacon: copartisan bias in intergovernmental grant allocation in England. J. Polit. 77 (3), 802–817.
Fowler, Anthony, 2015. Do elections select for better representatives? Working Paper
Fowler, Anthony, Hall, Andrew B., 2015. Searching for convergence. Working Paper.
Fowler, Anthony, Hall, Andrew B., 2015. Long term consequences of election results. Br. J. Polit. Sci. http://dx.doi.org/10.1017/S0007123415000241 (in press).
Franco, Annie, Malhotra, Neil, Simonovits, Gabor, 2014. Publication bias in the social sciences: unlocking the file drawer. Science 345 (6203), 1502–1505.
Freier, Ronny, Odendahl, Christian, 2012. Do parties matter? Estimating the effect of political power in multi-party systems. DIW Working Paper 1205.
Gelman, Andrew, Huang, Zaiying, 2008. Estimating incumbency advantage and its variation, as an example of a before–after study. J. Am. Stat. Assoc. 103 (482), 437–446.
Gelman, Andrew, King, Gary, 1990. Estimating incumbency advantage without bias. Am. J. Polit. Sci. 34 (4), 1142–1164.
Gerber, Alan, Malhotra, Neil, 2008. Do statistical reporting standards affect what is published? Publication bias in two leading political science journals. Q. J. Polit. Sci. 3 (3), 313–326.
Grimmer, Justin, 2013. Appropriators not position takers: the distorting effects of electoral incentives on congressional representation. Am. J. Polit. Sci. 57 (3), 624–642.
Grimmer, Justin, Hersh, Eitan, Feinstein, Brian, Carpenter, Daniel, 2012a. Are close elections random? Presented at the 2012 Annual Meeting of the Midwest Political Science Association (http://stanford.edu/jgrimmer/CEF.pdf)
Grimmer, Justin, Messing, Solomon, Westwood, Sean J., 2012b. How words and money cultivate a personal vote: the effect of legislator credit claiming on constituent credit allocation. Am. Polit. Sci. Rev. 106 (4), 1–17.
Hall, Andrew B., Shepsle, Kenneth A., 2014. The changing value of seniority in the US House: conditional party government revised. J. Polit. 76 (1), 98–114.
Healy, Andrew, Malhotra, Neil, 2009. Myopic voters and natural disaster policy. Am. Polit. Sci. Rev. 103 (3), 387–406.
Jacobson, Gary C., 1989. Strategic politicians and the dynamics of US House elections, 1946–86. Am. Polit. Sci. Rev. 83 (3), 773–793.
Jacobson, Gary C., 2001. The Politics of Congressional Elections. Longman.
Knight, Brian, 2005. Estimating the value of proposal power. Am. Econ. Rev. 95 (5), 1639–1652.
Lee, David S., Moretti, Enrico, Butler, Matthew J., 2004. Do voters affect or elect policies? Evidence from the US House. Q. J. Econ. 119 (3), 807–859.
Levitt, Steven D., Poterba, James M., 1999. Congressional distributive politics and state economic performance. Public Choice 99 (1), 185–216.
Levitt, Steven D., Snyder Jr., James M., 1995. Political parties and the distribution of federal outlays. Am. J. Polit. Sci. 39 (4), 958–980.
Levitt, Steven D., Snyder Jr., James M., 1997. The impact of federal spending on House election outcomes. J. Polit. Econ. 105 (1), 30–53.
Martins, Rodrigo, Veiga, Francisco José, 2014. Does voter turnout affect the votes for the incumbent government. Eur. J. Polit. Econ. 36, 274–286.
McCrary, Justin, 2008. Manipulation of the running variable in the regression discontinuity design: a density test. J. Econ. 142 (2), 698–714.
McKelvey, Richard D., Riezman, Raymond, 1992. Seniority in legislatures. Am. Polit. Sci. Rev. 86 (4), 951–965.
Moore, Michael K., Hibbing, John R., 1996. Length of congressional tenure and federal spending: were the voters of Washington state correct? Am. Politics Res. 24 (2), 131–149.
Roberts, Brian E., 1990. A dead senator tells no lies: seniority and the distribution of federal benefits. Am. J. Polit. Sci. 34 (1), 31–58.
Snyder, Jason. 2005. "Detecting Manipulation in US House Elections." Unpublished Manuscript, University of California, Los Angeles. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.335.6505&rep=r ep1&type=pdf.

Stadelmann, David, Portmann, Marco, Eichenberger, Reiner, 2014. The law of large districts: how district magnitude affects the quality of political representation. Eur. J. Polit. Econ. 35, 128–140.
Stein, Robert M., Bickers, Kenneth N., 1994. Congressional elections and the pork barrel. J. Polit. 56 (2), 377–399.
Stratmann, Thomas, 2005. Ballot access restrictions and candidate entry in elections. Eur. J. Polit. Econ. 21, 59–71.
Stratmann, Thomas, 2013. The effects of earmarks on the likelihood of reelection. Eur. J. Polit. Econ. 32, 341–355.
The Cato Institute, 2009. Cato Handbook for Policymakers. 7 ed. The Cato Institute.