# The Importance of Breaking Even: How Local and Aggregate Returns Make Politically Feasible Policies

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**Abstract**

Policies that promote the common good may be politically infeasible if legislators representing "losing" constituencies are punished for failing to promote their district's welfare. We investigate experimentally how varying the local and aggregate returns to a policy affects voter support for their incumbent. In our first study, we find that an incumbent who favors a welfare-enhancing policy enjoys a discontinuous jump in support when their own district moves from losing to at least breaking even, while the additional incremental political returns for the district doing better than breaking even are modest. This feature of voter response, which we replicate, has significant implications for legislative politics generally and, in particular, how to construct politically feasible social welfare enhancing policies. In a second study, we investigate the robustness of this finding in a competitive environment in which a challenger can call attention to a legislator's absolute and relative performance in delivering resources to their district.

**Keywords:** political representation, social welfare, geographic coalitions, pork barrel politics, legislative coalitions

A key challenge confronting governments is how to promote the common good, understood as translating citizen resources into policies that enhance aggregate welfare. But there are political hurdles to enacting general interest legislation. For instance, policy proposals may enhance collective welfare but produce net costs for some regions or groups. When individual legislators represent geographic constituencies, the officeholder feels pressure to be responsive to their constituents, which may undercut support for policies that, on balance, improve public welfare (Arnold, 1990). Prior research suggests voters punish incumbents who fail to garner sufficient distributive spending for their constituents (e.g. Mayhew, 1976; Weingast, Shepsle, and Johnsen, 1981). Representatives who are interested in policies that have positive net benefits for society may sometimes face a conflict when legislation that is good for the collective leaves their own constituents worse off.

This tension between local and aggregate benefits is well understood in work focusing on legislative policy making (e.g. Patashnik, Gerber, and Dowling, 2017). Seminal studies focus on how incumbents make decisions to optimally redistribute benefits among groups more generally (e.g. Lowi, 1966) or exploit the legislative process to obscure negative outcomes from voters in order to protect incumbents (e.g. Arnold, 1990). This work rests on a set of assumptions about voters' support for legislators who support policies that prioritize constituency benefits over societal interests. However, direct evidence about *how* voters may trade off constituency interest and general interest is limited. Although previous studies have focused on how legislatures balance competing particularistic interests to improve aggregate social welfare, especially through norms such as logrolling and legislative exchange (e.g. Shepsle and Weingast, 1981), these studies do not attempt to measure how voters evaluate the tension between district particularism and policies that promote the common good.

We study how voters respond to potential tradeoffs between district-level electoral accountability and government production of policies that promote overall social welfare. We report the results of two experiments and two replication studies that investigate how voters react to changes in both aggregate and district welfare to understand how concerns about

district service shape policy, particularly when it is in conflict with general social welfare. For example, voters may punish incumbents who support policies with large aggregate gains when their own communities are on the losing end, or even if their district simply does worse than others. Conversely, voters may punish their representatives if a policy reduces overall social welfare, despite benefits for their own district.

Importantly, understanding the political consequences of a district "winning" and "losing" helps identify how mass attitudes can influence the way in which legislatures can adjust policies that enhance aggregate social welfare through mechanisms like side payments to make otherwise politically infeasible options electorally palatable (e.g. Arnold, 1990, 109). At the same time, it is also unclear how this tension between particularistic and aggregate benefits plays out in the campaign context, where electoral challengers may raise criticisms about the shortcomings of a policy for an incumbent's own district, even though it enhances overall social welfare (e.g. Arnold, 1990, 10, but see also Kingdon, 1989).

In this project, we conduct a series of survey experiments to measure how citizens evaluate legislators who support policies that provide different levels of district and societal returns. These data allow us to understand the specific mapping between these policy outputs and voters' support for their incumbent legislator. A policy proposal may be thought of as having an economic return for each constituency and a political return for the district's incumbent. We measure the mapping between this economic return and the political return using survey experiments.

Our core experiment focuses on a hypothetical scenario in which a city council has passed a road project with the support of the respondent's legislator. We independently experimentally manipulate the benefits the project returns both to the city as a whole and to the respondent's home district, with a wide range of potential values for each dimension of manipulation. In this hypothetical scenario, the respondent's "home district" is a smaller district (local) within the city (aggregate).[1] Although we focus on the United States in our

[1]In our second replication, we also vary the aggregate jurisdictions (the county or the state) and the policy (replacing water distribution pipes to reduce the risk of lead contamination), and we find that our

study, this is a specific instance of the more general institutional design present in many countries and levels of government in which elected officials represent defined geographic constituencies, but come together to make collective decisions.

As expected, we find that voters have preferences for policies with outcomes that return at least as much as they pay in taxes at both the particular and aggregate level. However, what is surprising is how voters trade-off between the return for their home district and the aggregate. Even if policies generate substantial aggregate returns for the city, they result in less support for the incumbent legislator if they make the home district even slightly worse off.

There is clear evidence that the political response to economic benefits for both city and district returns is non-linear. In particular, respondents exhibit a distinct and discontinuous sensitivity around zero: voters provide significant punishments to legislators who do not secure a non-negative return for either the city or the district, but they provide a sharp jump in political support when either the city or district return is net neutral. At the same time, however, the marginal return for doing much better than a net neutral return is quite low. Our core interest is in understanding how a district's returns affect support for policies that produce aggregate social welfare. We confirm the critical importance of a district at least breaking even for incumbent support in two pre-registered replications. While the first replication (Experiment R1) was largely similar to Experiment 1, but with a larger sample for greater statistical power and to rule out sampling variability as the explanation for our original finding, the second replication (Experiment R2) changed both the survey sample provider and some features of the survey vignettes to address concerns about respondent attention and the scope of geographic tradeoffs between local and aggregate returns.[2]

This non-linear relationship between the economic returns to a policy and its political

results hold.

[2]As a manipulation check, we asked respondents after each treatment whether their aggregate and district net returns were each positive, negative, or neutral. While Experiments 1, R1, and 2 had pass rates of around 61%, 66% (both Lucid), and 60% (YouGov), respectively, Experiment R2 (Bovitz) had a pass rate of around 79%.

returns implies that shifting a fixed economic benefit across districts may produce an increase in the aggregate political returns to incumbents from passing a policy, enhancing its political viability. Given this tradeoff, we conduct a simulation where a hypothetical policy returns a fixed social surplus and estimate whether redistributing this pool of benefits as "side-payments" to policy "losers" whose districts otherwise come out behind from "winning" districts can be used to build feasible majority coalitions. We find that legislators from a coalition that benefits from a policy can, at a modest political cost, use some of their surplus to "buy off" legislators from a coalition that otherwise endures costs to build support for the policy. These side payments can make supporting the policy electorally attractive with minimal loss in economic and electoral benefits for those who control the policy agenda.

Of course, electoral competition provides incentives for incumbents and challengers to make political information salient to voters and to provide cues about how to process such information (e.g. Gordon and Huber, 2007). Therefore, we extend our initial design in a second experiment by introducing experimental manipulations in which the councilor's challenger can raise different critiques, like those in a competitive campaign environment. We find that while this non-linearity of responsiveness around net zero returns persists, critiques about the fairness of a distribution of benefits can be effective in reducing support for an incumbent legislator. In fact, the magnitude of this critique effect is roughly enough to eliminate the gains in approval from securing a net zero return, suggesting limitations of side payments for building majority coalitions among those receiving minimal returns, and also explaining efforts by incumbents to advertise their performance in ways that obscure this relative performance benchmark (Grimmer, Westwood, and Messing, 2015).

# 1 Policy Returns and Electoral Support

To retain office, legislators must balance their desire to enact normatively "good" public policy and satisfying voter preferences. These impulses may be in tension when elected officials

representing distinct geographic constituencies consider legislation that improves general welfare but which makes the voters in their home constituencies worse off. If constituents prefer receiving more for themselves from distributive policies, then they will punish incumbents who fail to return funds to their home districts even if those policies improve social welfare in the aggregate. Voter preferences may therefore undercut the willingness of legislators to produce policies that serve the general interest.

Extensive observation of elite behavior suggests legislators believe providing benefits to their districts is important for their electoral fortunes. For example, legislators frequently engage in credit claiming to make voters aware of government spending in their constituencies, regardless of whether they are responsible for the funds (e.g. Mayhew, 1976; Grimmer, 2013). These impulses also appear to shape the crafting of legislation and coalition building. Policies that provide benefits to many legislative districts are more likely to receive attention on the legislative agenda and be enacted than those that provide benefits only to a small number of districts. In cases where districts will experience substantial costs, legislative procedures are used to distance legislators from those costs (Arnold, 1990).

The pressure to provide district benefits may also help explain patterns of limited universalism, in which legislation provides benefits to all districts (albeit with some legislators getting more, see, e.g. Balla et al., 2002; Berry and Fowler, 2016) rather than hypothetical minimum winning coalitions in which benefits are divided among a bare majority of legislators.[3] In particular, legislators can use log rolls to either ensure all districts come out ahead in the aggregate or rely on jurisdictional property rights associated with committees to secure benefits on policy dimensions their districts care deeply about to offset losses in other less important policy areas (e.g. Bickers and Stein, 1996; Clemens, Crespin, and Finocchiaro, 2015; Evans, 2004), with either approach reducing the overall incidence of "losing" districts. Historically, compensating veto players who have short-term losses through "side

[3]Additionally, scholars have noted that minimum winning coalitions may be unstable and subject to constant renegotiation, or simply uncertainty about the future. In some of these accounts, minimum winning coalitions are vulnerable to alternatives that ensure no district is a clear "loser" in any given round of distributive policymaking (e.g. Fenno, 1966; Volden and Carrubba, 2004).

payments" has been an effective strategy for government around the world to build coalitions for policies that improve collective welfare in the long-run (Jacobs, 2016; Lindvall, 2017).[4] The balance of these studies focus on national and state legislators, but local politicians face similar pressures. Indeed, the distribution of public resources remains a policy dimension somewhat orthogonal to national partisan conflict (Bucchianeri et al., 2021). While these accounts are built on assumptions about how voters respond to the distribution of overall and district-specific benefits, they do not provide direct evidence about the weight given to each or the exact nature of the mapping between local or aggregate policy outcomes and incumbent support.

We identify our theoretical expectations about the importance of breaking even and relative performance. First, past work suggests that incumbents will be hurt electorally by policies that yield negative returns for their district, but that voters are also less sensitive to the magnitude of gains than to losses. Specifically, voters who respond to credit claiming activities do not simply reward incumbents who maximize district returns (Grimmer, Messing, and Westwood, 2012; Grimmer, Westwood, and Messing, 2015). For example, they find that voters appear to respond much more to claims that a legislator brought *something* home to the district than to the amount of those awards. This is broadly consistent with prospect theory's approach to explaining individual decision-making processes (e.g. Kahneman and Tversky, 1979), as voters sharply penalize losses while discounting gains, which causes a discontinuity at around the break even point as voters reward legislators for merely not bringing net negative returns. Together, this informs our prediction that incumbents (who support a policy that produces aggregate welfare) will experience a discontinuous increase in support near the local break even point, as voters shift from loss aversion to discounting gains after they receive net neutral returns. However, these accounts focus on reactions to costs and benefits only in a single dimension in isolation, leaving unexplored the question of whether

[4]At the individual-level, a similar logic underlies the theory of welfare universalism, in which welfare policies are most popular when they eschew means-testing that creates stark winners and losers and instead make everyone eligible for benefits regardless of income level (Jacques and Noël, 2018; Korpi and Palme, 1998).

similar patterns prevail when policies produce costs and benefits in multiple dimensions (i.e., at both the local and aggregate level). Our work therefore investigates the response of the electorate as a whole to district and societal returns rather than individual responses to individual gains and losses.

Second, performances may also be benchmarked to other levels, such as the average district, rather than simply breaking even. Therefore, if one's district performs worse than the aggregate does, voters may penalize the legislator because of concerns about relative fairness. When individuals receive much less than someone else in a transaction, they may be concerned that they are being taken advantage of or being duped, even if they personally benefit somewhat (Vohs, Baumeister, and Chin, 2007). (Of course, one salient measure of being treated unfairly is losing so others benefit, which would predict a discontinuous jump in approval when one goes from losing to breaking even or coming out barely ahead.) For this reason, voters may punish incumbents who secure positive returns for their constituents if other districts do better than their own, implying their representative is less effective (this is also a form of benchmarking). Gerber, Patashnik, and Tucker (2022), using a survey experimental design similar to Grimmer, Westwood, and Messing (2015), show that when voters are informed their incumbent secured fewer funds than the average legislator, they provide much lower evaluations than when that same information is provided without a comparison to a better performing district. But, confirming a pattern found in earlier work, they do not find that learning one's incumbent does better than the average legislator generates more support than simply being average.

This discussion highlights the potential tension for incumbents between producing policy that enhances collective welfare and district service as well as the uncertainty in extant work about how people tradeoff between aggregate and particularistic returns in evaluating incumbent politicians. However, it is unclear if incumbent support increases merely by being brought to neutral (break even) or if a constituency needs to do better than break even to generate improved incumbent support. It is also unclear if this discontinuity will be present

when a second dimension, aggregate returns, is strictly positive, or if instead, voters evaluate policies as a weighted average of aggregate and local returns.

Our expectations about the importance of a local constituency breaking even (despite a policy producing substantial social benefit) and the potential importance of comparisons across districts (relative performance) are derived from the prior experiments mentioned above and general observations of policymaking and incumbent behavior in a potentially competitive campaign environment. However, direct evidence about how citizens react to changes in aggregate and district returns is not readily available, and obtaining unbiased estimates of these quantities from the observed correlation between distributive outcomes and incumbent evaluations is difficult because omitted factors may explain both (e.g., legislator skill and effort, incumbent vulnerability, etc.). For this reason, we adopt an experimental approach here, in which we can manipulate both the local and aggregate returns to a public policy.

While we have not discussed electoral challengers explicitly, the potential for such challengers to publicize instances of incumbent malfeasance and poor performance may further strengthen the incentive against those behaviors (Gordon and Huber, 2007). There is mixed evidence that negative campaigning on average helps incumbents (e.g. Ansolabehere and Iyengar, 1995; Lau et al., 1999), although of course critiques of incumbent performance are more likely to be effective when they are germane, and electorally-motivated incumbents may avoid behaviors that are vulnerable to such criticism in the first place. For this reason, a further remaining question is whether campaign rhetoric criticizing incumbents for poor policies is necessary to make salient a district's absolute and relative performance, and also whether such criticisms are more effective when germane.

# 2 Data Collection and Analysis

We designed a pair of experiments to understand how the electorate responds to incumbent support for a policy that produces various combinations of collective- (aggregate) and district-specific (local) benefits. In Experiment 1, we investigate support for incumbents across policies that provide a range of city- and district-specific returns. This design allows us to examine the potential tradeoffs between these two benchmarks, to test whether there are discontinuities in incumbent support around a district breaking even, and also to fully map the function of voter responses to changes in both district and overall societal outcomes. We then conducted two independent pre-registered replications of this experiment, while varying some aspects of the hypothetical scenario in the second replication. Experiment 2 builds on the first experiment, focusing on instances in which policies that promote overall social welfare are in tension with those that produce district-specific returns. Additionally, we introduce a challenger in Experiment 2, whose criticism of an incumbent may be generic, highlight that a district does poorly, or explicitly compare an incumbent's performance to how others are doing.

## 2.1 Experiment 1: Incumbent support is discontinuous to a district breaking even, and non-linear in gains

In our first experiment, we recruited 500 survey respondents online using Lucid.[5] Each respondent was exposed to three brief vignettes that described a road project that their own (hypothetical) city council member supported.[6] We experimentally manipulated the overall net return for the city of this public works project, as well as the net return for the respondent's own geographic district in each vignette. Net returns for the city and the district

[5]Lucid is an online survey vendor that provides researchers with convenience samples. Demographics of subjects recruited through Lucid have been found to match closely to those of national benchmarks and researchers have found it appropriate for experimental social science research (Coppock and McClellan, 2019).

[6]While much of the literature on how citizens evaluate legislative spending occurs at the federal level, we have chosen a city vignette because it allows us to create a non-partisan legislature with real world validity.

were independently randomly assigned and ranged from the average citizen at each level of aggregation losing $50 on the project to the average citizen gaining $50 on the project.[7] In addition to reading a summary of the project for each scenario that included both of these figures, respondents were also presented with a figure that made it straightforward to recognize any differences in the per capita return in their district relative to the average citizen in the city.[8] Because we were interested in possible discontinuities in support for returns at or above zero, we oversampled scenarios in which either the district had net neutral returns (e.g., simply broken even), as well as those returns that were slightly more than or slightly less than zero.[9]

After each respondent read the assigned vignette (the survey was structured so that respondents had to spend at least 20 seconds on the vignette before proceeding to the next item), they were asked three questions about their support for the project and their councilor who had voted in favor of it. First, they provided their approval of the project on a five-point scale ranging from "strongly disapprove" to "strongly approve." Second, using the same scale, they were asked their approval for their incumbent councilor who supported the project. Finally, they were told to suppose their councilor was being challenged in a reelection campaign and asked their likelihood of supporting the candidate on a five-point scale, ranging from "I would certainly vote for the challenger" to "I would certainly vote for the incumbent." Respondents repeated this evaluation task two more times, and each time we randomly assigned new district- and city-level returns. For the purposes of our analyses, we rescale each evaluation variable from $-1$ to 1.

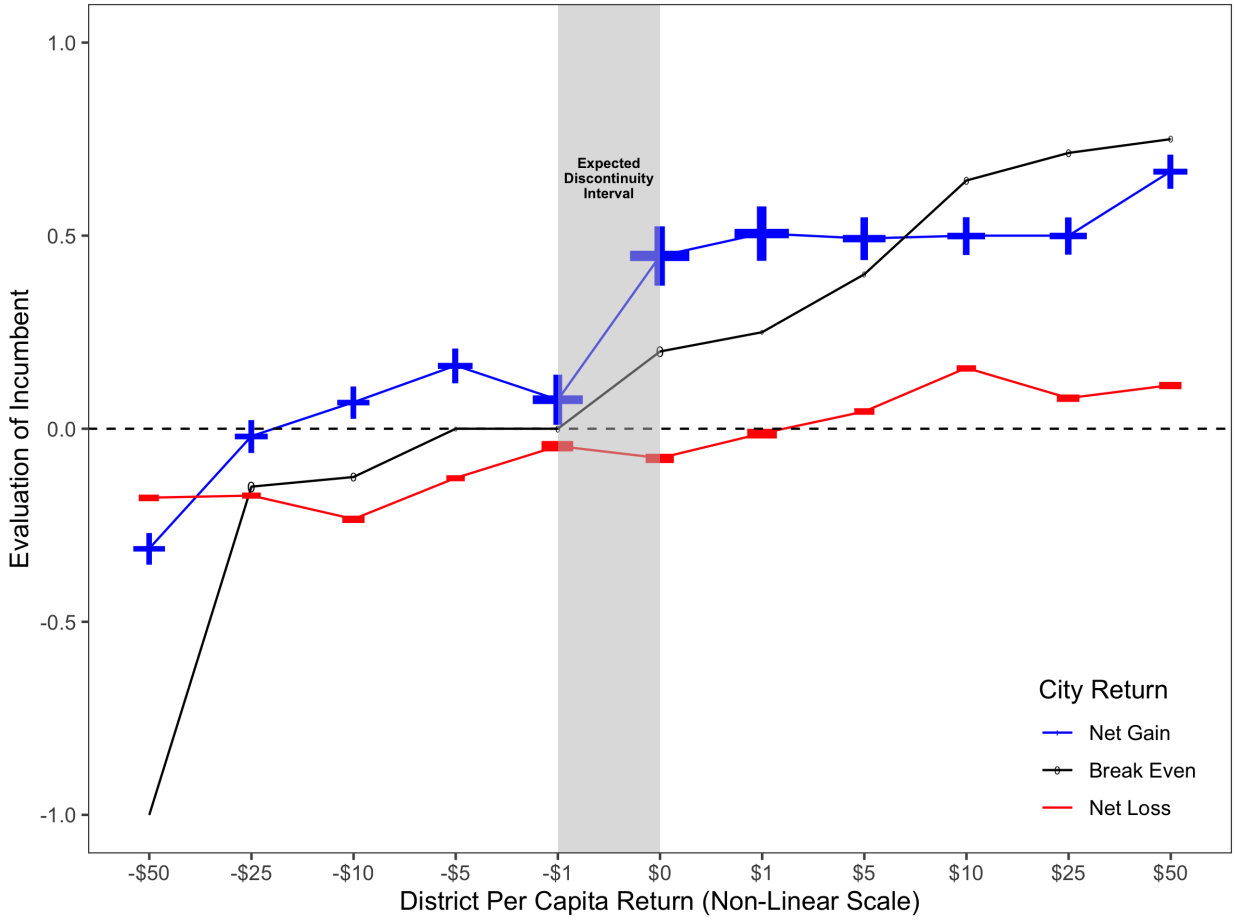
In Figure 1, we plot the mean level of approval of the incumbent by the size of the net

[7]Per capita net returns for the city values were losses and gains of $50, $40, $30, $25, $20, $15, $10, $5, $1, and $0.1. Per capita net returns for the district values were losses and gains of $50, $25, $10, $5, and $1. Both city and district returns also included net neutral returns, or $0 net returns for the average resident. Net returns for city and district were assigned independently.

[8]The complete text of the vignette and an example of the figure appears in Section F of the Supplementary Materials.

[9]In Table A6, we conducted a balance test that indicated no relationship between assignment of either treatment variable with key characteristics such as party identification, education, household income, race, and region.

Figure 1: Mean Incumbent Evaluations by District Per Capita Returns, Binned by Net City Returns, Experiment 1




*Note:* The gray shaded area is the expected discontinuity interval, which ranges from -$1 to $0 for the district per capita return. The size of the points at each coordinate reflects the sample size for the given city-district treatment pairing. District per capita returns of -$1, $0, and $1 were oversampled.

district and city per capita returns. The y-axis reflects the mean level of approval, while the x-axis represents the *size of the district net return*. The three lines represent whether the *net city return* was above (plotted with "+"), below (plotted with "−"), or at zero (plotted with "0"). The size of the points on each line are scaled by the sample size at each combination of city and district net return. We expect a sharp discontinuity in response to the district's return moving from just slightly negative to just breaking even, and perhaps a further jump just above that. To highlight this hypothesis, we shade the interval between the −$1 and $0 net district returns per capita where we expect to observe a discontinuity in

responsiveness. Within this interval, we do find sharp increases in support when the project returns at least as much value to the city as it costs in taxes (i.e, the lines plotted with "+" and "0"). Specifically, when the project is a net positive overall for the city, a legislator who can ensure their district at least improves to breaking even from a −$1 district per capita return can increase their mean level of support by 0.37 ($p < .001$) on the two-point scale.[10] This result suggests that legislators have substantial incentives to work to ensure that a legislative proposal that produces positive social value at a minimum produces net zero returns for their district. For comparison, under these same conditions, we find that a legislator who moves their district's per capita return from $0 to +$25 only increases their level of support by 0.05 ($p = 0.52$) on the same scale (there is no further discontinuity above 0). Thus, we see a substantive discontinuity around zero when the city has a positive return. Quite notably, we find little evidence of a "jump" in approval when the net district return reaches $0 if the project is a net negative return for the city overall.[11] That is, if a project is a net loss in the aggregate, voters do not reward politicians for breaking even in their own district.[12]

To formally characterize the nature of discontinuities in responsiveness to public policies, we analyze these data using OLS regression and predict each evaluation, using measures of the per capita net return for both the city and the district, along with an indicator for which vignette the respondent was evaluating (i.e., the second vignette). To account for the fact that respondents evaluated multiple vignettes, we cluster standard errors at the respondent

[10] We conducted a difference in means t-test, and all reported tests are two-tailed unless otherwise specified.

[11] Figure 1 also shows that the electorate responds to both city and district net benefits (that is, each line is generally upward sloping and the line for positive city-wide returns is generally above that for a net neutral city return, which is generally above that for a net negative city return). A discontinuity at zero would be expected generally regardless of whether the city return is positive or not if voters placed no weight on city benefits. The pattern we observe, however, shows that voters do reward social returns.

[12] In Figure E3, we repeat the graphical presentation in Figure 1, but we present the city returns on the x-axis and subset our data by whether the net district return was positive, zero, or negative. As with Figure 1, we observe a discontinuity at zero when the district net return is positive or net neutral, but not when the district net return is negative. Therefore, as with our main analysis, the discontinuity at around net neutral city returns disappears if the district net returns are negative, implying that the home jurisdiction must at least break even for a legislator to be rewarded for wider societal returns.

level.[13] We collapse both the city and the district returns into three indicator variables: city/district loses money (return is less than 0), city/district at least breaks even (greater than or equal to 0), and city/district earns a positive return (greater than 0).[14] The negative net return category serves as the baseline category for both the city and the district. In this way, we test whether a non-negative return produces a significantly different evaluation from a positive return, relative to a negative return. Additionally, we include measures of district per capita returns, city per capita returns, and an indicator for whether the district per capita return is smaller than the city-wide return to test whether poor relative district performance also affects these outcomes.[15]

The regression results displayed in Table 1 employ this specification. Confirming the graphical presentation, there is clear evidence that the district simply breaking even improves evaluations of the incumbent, willingness to vote for the incumbent, and the project evaluation—all coefficients are positive and statistically significant at $p < 0.05$. The effect of doing strictly better than breaking even is also consistently positive, but it is smaller (between about 14% and 56% of the effect of simply breaking even) and not statistically significant. There are similar results for the city-wide returns, but with the willingness to vote for the incumbent not being statistically significant. Comparing the size of the two effects, we note that the city going from losing to breaking even is associated with an effect of .18 and .22 for the incumbent and project evaluations, which is about equal to the effect of the district breaking even, on average.

[13] We standardize the data used in the regression to only respondents who answer all three of the dependent variables (incumbent evaluations, vote choice, and project evaluations) for a total of 1,487 observations from 496 respondents.

[14] In Table A1, we estimate an alternative specification in which we treat city and district returns as categorical variables. Each coefficient represents the given net return and the lowest value for the district and city return represents the baseline. Our results are consistent in that we find discontinuities in the size of the effects near zero. In Figure E1, we present the discontinuity in responsiveness to these returns graphically.

[15] To justify our choice to divide city returns at zero, we estimated regressions with every possible combination of district and city cutpoint values (i.e. in the Table 1 specification, the city and district cutpoints are indicators for returns at or above 0). We found that for all but one of the possible city return cutpoints, using a cutoff of net district return at zero provided the lowest Akaike Information Criterion (AIC), meaning that this categorization provides the best fit. AICs for each combination may be found in Table A4 for Experiment 1, Table B4 for R1, and Table C6 for Experiment R2.

Table 1: Effect of District and City-Wide Returns on Evaluations, Experiment 1

| | Incumbent Evaluations (-1 to 1) | Vote for Incumbent vs. Challenger (-1 to 1) | Project Evaluation (-1 to 1) |
|---|---|---|---|
| District At Least Breaks Even (District $\geq 0$) | $0.204^{***}$ | $0.105^{*}$ | $0.191^{***}$ |
| | (0.056) | (0.051) | (0.056) |
| District Benefits (District $> 0$) | 0.044 | 0.059 | 0.026 |
| | (0.056) | (0.048) | (0.057) |
| District Returns Per Capita | $0.003^{***}$ | $0.003^{**}$ | $0.003^{**}$ |
| | (0.001) | (0.001) | (0.001) |
| District Worse Off than City | $-0.028$ | $-0.023$ | $-0.003$ |
| | (0.052) | (0.050) | (0.056) |
| City At Least Breaks Even (City $\geq 0$) | $0.179^{*}$ | 0.125 | $0.218^{**}$ |
| | (0.076) | (0.073) | (0.076) |
| City Benefits (City $> 0$) | 0.015 | 0.052 | 0.067 |
| | (0.076) | (0.072) | (0.075) |
| City Returns Per Capita | $0.004^{***}$ | $0.002^{*}$ | $0.003^{**}$ |
| | (0.001) | (0.001) | (0.001) |
| Vignette 2 | $-0.107^{***}$ | $-0.014$ | $-0.107^{***}$ |
| | (0.031) | (0.029) | (0.032) |
| Vignette 3 | $-0.060^{*}$ | $-0.004$ | $-0.062^{*}$ |
| | (0.030) | (0.028) | (0.030) |
| Constant | $-0.036$ | $-0.023$ | $-0.070$ |
| | (0.048) | (0.046) | (0.050) |
| $R^2$ | 0.166 | 0.102 | 0.161 |
| Observations | 1487 | 1487 | 1487 |
| Respondents | 496 | 496 | 496 |

$^{***}p < 0.001$; $^{**}p < 0.01$; $^{*}p < 0.05$.
*Note:* Dependent variables are listed in each column. Models estimated using ordinary least squares regression, with standard errors clustered by respondent.

In addition to this evidence about discontinuities around 0, the district doing worse, on a per capita basis, than the city as a whole has a small negative and insignificant effect on all outcomes. Finally, there is also evidence of an average effect of both district and city returns—the per capita measures of both values are positively signed and statistically significant.

These results are robust to several alternative modeling choices. We added controls for

party identification, education, household income, and race to the model found in Table 1, column 1 and found the main experimental results held. We also interacted each control variable with the two district cutpoints to identify any potential heterogeneity in responses to district returns. We were unable to find any significant evidence of an interaction effect (see Table A5 in the Supplementary Materials).

We also extended this investigation in Table A7 to ascertain whether the non-linearity in the effect of district returns varied by overall returns to the city. We continued to find a significant and positive discontinuity when the district and city return were at least zero. However, when the city experienced a negative return, we found no evidence of a discontinuity. That is, the return to a district of at least breaking even exists only for those policies that produce break even or better city returns. These results suggest that the main findings regarding district returns are conditional on a public policy design not being a net loss for the aggregate population. Additionally, in Table A8, we investigated whether responsiveness to city and district returns varied significantly when the district return was substantial (district per capita return greater than or equal to 10) and positive. We found no evidence of such heterogeneity. In Table A9, we restricted our analysis to those instances in which the city does better than the district. We found our results regarding the discontinuity at zero still hold for the district per capita returns. In Table A10, we conducted the regression in column 1 of Table 1 for each specific round of vignettes. The effect of the district's return being greater than or equal to zero was positive in all three rounds, but it was stronger in round 2 than round 1 or 3 and only individually significant in round 2. Overall, the effects were consistent with those in the main analysis, suggesting that our results are not driven entirely by learning or contrast effects.

## 2.2 Implications of Experiment 1 for Politically Feasible Policies

The results presented so far show that there are clear discontinuities in incumbent support around a district breaking even but a much weaker relationship between further district

returns and incumbent support. This pattern of results may have important implications for the strategies of legislators seeking to design politically feasible policies that promote social welfare. Empirically, legislators suffering losses are often compensated with ancillary benefits to secure their support for policies that improve overall social welfare (Lindvall, 2017). Our results suggest that it might be possible to increase the size of a supporting coalition through (potentially universal) side payments, in which some of the gains from a policy that enhances overall welfare but which might be concentrated in winning districts are reallocated to otherwise losing districts to move them to breaking even. This, in turn, may allow legislators from those districts to switch from opposing the policy (for electoral reasons) to supporting the aggregate welfare-enhancing policy despite their district not sharing equally in the policy's benefits.

To investigate the feasibility of such side payments for building larger political coalitions, we reanalyzed our data, focusing on those cases in which overall city returns were positive. This is because we want to understand the possibility of building coalitions to support policies that enhance overall welfare, as well as because side payments are only feasible when there is a social surplus to redistribute. To make this presentation more transparent, we collapsed the incumbent vote variable to a dichotomous indicator in which responses of "I will certainly vote for the incumbent" and "I will probably vote for the incumbent" are coded as "100" and all other responses are coded as "0." We then predicted this outcome using the same covariates from the Table 1 specification, but restricted to cases where city returns were strictly positive. Model results appear in Table A2 in the Supplementary Materials and are broadly similar to the results shown in Table 1. Of most importance, a district at least breaking even is associated with a 24-point increase in electoral support for an incumbent who supports the policy, implying a large political return to being brought to break even, while the coefficient on district returns per capita is only .13, implying a relatively minimal cost in winning districts to transferring some resources to losing districts.

We use the coefficients from this model to predict the level of support for an incumbent

legislator who supports this project in the presence and absence of side payments. Side payments are a redistribution of returns from one or more winning districts (per capita returns greater than 0) to one or more losing districts (per capita returns less than 0 before side payments) that increase per capita returns in the receiving (formerly losing) districts to simply breaking even (per capita returns of 0). In this way, we are able to calculate whether the costs needed to convince a "losing district" representative to support a project are politically and economically feasible for legislators from the winning districts. That is, we want to know if there is a sufficient economic surplus that politically-efficient side payments can allow electorally-minded incumbent legislators to vote for the project.

A summary of our simulation results appears in Table 2. As expected, the discontinuous increase in electoral support that an incumbent legislator receives when supporting a project that benefits the city but for which a district simply breaks even makes side payments a highly effective strategy for building larger political coalitions. In this hypothetical simulation, the benefit of the policy is initially concentrated solely in 4 districts for which the per capita district return is \$4 and in the remaining 6 districts for which the per capita district return is −\$1. This policy therefore produces, on average, a modest return of \$1 per capita in the city as a whole (that is, the average of $(4 \times \$4 + 6 \times -\$1)/10 = \$1$). The model predicts that legislators who vote for the policy will receive 65.79% of the vote in the winning districts and 32.79% of the vote in the losing districts (as seen in column 1 of Table 2), implying it is politically infeasible for legislators in those losing districts to support the policy, thus likely defeating the project with only 4 legislators voting for it.

What happens when the policy is amended through side payments or other means so that 2 of the formerly losing districts are simply brought to breaking even, creating a majority coalition of 6 (column 2 of Table 2)? Holding fixed the city per capita return at \$1, bringing the 2 losing districts to break even returns (from −\$1 to \$0 per capita net returns) increases the predicted support for those legislators when voting in favor of the policy from 32.79% to 57.17%, a 24-point increase in their support, which makes voting in favor of the policy

Table 2: Simulated Electoral Tradeoffs from Side Payoffs when City-Wide Per Capita Returns are $1, Experiment 1

| | Initial Losing Coalition (4 – 6) | | New Winning Coalitions (6 – 4 and 10 – 0) | | | |
|---|---|---|---|---|---|---|
| | 4 Winners | ($4 district return) | 4 Winners | ($3.5 district return) | 4 Winners | ($2.5 district return) |
| | 0 Break Even | ($0 district return) | 2 Break Even | ($0 district return) | 6 Break Even | ($0 district return) |
| | 6 Losers | (−$1 district return) | 4 Losers | (−$1 district return) | 0 Losers | (−$1 district return) |
| Support in Winning Districts | 65.79% (4) | | 65.72% (4) | | 65.59% (4) | |
| Support in Break Even Districts | N/A (0) | | 57.17% (2) | | 57.17% (6) | |
| Support in Losing Districts | 32.79% (6) | | 32.79% (4) | | N/A (0) | |

*Note:* This table presents the predicted electoral outcomes estimated from Table A2. We assume a 10-district city passes a policy that has a per capita net return of $1 to the city as a whole. By type (winning, break even, losing), all districts are assumed to have the same net return. Districts that come out behind have a per capita net return of −$1. In column 1, we present the vote share in which 4 districts come out ahead with a per capita net return of $4. In column 2, the 4 councilors from the winning districts provide payoffs to 2 losing districts so that they reach a per capita return of $0, to create a minimum winning coalition of 6. In column 3, the councilors provide payoffs to 6 losing districts to create a universal coalition of 10.

politically tenable. For the legislators in the winning districts, this would mean that their district's per capita returns drop from \$4 to \$3.5 (the per capita social surplus is still \$1, but now it is the average of $(4 \times \$3.5 + 2 \times \$0 + 4 \times -\$1)/10 = \$1$). However, this "costs" little politically, as it is predicted to decrease their support by a miniscule 0.07 points. The winning districts could even share their gains with a larger number of legislators to create a universal coalition at minimum costs. For example, if they brought all 6 of the formerly losing districts to even (column 3 of Table 2), the winning districts could each maintain per capita returns of \$2.5 and a predicted vote share of 65.59% (the per capita social surplus remains at \$1, which is the average of $(4 \times \$2.5 + 6 \times \$0)/10 = \$1$). In short, given the strong evidence of a discontinuous return to simply breaking even, side payments make constructing majority coalitions for policies that generate aggregate social welfare more feasible than may have previously been understood.

This simulation considers a case in which the policy's overall return is modest (\$1 per capita). Given these results, it is immediately apparent that policies that generate larger social welfare returns make side payments even more feasible. For example, if a policy generated \$2 or \$5 return per capita in the city as a whole, there would be ample surplus to distribute more widely and bring other districts to breaking even or better with very small losses for winning districts. Similarly, if an incumbent was concerned only about creating a majority coalition (in this case, getting the votes of 6 rather than 10 legislators), they could concentrate their side payments on a smaller subset of legislators and keep more of the surplus for themselves.

At the same time, this simulation assumes that side payments are fully efficient. This is likely an unreasonable assumption. For example, if a road generates a large average social surplus, this is because it produces a public value. A simple cash subsidy to other distributive programs in a legislator's district might not generate as much social value. But given the finding that the effect on a legislator's support of incremental district returns above 0 is small, even economically inefficient side payments may be politically efficient, particularly

when programs generate large social returns. For example, suppose that side payments are 50% less efficient than the program as a whole. This means bringing "losing" districts to break even costs twice as much, reducing the remaining social surplus for winning districts by a factor of two. In our simulation, even these economically inefficient transfers (which reduce the per capita return in the winning districts from \$2.5 to \$1.25) reduce the support for the winning district incumbent by only an additional 0.2 points. Overall, this simulation exercise demonstrates that the sharp penalty for doing worse than breaking even, coupled with the modest returns for doing incrementally better in a district that at least breaks even, gives legislators the possibility of reallocating social surplus through side payments to build majority coalitions that make welfare-enhancing policies feasible.

## 2.3 Pre-Registered Replication of Experiment 1

In November 2020, we fielded a pre-registered replication (Experiment R1) of this study to confirm our findings were not the result of sampling variability or respondent inattention. The sample was provided by Lucid and its larger size allows us to more precisely identify treatment effects. In this fielding, we also included a pre-treatment attention check that required subjects to recall a salient detail from an unrelated short newspaper article and removed subjects who failed this attention check prior to the experiment (31.5% of total entrants failed), reducing concerns that any results are due to inattentive subjects.[16]

In the Supplementary Materials, we present our replicated analyses. The results from this replication largely confirmed our analyses in Tables 1 and 2 and Figure E1, with some modest differences (see Figures E2, E4, and Tables B1–B3).[17] First, as Figure E2 demonstrates, we find a jump in approval of the incumbent when district and city returns each reach a net neutral per capita return, but the effect of a district at least breaking even is only present

[16] Among those passing the first attention check, 81% passed a much more difficult pre-treatment attention check about the same news story.

[17] We also standardize the data for the replication of Experiment 1. With the standardization, this experiment has a total of 4,348 observations from 1,452 respondents. We also conduct a balance test, shown in Table B5, which shows no relationship between assignment of either treatment variable with key characteristics such as party identification, education, household income, race, and region.

graphically when the city-wide return is positive. Our replication of Table 2's analysis in Table B1 finds a significant, sizable increase when the district at least breaks even, but this effect is smaller than the one estimated in Experiment 1. Finally, when we limit the model in Table B2 to those scenarios in which the project generates net positive returns for the city in order to estimate the potential for side payments to be used to bring districts to the "break even" point, we find in Table B3 that getting losing legislators to zero still only costs incumbents a fraction of support, while providing sizable gains for initial losers.

## 2.4 Second Pre-Registered Replication of Experiment 1

In May of 2023, we conducted a second pre-registered replication (Experiment R2) of Experiment 1 using a different online convenience sample provided by Bovitz to confirm our results are robust across samples and to differences in both type of policy and geographic scope.[18] While this replication had a similar design to the previous experiments, there were three important changes.[19] First, we change the hypothetical scenario from a road project to a different public works project that installs lead-free service pipes to reduce the risk of lead contamination in drinking water. While voters drive on roads outside of their home district, thus potentially affecting their evaluation of the aggregate net returns of a road project, the benefits of the water policy are more clearly localized because individuals are much less likely to personally benefit from using another resident's water supply. Second, we change the aggregate jurisdiction from a city to a county or a state (randomly assigned), which are much larger jurisdictions that contain more geographically distant residents that voters may have less affinity towards. Finally, unlike in the prior studies, the potential aggregate (county or state) returns were always positive, while we included a wider range of district net returns

[18]Prior research has benchmarked samples provided by Bovitz to demographic data in the ACS and partisanship data in the ANES and found that they track closely to these surveys (Druckman and Levendusky, 2019). We again standardize the data, for a total of 10,002 observations from 2,003 respondents. The balance test, shown in Table C7, shows no relationship between assignment of either treatment variable with key characteristics such as party identification, education, household income, race, and region.

[19]We included the same pre-treatment attention check as in Experiment R1 and removed subjects who failed it (only 8.4% of total entrants failed). We also asked the same much more difficult pre-treatment attention check, and of those passing the first attention check, 89% passed.

(from −$55 to $55 per capita).[20] In this experiment, respondents evaluated 5 vignettes, rather than 3 as in the prior two studies, so that we can also leverage a within-subjects design.

We find that our previous results hold for this replication. As Figure E5 demonstrates, we see a jump in incumbent evaluations when the district returns become net neutral at both the county and state levels. Tables C1 and C2 confirm this graphical presentation, as the district at least breaking even and the district being greater than 0 are significant and positive for both the county and the state. When comparing the magnitude of the district at least breaking even for the county and the state, Table C3 shows that the discontinuity (district at least breaks even x state) is around .036 points larger when the aggregate jurisdiction is the state for the incumbent and project evaluation dependent variables, but this difference is not statistically significant.

Because of the similarity of the results for the county and state treatments, we pool the county and state conditions in the remainder of our robustness analyses. We conduct a fixed effects model with the individual as the unit for the fixed effect in Table C4, because each respondent sees 5 vignettes with district net returns that are very bad, somewhat bad (around the discontinuity point), break even (net neutral), somewhat good (around the discontinuity point), and very good. This within-subjects model strongly replicates our previous findings for all three dependent variables, with all variables in the model being statistically significant. When the district at least breaks even or benefits, respondents evaluate the legislator and the project very positively and are more willing to vote for the incumbent versus the challenger. To address concerns that these results might be due to contrast effects that arise when evaluating multiple scenarios, we restricted our analysis to

[20]For the aggregate return (randomized to be about either the county or the state), respondents saw in random order a $5, $10, $15, $25, and $50 per capita net returns for the 5 vignettes (restricting our vignettes to only those with social surpluses). For the district return, respondents saw in random order five vignettes with per capita net returns with gains and losses of $0, $0.10, $0.50, $2, $5, $10, $15, $20, $25, $30, $45, $50, or $55 for each vignette. We again oversampled the district returns that are around the break even point (−$2, −$0.50, −$0.10, $0, $0.10, $0.50, $2), such that each respondent always sees one break even ($0), one somewhat good ($0.10, $0.50, $2), and one somewhat bad (−$2, −$0.50, −$0.10) district net return.

the first two vignettes a respondent viewed in Table C5 and still find strong evidence of a discontinuity at the net neutral point for district returns.

## 2.5 Experiment 2: Challenger Criticisms of Incumbent Performance

Experiment 1, and the two replication studies, provides robust evidence that incumbents who fail to produce policy that is at least break even for their home district lose electoral support, particularly when such policy is good for the aggregate political unit (city, county, or state) as a whole. In the scenarios used in these experiments, the challenger was a passive actor who was presented only as an alternative to the incumbent. In Experiment 2, we investigate whether a more active challenger who makes arguments about incumbent performance affects the relationship between district and overall policy returns and incumbent support. This extension allows us to investigate a potentially more generalizable scenario in which political candidates make arguments and provide information that make citizens aware of important public policy details.

Experiment 2 follows the basic template of the first experiment, with one key alteration: to simulate the effect of campaign rhetoric, we included a randomized challenger critique.[21] In the *control* condition, the challenger is a passive actor as in Experiment 1 and does not criticize the incumbent. In the other three conditions, the challenger offers (1) a *generic criticism* ("Our councilor isn't doing a good job. We're not on the right track and it's time for a change."), (2) a *district performance criticism* (adding to the generic criticism, "This project is a bad deal for the district."), (3) or a *fairness criticism* (adding to the generic criticism, "Our district puts in the same amount of money as other districts, but some other

[21] Additional differences are, first, that respondents evaluated only a single scenario. Second, because we are interested in highlighting the potential tension between district and polity-wide performance, we restricted our attention to cases in which the policy produced positive city-wide benefits, as with Experiment R2. The policy was randomly assigned to generate city-wide returns of \$10,000, \$250,000, or \$1 million, which corresponded to per capita average returns of \$.04, \$1, and \$4. The policy was independently randomly assigned to generate district returns of −\$25,000, −\$1,000, 0 (break even), \$1,000, \$25,000, or \$100,000, which corresponded to per capita average district returns of −\$1, −\$0.04, \$0, \$0.04, \$1, and \$4.

district is getting a lot more."). After the respondent read their assigned treatment, including any criticism, if assigned, they were asked to provide their likelihood of supporting the incumbent's re-election in the upcoming campaign on the same five-point scale used in Experiment 1, as well as their approval of the project on the five-point scale. Respondents were also asked to provide their assessments of the favorability of the project and the incumbent on a 0–100 thermometer scales. The order of these questions was randomized.[22]

Experiment 2 was fielded in August 2020 using the online survey vendor YouGov. To analyze the data from this experiment, we adopt the same approach as we used for the first experiment, predicting each outcome as a function of the city return, district return, and criticism treatment variables. We operationalized district and city returns in per capita terms, and included indicators for whether the district return was at least neutral or strictly greater than zero and whether the district return was less than the city return. Because this experiment was fielded in two separate waves, we also included an indicator for wave to control for possible differences between respondents in the two fieldings.

For the district performance criticism and the fairness criticism, we also created an indicator for whether the criticism was *germane*. A criticism was *germane* when it corresponded to the situation described in the vignette (the generic criticism was always germane.) The district performance criticism was coded as germane when the district return was negative. The fairness criticism was coded as germane when the district return (per capita) was less than the city-wide per capita (average) return. We separately estimate the effects of these two criticisms for when they were and were not germane.

Table 3 displays the results of this analysis.[23] Setting aside the various criticism treatments for the moment, we find evidence consistent with our previous experiment that respondents display discontinuities in responsiveness around zero. For all four outcome measures

[22]Respondents were randomly assigned to see either the group of discrete choice or thermometer outcome variables first. Within each group, we also randomized the order of the project or incumbent questions.

[23]We also standardize the data for the second experiment to only include respondents who answered all four dependent variables, resulting in 4,012 respondents. We also conduct a balance test, shown in Table D3, which indicates no relationship between assignment of either treatment variable with key characteristics such as party identification, education, household income, race, and region.

Table 3: Effect of Challenger Criticisms on Evaluations, Experiment 2

| | Project Evaluation (0 to 100) | Approval of Project (1 to 5) | Incumbent Evaluation (0 to 100) | Vote for Incumbent vs. Challenger (1 to 5) |
|---|---|---|---|---|
| District At Least Breaks Even (District $\geq 0$) | 3.137* | 0.212*** | 3.489** | 0.269*** |
| | (1.272) | (0.060) | (1.279) | (0.053) |
| District Benefits (District $> 0$) | −0.954 | −0.049 | −0.550 | −0.030 |
| | (1.339) | (0.064) | (1.351) | (0.056) |
| District Returns Per Capita | 0.878* | 0.025 | 0.806* | 0.033* |
| | (0.364) | (0.017) | (0.361) | (0.016) |
| District Worse Off than City | −4.250** | −0.168* | −3.938* | −0.172** |
| | (1.560) | (0.074) | (1.552) | (0.066) |
| City Returns Per Capita | 0.706** | 0.032** | 0.228 | 0.013 |
| | (0.252) | (0.012) | (0.255) | (0.011) |
| Second Sample | −0.877 | −0.007 | −0.475 | −0.000 |
| | (0.771) | (0.037) | (0.777) | (0.033) |
| Generic Critique | −0.648 | 0.029 | −0.391 | 0.010 |
| | (1.179) | (0.056) | (1.178) | (0.049) |
| District Performance Critique (Not Germane) | −2.684* | −0.071 | −0.982 | 0.057 |
| | (1.334) | (0.063) | (1.336) | (0.054) |
| District Performance Critique (Germane) | −2.667 | −0.142 | −1.534 | 0.128 |
| | (1.781) | (0.082) | (1.744) | (0.071) |
| Fairness Critique (Not Germane) | −2.639 | −0.085 | −1.845 | −0.104 |
| | (1.643) | (0.077) | (1.677) | (0.072) |
| Fairness Critique (Germane) | −3.520** | −0.123 | −3.062* | 0.004 |
| | (1.354) | (0.064) | (1.371) | (0.056) |
| Constant | 65.200*** | 3.471*** | 62.969*** | 3.276*** |
| | (2.209) | (0.103) | (2.209) | (0.093) |
| $R^2$ | 0.031 | 0.029 | 0.031 | 0.037 |
| Observations | 4012 | 4012 | 4012 | 4012 |

***$p < 0.001$; **$p < 0.01$; *$p < 0.05$.
*Note:* Dependent variables are listed in each column. Models estimated using ordinary least squares regression, with standard errors clustered by respondent.

spanning evaluations of the policy and incumbent, outcomes are discontinuously and substantially more negative when the district return is negative compared to when it simply breaks even. There is also an effect of a district's per capita returns (the coefficients are consistently positive), but no evidence that doing better than simply breaking even provides additional positive returns. Unlike the first experiment, there is significant evidence that when a district does worse than the city as a whole, the evaluation of the policy and the incumbent suffer. Reading across Table 3, the negative effect of a district doing worse than the city as a whole is comparable in size to the positive effect of a district at least breaking even. Finally, also unlike in Experiment 1, the effect of the city per capita returns are posi-

tive but not consistently significant, although we have a much more limited range of returns in this experiment.

When considering the critiques from the challenger, we find evidence that some critiques appear more effective than others. For example, the generic criticism is not more effective relative to no critique being offered. Across all 4 specifications shown in Table 3, the estimates are irregularly signed and not one is close to being both negative and significant. Similarly, the district performance criticism is not consistently effective. While there is one case in which the non-germane district performance criticism is negatively signed and significant (the $-2.68$ coefficient for project evaluation in column 1), the effect is nearly the same size as the district performance criticism when it is germane ($-2.67$, in no case are the two effects distinguishable). Of course, both Experiment 1 and these results provide clear evidence that a district doing worse than breaking even directly affects evaluations. This implies that respondents do not generally need to be reminded about poor district performance, which is an ominous sign for a poorly-performing incumbent, regardless of whether a challenger calls attention to this program feature.

The one exception to this characterization is the effect of the fairness criticism, which highlights that other districts benefit disproportionately from the project. For evaluations of the project using either the 0–100 rating or the 5-category discrete response options item, as well as for the evaluation of the incumbent on the 0–100 scale, the effect of the germane fairness criticism is negative and significant or near significant. For example, per column 3, a germane fairness criticism reduces incumbent evaluations by 3 points ($p < .05$) on a 101 point scale, while a district simply at least breaking even increases it by a similar 3.5 points. This means that 88% of the politician's increased public support from at least breaking even is neutralized if a challenger accurately criticized the unfairness of the policy for the district. When we restrict our attention to scenarios in which the district at least broke even in Table D2, a germane fairness criticism reduces support for incumbents by 4 points. These estimated effects are generally larger than the effects of the non-germane fairness criticism,

although the differences between the estimated coefficients are not significant at conventional levels (one tailed $p$-values for tests of differences are .25 for incumbent evaluations in Table 3 and .10 in Table D2).

Besides highlighting the potential role of rhetoric in making inter-district comparisons salient in program and incumbent evaluations (see also Gerber, Patashnik, and Tucker, 2022), the other implication of this pattern of results is for the feasibility of constructing larger political coalitions using side payments. In our analysis of Experiment 1, we showed that there were outsized returns to a district breaking even, such that an incumbent might be able to find political cover in voting for a program that generated positive social returns so long as her district also at least broke even. Per the results shown here, however, such a bargain leaves the incumbent vulnerable to the fairness criticism (which is, of course, also the case the case when the district return is negative). If one is seeking to promote good public policy, however, these results also provide some hope. That is because the penalty for doing worse than average when criticized as such is offset somewhat both by large social returns and merely breaking even. For example, per column 3, a legislator who votes for a program that gets her district to even but generates a social return of $4 per capita is evaluated at around 60 on the favorability scale. She generates about 0.9 units of additional support for the policy producing $4 in social value, and 3.5 points for at least breaking even. By contrast, she loses 3.9 points for doing worse than average and an additional 3.1 points for being criticized for doing worse than average. Assuming all else were held equal, a legislator who votes for this policy only decreases their support by a modest 2.6 points.

# 3 Conclusion

The electoral pressure to promote constituents' interests is a potential hurdle to an individual legislator's willingness to support legislation that promotes the welfare of the population as a whole. Although this tension has long been recognized by scholars of representation, our

experiments measure how citizens' preferences regarding distributive spending may help to explain politically feasible policies for allocating resources. In particular, voters have a strong aversion to their district suffering a net loss from projects. Even a trivial loss for their district is enough to produce a substantial punishment for an incumbent who supports the policy. Respondents provide significantly greater levels of support to those incumbents who ensure their district *at least* breaks even in terms of the value it receives compared to the revenue it contributed to social spending, while the marginal returns measured in terms of support for legislators who bring home *more* benefits to their districts are quite small.

The lack of large increases in support for those legislators who secure returns greater than simply breaking even presents incumbents with a previously unappreciated strategy for creating politically feasible policies. While scholars have recognized the importance of distributing side payments to losers to create winning coalitions that can pass public reforms (Lindvall, 2017), rather than create minimum winning coalitions in which the smallest number of legislators needed to pass a bill hoard the benefits among themselves, these results suggest legislatures may instead have strategic political reasons to move towards norms of universalism when designing public policies. Incumbents who receive just enough benefits so that their districts break even receive enormous gains in electoral support. Furthermore, those incumbents who choose to provide side payments to their colleagues, which could come in the form of any number of particularistic benefits, face hardly any serious loss in electoral support for doing so. In this way, legislative coalition leaders have an incentive to strike bargains to adjust their policies so as not to leave out members who are close to breaking even.

At the same time, our experiments show that a competitive electoral environment may limit the set of politically feasible policies. Challengers who draw attention to incumbents who garner benefits that are less than what the average district in the city receives are able to damage those incumbents. This tactic is effective even when an incumbent's district at least breaks even. Thus, incumbents may be less likely to be "bought off" by side payments

from legislators in a coalition if voters have an aversion to seeing other citizens receive more resources. This, in turn, may explain why legislators go to great lengths to promote their role in securing resources for their districts, even though that communication does little to communicate relative district performance (e.g. Grimmer, Westwood, and Messing, 2015). Additionally, this incentive structure may explain why it is so difficult to observe the total magnitude of government spending in different districts, perhaps precisely because such information facilitates comparative benchmarking.

We use only survey-experimental methods in our studies. The key advantage of this approach is that it provides us with precise control of the district and aggregate returns to estimate the discontinuous return to a constituency breaking even without concerns about bias generated by omitted variables or unobserved heterogeneity. While the strength of this design is its internal validity, particularly given the consistent replication of our findings, we acknowledge that there may be limitations of external validity. Most clearly, other factors apart from those that we manipulate can affect elections, which would likely attenuate the treatment effects we estimate. Another concern might be that voters may not be well-informed of the different local and aggregate returns to policy in actual elections, although strategic incumbents and challengers may publicize such information, as in Experiment 2. More generally, our view is that these experiments complement and help understand patterns found in prior observational analyses without many of the threats to inference present in those works.

These findings have implications for the study of distributive politics and representation more broadly. While citizens' preferences for distributive returns are non-continuous around a break even point, citizens are also motivated to punish incumbents when they fall behind other citizens in their polity. These preferences could impose competing pressures on incumbents when designing public policy. A legislator must choose not only between what is good for their district and what is good for the polity as a whole, but they must also consider whether their citizens get back as much as they contribute and whether other

citizens are getting more than their constituents. Future work should consider the means by which such information could be transmitted to voters. In our design, we use a hypothetical electoral campaign, but as local news reporting resources continue to dwindle (e.g. Peterson, 2021), the ability of citizens to learn the details of distributive spending will likely diminish. Finally, our results provide a potential campaign tactic for legislators with precarious reelection prospects. By focusing on relative local gains rather than total benefits, incumbents who bring superlative resources to their constituents can perhaps improve their chances of remaining in office.

**Supplementary material.** The supplementary material for this paper can be found at: https://huber.research.yale.edu/materials/105_onlineappendix.pdf.

**Data availability statement.** The replication data and code for this paper can be found in the BJPS Dataverse page at:

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