

The Runner-Up Effect

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Exploiting regression discontinuity designs in Brazilian, Indian, and Canadian first-past-the-post elections, we document that second-place candidates are substantially more likely than close third-place candidates to run in, and win, subsequent elections. Since both candidates lost the election and had similar electoral performance, this is the effect of being labeled the runner-up. Selection into candidacy is unlikely to explain the effect on winning subsequent elections, and we find no effect of finishing in third place versus fourth place. We develop a simple model of strategic coordination by voters that rationalizes the results and provides further predictions that are supported by the data.

I. Introduction

Social scientists have a long-standing interest in the factors that determine electoral success. A large part of political economy studies how voters and other agents use information on candidates such as personal traits, policy platforms, and past performance to select leaders. Understanding how

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this information is processed is key to understanding how a democracy chooses its elected officials and, consequently, the policies those elected officials enact.

While previous research has focused mostly on how incumbents are evaluated, this paper analyzes the use of information on challengers. In particular, we study how the electoral performances of losing candidates affect their future success. Our first contribution is to document a new empirical result regarding simple plurality (first-past-the-post) elections: coming in second place, instead of third, has a substantial effect on the probability that a candidate runs in, and wins, the next election in her constituency. We use a regression discontinuity design (RDD) to estimate this “runner-up effect,” comparing barely second-place to barely third-place candidates in four distinct sets of elections: Brazilian municipal mayors, Canadian House of Commons, Indian state assemblies, and the Indian Lok Sabha (federal lower chamber). These contexts cover multiple continents as well as local, state, and federal elections for executive and legislative positions.

At first pass, it is perhaps surprising that simply being labeled the runner-up would matter in a future election. On average, close second- and third-place candidates are similar, and neither gets to hold office or enjoy any institutional advantage in future elections. Moreover, the difference in ranking provides no additional information about the candidates beyond their votes, which are publicly available.

Despite these factors, we find that being labeled the runner-up has large implications for whether a candidate runs in, and wins, the next election. For example, our preferred estimates indicate that being the runner-up increases a Brazilian mayoral candidate’s probability of running in the next election by 9.4 percentage points and her chances of winning by 8.3 percentage points, a large effect given that close third-place finishers run again in, and win, the next election only 30.3 percent and 9.5 percent of the time, respectively. Similarly, being the runner-up (instead of third place) increases the probability of running again from 31.9 percent to 36.3 percent in Indian state elections and the probability of winning from 7.8 percent to 11.2 percent. This implies that variation in past electoral perfor-

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mance that is essentially noise can substantially affect the probability a candidate will be elected in the future. Results on Indian and Canadian federal parliamentary elections are also consistent with the presence of runner-up effects, although the smaller sample sizes make the statistical significance of these results more sensitive to the specific regression discontinuity specification. Interestingly, the analogous analysis using RDDs from elections in the above four contexts in which third and fourth place are close finds effects that are close to zero in magnitude and statistical significance.

The finding of significant runner-up effects has possible implications for two widely studied electoral phenomena. The first is the incumbency effect. While it is natural to believe that a large part of the effect of being an incumbent on future electoral outcomes is due to holding office, our results suggest that simply being labeled first-place might play a role. A compelling theory involving incumbency effects should also acknowledge that previous electoral rank by itself can have impacts.¹ Second, the runner-up effect demonstrates that the electoral performance of losing candidates has sizable impacts on their future performance. This sheds light on candidates' decisions to enter races in which they have low chances of winning, as they might be attempting to improve their odds in future elections.²

We also assess whether the effect on winning the next election simply comes from the runner-up being more likely to run in it. While the RDD makes it straightforward to estimate the effect of winning unconditional on running, estimating the conditional effect requires addressing selection into future candidacy. We adapt Lee's (2009) procedure to obtain bounds on such conditional effects. Lower bounds are well above zero (except in the Canadian case), indicating that what drives the runner-up effect not only makes a candidate more likely to run in the next election but also makes her more likely to win conditional on running.

The second contribution of this paper is to provide evidence on the mechanisms behind the runner-up effect. One possibility is that being the runner-up creates an advantage when some agents (voters, donors, parties, or candidates) engage in strategic coordination. Under this hypothesis, the second-place label makes a candidate more likely to be "coordinated on."

¹ Lee (2008) uses close-election RDDs to estimate the incumbency advantage in the US House of Representatives. This approach is applied to the contexts we study by Linden (2004), Uppal (2009), and Kendall and Rekkas (2012). In a similar vein, Folke, Persson, and Rickne (2014) find an effect of being the (close) first-ranked candidate within a party list under preferential voting and proportional representation on future party leadership.

² Models of candidate entry (e.g., Osborne and Slivinski 1996; Besley and Coate 1997) usually have candidates entering elections only when they have a positive probability of winning (or affecting the outcome of) the election.

This behavior is found in laboratory experiments.³ A theoretical literature studies strategic coordination by voters (Myerson and Weber 1993; Cox 1997; Myerson 2002). Under simple plurality, these models yield two types of equilibria: the Duvergerian type, where coordination leads to two candidates receiving all votes, and the non-Duvergerian type, where second- and third-place tie. The latter is “knife-edge” or “expectationally unstable” (Palfrey 1988; Fey 1997).

We develop a simple “global game” model of strategic coordination to show how our results can be interpreted as constituencies moving from non-Duvergerian to the more stable Duvergerian equilibria. In an election with uncertain outcomes, two groups of citizens face a decision between voting for their preferred candidate and the one with higher chances of beating an unwanted incumbent. Voters use past vote shares to gauge a candidate’s current popularity, and in the unique equilibrium, voters coordinate on the runner-up. In particular, while a candidate’s popularity is a continuous function of previous performance, voters’ equilibrium strategies are a function of candidate rank only, even though voters are rational and observe previous performance.⁴ Although simple and stylized, the model predicts positive runner-up effects on winning and running (given that candidate entry is endogenous), a zero third-place (vs. fourth) effect, and either a positive or a negative incumbency advantage. It allows us to rationalize the relative magnitudes of effects across contexts and also yields multiple additional testable predictions.

First, we find that candidate vote shares evolve over time in a way that is broadly consistent with “ties” between second- and third-place (non-Duvergerian equilibria) becoming larger gaps between second- and third-place (Duvergerian equilibria) by the next election. Second, the model predicts that voters who supported the (close) third-place candidate should switch to voting for the (close) runner-up in the next election. We find support for this prediction using polling station (i.e., subconstituency) data from Brazil: stations that tended to vote for the third-place candidate provide larger vote shares for the runner-up in the next election, compared to those that tended to vote for the winner or fourth- and lower-placed candidates. A third prediction, supported by data from Brazil and India, is

³ In an experiment in which voters must coordinate on one out of two majority candidates in order to beat a minority candidate under plurality rule, Forsythe et al. (1993) find that “a majority candidate who was ahead of the other in early elections tended to win the later elections, while the other majority candidate was driven out of subsequent races” (235). Bouton, Castanheira, and Llorente-Saguer (2012) find similar results.

⁴ The model studies a coordination game in which, under full information, multiple equilibria arise naturally. We follow the “global games” literature in assuming a small amount of aggregate uncertainty, which leads to a unique equilibrium (Carlsson and van Damme 1993; Morris and Shin 2002). Myatt (2007) also uses global games to study coordination in elections with a divided majority.

that the runner-up effect (on winning) is stronger in cases in which the second- and third-place candidates received a large number of votes, compared to the winner. Fourth, we also find larger effects on winning future elections immediately after the 1975–77 “emergency” in India; this is a period in which it is plausible that the number of voters acting strategically was higher relative to other periods. Finally, the model is particularly suited for analyzing cases in which the second- and third-place candidates are similar in voters’ perception, and consistent with this, we find that our effects are stronger when second- and third-place candidates are from parties with similar platforms.

Another (nonexclusive) possible mechanism behind the runner-up effect is that at least one political player (e.g., voters, candidates, parties, the media) evaluates candidates on the basis of their rankings, even though rankings provide no additional information beyond the underlying vote shares. In other words, they engage in a “rank heuristic.”⁵ For example, parties might use a heuristic in which, at least in some cases, they provide more support for runners-up. Another possibility is that candidates perceive that, even holding electoral performance constant, they were closer to winning after coming in second instead of third place and are therefore more motivated to invest in future campaigns. We discuss the possibility of such heuristics driving the effect. In particular, we note that it is not clear how an explanation based on heuristics could explain all the additional predictions from the coordination model that find support in the data.

We also present tests of a heuristic-based explanation in relation to the media. One possibility is that the media give more coverage to runners-up than to third-place candidates. We do not find evidence for this in the Canadian context, where comprehensive newspaper archive searches for candidate names are possible. Furthermore, we do not find that the runner-up effect is larger in Brazilian and Indian regions with greater media presence.

We reiterate that heuristic behavior and strategic coordination are not mutually exclusive explanations. They are likely mutually reinforcing (e.g., if runners-up are more likely to be coordinated on, they should be motivated by rank). We also emphasize that while our results are consistent with coordination by voters, it is possible that this coordination (that shifts vote shares) also occurs at a different level. Candidates, parties, and/or other “elites” may coordinate their support and rely on election rankings

⁵ An individual who observes ranks but not vote shares should (rationally) infer that any runner-up received substantially more votes than a third-place candidate. However, and more relevantly for our purposes, an agent observing only ranks implies that some other agent (e.g., the media) acted following (or imposing) a rank heuristic by deciding to supply only the coarser information. For examples of rank heuristics in other contexts, see Pope (2009) and Barankay (2012).

to do so. While the results suggest that voters' coordination plays a part in the effect, it is also possible that other agents play a role.

Given the result suggesting that strategic coordination plays an important role in causing runner-up effects, this paper contributes to the empirical literature on strategic voting (Cox 1997; Fujiwara 2011; Kawai and Watanabe 2013; Spenkuch 2014, 2015). While previous studies are primarily focused on whether (or how frequently) voters act "strategically" or "sincerely," our results highlight the empirical relevance of strategic coordination in determining election winners. Sizable magnitudes for the runner-up effect imply that coordination frequently "matters." In particular, under additional assumptions, our model allows us to infer the share of non-Duvergerian elections in which the winner was not a Condorcet winner from our results. Our estimates suggest that in some contexts (Brazil and India), this is a common phenomenon. In more than half of the elections in which the runner-up tied with the third-place candidate, he could have won a two-candidate race against the winner.

The next section describes the elections and data analyzed. Section III provides the main estimates and documents the runner-up effects. Sections IV and V analyze the strategic coordination and heuristic mechanisms, respectively, and Section VI presents conclusions.

II. Data and Background

This paper compares the subsequent performance of second- and third-place candidates in four separate sets of elections: Brazilian municipal mayors, Canadian House of Commons, Indian state assemblies, and the Indian Lok Sabha. These contexts were chosen for two reasons. First, they use a simple plurality (first-past-the-post) electoral rule in single-member constituencies, where there is no differential treatment of second- and third-place candidates. For example, a similar analysis using elections from runoff systems would be confounded by runners-up having longer campaigns. Cases with a mixed system (e.g., the German Bundestag) would also be problematic if the rank of losing candidates plays a role in assigning candidates to "party seats." Additionally, the focus on simple plurality allows us to interpret our results in light of a strategic coordination model and test further predictions.

The second reason concerns statistical power. The RDD analysis requires a large number of elections to obtain precise estimates. Indeed, in Section III, we discuss how even the Canadian and Indian federal election samples may not yield enough power to detect relatively large effects for some outcomes. We searched the Constituency Level Elections Archive (CLEA; <http://www.electiondataarchive.org>) as well as the references in Eggers et al. (2015), which analyzes RDDs from close first- and second-place candidates in multiple contexts, for cases in which at least 5,000

single-member plurality rule elections would be available. The only cases that satisfied such requirements and are not included in our main analysis are American elections and British House of Commons elections. We do not analyze American elections given that the US political system has two clearly dominant parties with few meaningful third candidates. However, we analyze primary elections to the US House of Representatives (online app. A.9). Similarly, appendix A.8 analyzes the British case. However, results in both contexts suffer from a similar issue: close second- and third-place candidates have negligible chances of winning the next election.⁶

The main outcomes studied in this paper are whether a candidate runs in, and wins, a subsequent election. We use candidates, not the parties, as the unit of analysis because candidates are politically more salient in the contexts with larger numbers of observations (Brazil and Indian states). Party mergers, splits, and name changes also complicate measuring party outcomes across time, making the use of candidates more appealing. Moreover, in Indian state elections, 21 percent of second- and third-place candidates are independents who would need to be discarded in a party-level analysis. While there are no officially independent candidates in Brazil, municipal elections are typically nonpartisan in nature (Ames 2009), with candidate identity being more salient than party. This is especially true in smaller municipalities, which constitute the bulk of our sample. Moreover, 37 percent of second- or third-place candidates that ran again did so under a different party. Appendix A.2 presents results using parties as the unit of analysis; our main qualitative conclusions remain.

Our outcomes capture only the cases in which a candidate ran again and/or won a race for the same office in the same constituency. This decision is mostly driven by data considerations: in India and Canada, the only individual identifier for each candidate is her name, and matching across constituencies and offices would likely lead to a large number of false matches. There are relatively few elected offices in the Indian and Canadian parliamentary systems, and Indian state politics is in particular based on local connections, making it unlikely that candidates would switch districts (except in the case of a small number of high-profile candidates). In the Brazilian data it is possible to analyze how often candidates run in

⁶ British local elections involve multimember constituencies and are further complicated by a two-tiered government structure. Most elections in the CLEA involve proportional representation systems, and many of the elections analyzed in Eggers et al. (2015) involve either multimember districts, mixed systems (e.g., Germany), or variations of runoffs (e.g., Australia, Bavaria, France). Examples of cases that are not analyzed because of small sample sizes are elections from the Philippines, New Zealand, and several African countries. Finally, the majority of local elections in Spain and Italy occur under proportional representation and runoff systems, respectively.

different constituencies. Less than 0.5 percent of candidates run for office in a different municipality in the next election.

Finally, it should be noted that in all the contexts we study, there is no institutional advantage of being the runner-up instead of third-place (e.g., the runner-up does not participate in a runoff election, is not listed more saliently on future ballots, and does not receive more public resources or funding in subsequent elections).

Brazil: Municipal mayors.—Brazil comprises over 5,000 municipalities, each with its own elected mayor (*prefeito*), who is the dominant figure in municipal politics. Federal law mandates that all municipalities hold elections every 4 years on the same date. Mayors are elected by plurality rule at-large (i.e., the entire municipality is a single electoral district). Our data cover the universe of mayoral elections in the 1996–2012 period (five rounds of elections). They were obtained from the Brazilian electoral authority website (<http://www.tse.jus.br>).⁷

Municipal borders are mostly stable during the period, and we matched municipalities over time using official identifiers. For all years, the Electoral Authority provides the candidate's name and voter registration number (*título eleitoral*). The latter is a government-issued document unique to each person. We match candidates across elections using their registration number and, when this is missing, their name.⁸

We define a candidate as running in the subsequent election if we are able to match her to a candidate who appears in the candidate list in the subsequent election in that municipality. While the full data set consists of 73,113 candidates in 27,317 elections across 5,521 unique municipalities, only 10,304 races have three or more candidates and occurred before the last election in the sample (2012), allowing us to observe future outcomes.⁹

India: State assembly elections.—Each Indian state elects a state assembly (*Vidhan Sabha*), a legislative body operating under a parliamentary system by selecting the executive (chief minister). Members are elected by plurality rule from single-member geographic units known as assembly constituencies. Each assembly is formed for a 5-year term, after which all seats are up for election, but it can be dissolved earlier by a motion of

⁷ Municipal council elections use proportional representation and are not analyzed in this paper. Municipalities with more than 200,000 registered voters elect their mayors under a runoff system and are excluded from our sample. By-elections (or supplemental elections) held outside the official dates are uncommon.

⁸ Voter registration numbers are missing for the 1996 election. We cross-checked the quality of name-only and voter identification-based matches using data for later years and found that a negligible number of candidates could not be matched by name.

⁹ Two elections resulted in the second- and third-place candidates receiving exactly the same number of votes. We drop these observations as it is not possible to assign these candidates to second or third place.

no confidence or the executive's request. In the case in which a sitting member dies, a by-election for only her seat is held.

We collected data from the Election Commission of India website (http://eci.nic.in/eci_main1/index.aspx) on all assembly constituency elections, including by-elections, held in India over the 1951–2013 period.¹⁰ We first match constituencies over time using constituency name and state. Major redistricting occurred in 1972 and 2008, which created new constituencies as well as the redefinition of old constituencies in some cases. When a new assembly constituency is created, we do not attempt to match it to the one it was created out of, but instead treat it as a new separate assembly constituency.

The Election Commission website provides the candidate's name, party, and votes received. The data set does not provide unique identification numbers for candidates, so we use an automated script to match them over time using their names. For each candidate our program searches for whether the candidate's name appears among the candidates in the next election held in the same assembly constituency. The majority of matches are made exactly, by substituting initials for first and middle names, changing the order of names, or using other simple permutations of the candidate's given name. When a candidate is matched across two elections, we define her as having run in two subsequent elections. To judge the quality of our automated matching process, we manually checked the matching algorithm for the top three candidates in 20 randomly selected elections. Our algorithm correctly identified whether the candidate ran in the next election for 88 percent of these sampled candidates.¹¹

The full data set consists of 374,472 candidates in 47,931 elections across 5,968 unique assembly constituencies. Most elections had three or more candidates, and we observe 39,214 elections with three or more candidates and a subsequent election in the same constituency.¹²

India: Federal lower chamber.—Our data on Indian federal parliamentary (*Lok Sabha*) elections cover the period between 1951 and 2009. Like its state counterparts, the Indian federal government operates under a parliamentary form of government with elections at least every 5 years.

¹⁰ Prior to 1962, some assembly constituencies had multiple representatives in the state government; we remove these constituencies from our analysis.

¹¹ This number falls short of 100 percent since Indian names often have multiple different spellings, which complicates detection using automated string-matching techniques. For our purposes, however, mismatches of candidates across time will lead to measurement error only in our dependent variables of interest (whether or not the candidate ran in or won the next election), which will increase noise but not induce any systematic bias in our coefficients of interest. Further, if the matching process did induce some kind of bias, we would also expect to see it when we look at whether close second-place candidates were more likely to run in or win a previous election, but we find no evidence that this is the case.

¹² Eight elections resulted in the second- and third-place candidates receiving exactly the same number of votes. We drop these observations as it is not possible to assign these candidates to second or third place.

Members are elected from single-member districts. For the period after 1974 we use data from the CLEA. For 1951–74, we use data from the Election Commission of India website.¹³ Since names are the only individual information available on candidates, we match Indian federal parliamentary candidates over time using the same matching procedure developed for the Indian state legislature elections.¹⁴ Our Indian federal election data consist of 73,687 candidates in 7,536 elections occurring in a total of 1,227 unique constituencies; 5,959 elections have three or more candidates and a subsequent election occurring in the same constituency.

Canada: House of Commons.—The House of Commons is the lower chamber of Canada’s Westminster-style federal parliamentary system. Members of Parliament are elected at least every 5 years by plurality rule in single-member constituencies (ridings). The data cover the universe of elections between 1867 and 2011 and are from the CLEA. Since names are the only individual information available on candidates, we construct the data set using a procedure similar to that used for the Indian data sets.¹⁵ We also match constituencies by name and province, considering constituencies with the same name over years as the same constituency. We have a total of 40,397 candidates in the Canadian data contesting in 10,485 elections across 1,146 constituencies; 5,948 elections had three or more candidates and at least one subsequent election.

III. Main Results

A. Graphical Analysis

Figures 1*a*–1*d* depict the runner-up effect for our four contexts. The sample in each figure includes any candidate that came in either second or third place in an election with three or more candidates. We define a variable “vote share difference between second and third,” which for second-place candidates is equal to the candidate’s vote share minus the third-place candidate’s vote share, and for third-place candidates is equal to their vote share minus the second-place candidate’s vote share. This variable is always negative for third-place candidates and always positive for second-place candidates. The *x*-axis in these figures corresponds to this vote share difference variable. The vertical line represents a zero vote share

¹³ In the years between 1951 and 1962, a small number of federal constituencies were multimember (i.e., more than one representative was elected from one constituency); we drop these constituencies from our analysis.

¹⁴ Our manual check procedure finds that our algorithm correctly identified whether a candidate ran again or not in the next election for 89 percent of Indian federal candidates.

¹⁵ Our manual check finds that our algorithm correctly identified whether a candidate ran again or not in the next election for 100 percent of sampled Canadian candidates. We also exclude a small number of multimember ridings.

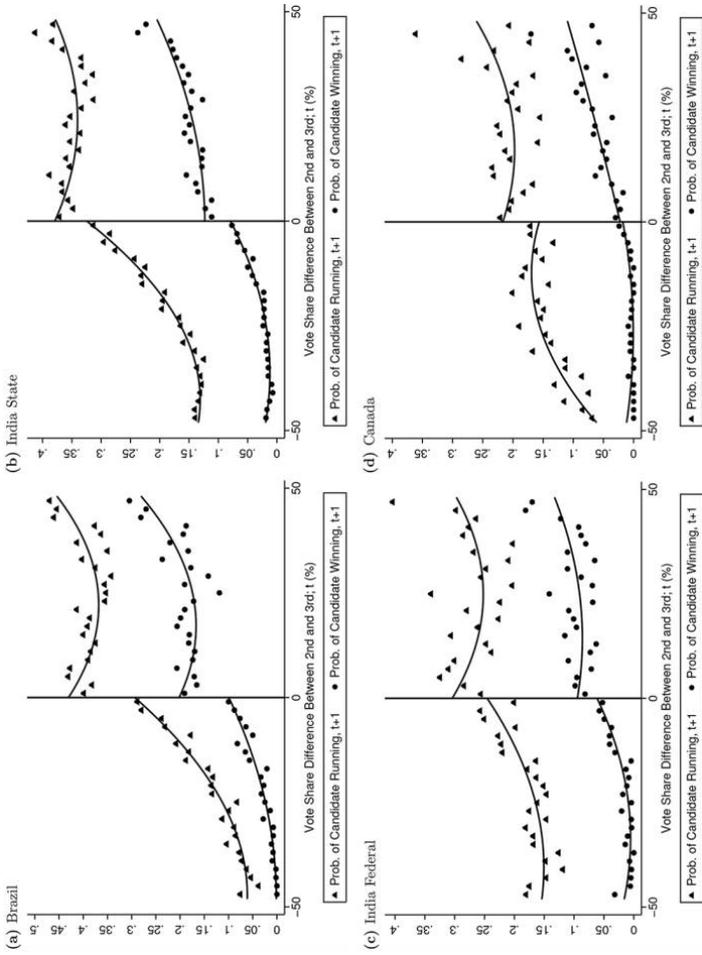


FIG. 1.—The runner-up effect (second vs. third place). Triangles (circles) represent the local averages of a dummy indicating whether the candidate ran in (won) the next ($t + 1$) election. Averages are calculated within 2 percentage point-wide bins of vote share difference (x -axis). Continuous lines are a quadratic fit over the original (“unbinned”) data. The sample includes only candidates who placed second and third at election t .

difference, indicating the transition from candidates who came in third place to those who came in second place.

The y-axis shows the probability that a candidate with a given vote share difference ran again in the next election (triangles) or won the next election (circles). The triangles and circles in these figures correspond to a local average of the outcome variable calculated within 2 percentage point bins of the vote share difference; for example, the triangle immediately to the right of the vertical line is the fraction of second-place candidates who beat a third-place candidate by less than 2 percentage points who ran in the next election. The circle just to the right of the vertical line is the fraction of second-place candidates who beat a third-place candidate by less than 2 percentage points who won the next election. Note that the fraction of candidates who win the next election is calculated including both candidates who did and did not run in it (i.e., it is unconditional on running). The curves to the right and left of the vertical line represent the predicted values of a quadratic polynomial of the outcome variable on the candidate's vote share difference. The polynomial is fit to the original unbinned data separately for each side of the cutoff.

Figure A.1 presents the number of observations (candidates) in each of figures' 1*a*–1*d* bins.¹⁶ Figure A.2 repeats the analysis using the candidate vote share (at time *t*). In all of our election samples, the second- and third-place candidates around the cutoff receive, on average, substantial vote shares each, between 21 percent in Canada and up to 27 percent in Brazil. This indicates that the runner-up effects we estimate are not based primarily on second- and third-place candidates who received very few votes.

Figure 1*a* shows the main results for Brazilian mayors. While barely third-place candidates (just left of the cutoff) ran again roughly 30 percent of the time, close runners-up ran again almost 40 percent of the time, implying a substantial “jump” at the cutoff. There is a jump of similar magnitude in the probability of the candidate winning the next election. In the Indian state case (fig. 1*b*), close second-place candidates are approximately 5 percentage points more likely to run and 3.5 percentage points more likely to win the next election relative to close third-place candidates. The sizes of the jumps in both Brazilian municipalities and Indian states are large relative to the bin-by-bin variation away from the cutoffs, suggesting that these differences are not due to noise.

For the Indian federal sample (fig. 1*c*), the quadratic polynomial fit indicates jumps at the cutoff. Interestingly, they have a magnitude similar

¹⁶ These figures are symmetric because our sample includes only elections in which there were at least three candidates. For every second-place candidate with a vote share margin of $+x$, there is one third-place candidate with a vote share margin of $-x$ from the same election.

to that of the state elections. However, the pattern in local averages is noisier and not as clear as in the Brazilian and Indian state cases. The difference in our ability to clearly visualize an effect is likely due to sample sizes. For example, there are approximately 3,000 candidates who came in second place by less than 2 percentage points in the Indian state data, but only approximately 340 in the Indian federal data (fig. A.1).

Figure 1*d* shows that for the Canadian sample, the polynomial fit indicates an increase in the probability that runner-up candidates run in the next election but little change in the probability that they win the next election. The effect on running is approximately 5 percentage points. As in the Indian federal case, the pattern in local averages is noisier, likely because of the smaller sample size. In interpreting the Canadian results, it is useful to keep in mind that, in contrast to the previous cases, Canadian parliamentary elections have a large incumbency advantage (most first-place candidates will win the next election). This lowers the probability that second- and third-place candidates win future elections; the circles in figure 1*d* are well below the level observed in the other figures. The effect size found in the Indian and Brazilian cases would be proportionally enormous (and unexpected) in the Canadian context.

There are also interesting similarities in the slopes presented in figures 1*a*–1*d*. While not the main focus of our analysis, it is useful to discuss two of these patterns. One expected pattern is the upward slope to the left of the cutoff: more successful third-place candidates are more likely to run in and win the next election.

The less obvious pattern is that the probabilities of running in and winning the next election have a “U” shape to the right of the cutoff. Runners-up who beat their third-place competitors by either a small or a large margin fare better in future elections, while candidates who beat their third-place competitor by an intermediate margin fare worse. Such a pattern is expected if the runner-up effects are driven by strategic coordination: close to the cutoff there are a larger number of supporters for the third-place candidate that can strategically switch toward voting for the runner-up, while away from the cutoff that is not the case (perhaps because in those elections there is coordination on the runner-up at time t).

However, other explanations are plausible as well. For example, it is possible that the first-place candidate is strongest in the intermediate case and weaker in the extremes. Figure A.7 plots the winner’s vote share (at t) against the same x -axis variable and finds that it follows an inverted-U pattern for our Brazilian and Indian samples: elections close to the cutoff have relatively strong second-/third-place candidates and weak first-place candidates, and elections with large second versus third margins also have relatively strong second-place candidates. However, elections with intermediate differences between the second- and third-place candidates have stronger first-place candidates. Another possibility is that the

media provide more coverage of close races (between the third-/second- and second-/first-place candidates). This would imply higher media coverage at the cutoff and the extreme right of the graph. If this coverage affects the runner-up chances in the next election, it can create a U-shaped pattern.

Appendix A.3 analyzes the effect on candidates' vote share in both the next and past elections. The interpretation of these graphs is complicated by vote shares not being observed for candidates not running in the next election. Appendix A.3 discusses a bounding methodology to address this issue and reports results consistent with discrete jumps in vote shares at the cutoff.

Finally, to assess whether the previously discussed effects might be due to other differences between second- and third-place finishers besides their rank, figures 2*a*–2*d* plot a candidate's running (and winning) status in the previous election against his vote share in the current election. In other words, we repeat the analysis using past instead of future outcomes. There is no visible jump at the cutoff, indicating that barely second- and third-place candidates have comparable past performance in elections. This also suggests that it is unlikely that other differences besides the second-versus third-place distinction can explain the effects in subsequent elections. If, for some unexpected reason, close runners-up were *ex ante* superior candidates than close third-place candidates, that would also lead to an "effect" in past elections, under the natural assumption that such quality differences are persistent over time.

In the Indian and Canadian federal cases, it is also useful to compare figures 2*c* and 2*d* (effect of close second on previous outcomes) with figures 1*c* and 1*d* (effect of close second on future outcomes). If the jumps around the cutoffs in figures 1*c* and 1*d* are driven by nonlinearities (instead of discontinuities) in, say, candidate characteristics, these nonlinearities would be expected to appear, at least to some extent, in the plots for the same outcomes in the past election. However, figures 2*c* and 2*d* indicate a smooth and continuous relationship around the cutoff. We interpret these results as suggestive of runner-up effects in Indian federal and Canadian contexts, but with the caveat that the evidence is not as clear as in Brazilian or Indian state elections.

B. Estimation Framework

Let x_{ict} be the RDD running variable for candidate i in the election at time t in constituency c ; ¹⁷ x_{ict} is a variable that for a second-place candidate

¹⁷ Constituencies are defined as the relevant electoral unit: municipalities in Brazil, assembly and federal constituencies in India, and ridings in Canada.

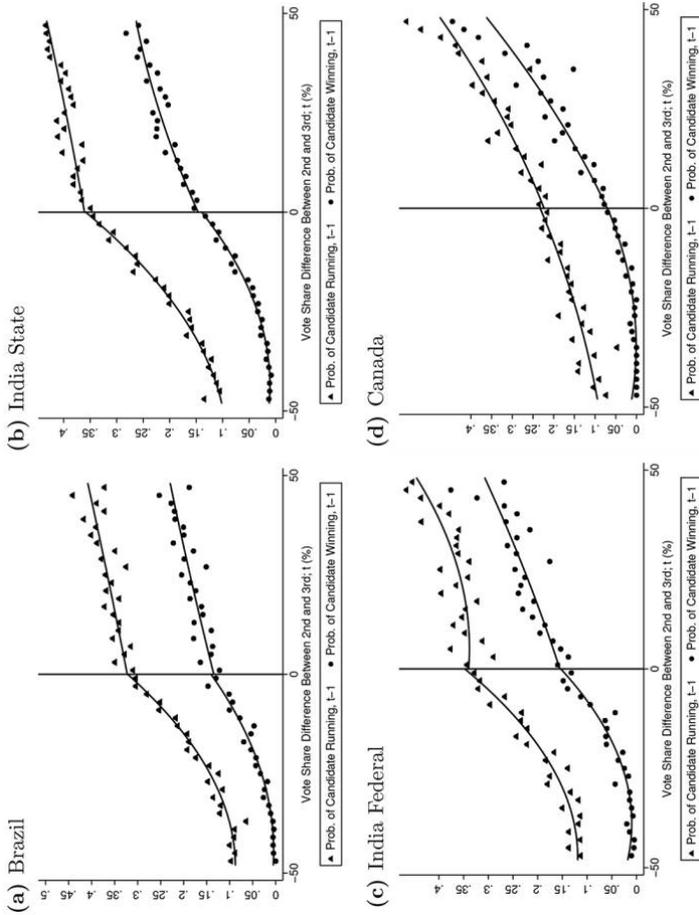


FIG. 2.—Covariate smoothness (second vs. third place). Triangles (circles) represent the local averages of a dummy indicating whether the candidate ran in (won) the past ($t - 1$) election. Averages are calculated within 2 percentage point-wide bins of vote share difference (x -axis). Continuous lines are a quadratic fit over the original ("unbinned") data. The sample includes only candidates who placed second and third at election t .

is equal to her vote share minus the third-place candidate's vote share and for a third-place candidate is equal to her vote share minus the second-place candidate's share. Hence, positive values indicate that the candidate is the runner-up and negative values that she finished third. Candidates with other ranks are excluded from the analysis.¹⁸ The treatment effect of barely placing second instead of third on outcome y_{ict} is given by

$$TE = \lim_{x_{ict} \downarrow 0} E[y_{ict} | x_{ict}] - \lim_{x_{ict} \uparrow 0} E[y_{ict} | x_{ict}]. \quad (1)$$

Under the assumption that the conditional expectation of y_{ict} on x_{ict} is continuous, the first term on the right side converges to the expected outcome for a second-place candidate who has as many votes as the third-place candidate. Similarly, the second term converges to the expected outcome of a third-place candidate with as many votes as the runner-up.

The limits on the right side are estimated nonparametrically using local polynomial regressions. This consists of estimating a regression of y_{ict} on (a polynomial of) x_{ict} using only data satisfying $x_{ict} \in [0 - h; 0]$. The predicted value at $x_{ict} = 0$ is thus an estimate of the limit of y_{ict} as $x_{ict} \uparrow 0$. Similarly, a regression using only data satisfying $x_{ict} \in [0; 0 + h]$ is used to estimate the limit of y_{ict} as $x_{ict} \downarrow 0$. The difference between these two estimated limits is the treatment effect. The local polynomial regression estimate is equivalent to the ordinary least squares estimation of the following equation using only observations that satisfy $x \in (0 - h; 0 + h)$:

$$y_{ict} = \beta 1\{x_{ict} > 0\} + f(x_{ict}) + \epsilon_{ict}, \quad (2)$$

where $f(\cdot)$ is a polynomial fully interacted with $1\{x_{ict} > 0\}$. The estimate of β is the treatment effect.

Two key decisions in the estimation are the bandwidth h and the polynomial order. Our preferred specification uses a linear polynomial with the Imbens and Kalyanaraman (2012) optimal bandwidth, which is itself a function of the data. To inspect robustness, we also present results based on smaller and larger bandwidths and different polynomial orders. We cluster the standard errors at the constituency level. To further probe the robustness of our results to other methods of inference, the online appendix reproduces the three main tables of this section using the standard errors proposed in Calonico, Cattaneo, and Titiunik (2014).¹⁹

¹⁸ For example, consider an election in constituency c at time t in which second-place candidate A obtains a 22 percent vote share and third-place candidate B 18 percent. In this case the $x_{A,ict}$ value for the second-place candidate would be 4 percent, and the $x_{B,ict}$ value for the third-place candidate would be -4 percent.

¹⁹ The use of linear local regressions is suggested by Lee and Lemieux (2010), which we also follow in not weighting observations.

C. Estimation Results

Table 1 presents our main estimates of the impact of coming in second place on whether the candidate runs in the next election (Candidacy, $t + 1$) and whether the candidate wins the next election (Winner, $t + 1$). Column 1 is the estimated value of the dependent variable for a third-place candidate who “ties” with the second-place candidate. Formally, it is an estimate of $\lim_{x_{it} \uparrow 0} E[y_{ict} | x_{ict}]$, using a linear specification and the Imbens-Kalyanaraman bandwidth, which is provided in column 2. The sample size of this optimal bandwidth specification is provided in brackets in the same column.

Column 3 provides the estimated effects based on our preferred specification, which uses a linear polynomial and the Imbens-Kalyanaraman bandwidth. To probe robustness of the results to specification and bandwidth choices, columns 4 and 5 repeat the exercise using a bandwidth equal to half and double the Imbens-Kalyanaraman bandwidth, respectively. Column 6 compares the mean outcome between second- and third-place candidates who are within a 2 percentage point difference (i.e., it matches the difference between the markers on each side of the cutoff on figs. 1*a*–1*d*). Column 7 uses the entire sample and fits a quadratic polynomial, matching the polynomial fit on figures 1*a*–1*d*.

Consistent with the graphical analysis, these estimates indicate large runner-up effects in the Brazilian context. According to our preferred specification, barely second-place Brazilian candidates are 9.4 percentage points more likely than barely third-place candidates to run again. This is a large effect given that 30.3 percent of barely third-place candidates run again. Moreover, they are also 8.3 percentage points more likely to win the next election (while only 9.5 percent of close third-place candidates do so). The effects on future candidacy and future winning are both significant at the 1 percent level under the Imbens-Kalyanaraman bandwidth. The magnitude and significance of the effects are comparable in other specifications. Figure A.4 provides estimates for a wide choice of bandwidths.

In the case of Indian state legislators, close second-place candidates are 4.4 percentage points more likely to run in the next election and 3.4 percentage points more likely to win the next election. These are sizable increases since close third-place candidates run again and win 31.9 percent and 7.8 percent of the time, respectively. These effects are all significant at the 1 percent level and robust to different specifications/bandwidths. Figure A.4 provides estimates for a wide choice of bandwidths.

We find similar-sized effects for federal Indian elections (although third-place means are slightly lower). These effects are significant in four out of our five specifications for candidacy and three out of five for winning. That the estimated effects are not as robust in the Indian federal

TABLE 1
THE RUNNER-UP EFFECT: SECOND VERSUS THIRD PLACE

	THIRD-PLACE MEAN (1)	OPTIMAL BANDWIDTH VALUE (2)	POLYNOMIAL ORDER ONE			POLYNOMIAL ORDER ZERO	POLYNOMIAL ORDER TWO
			Optimal Bandwidth (3)	$\frac{1}{2} \times$ Optimal Bandwidth (4)	$2 \times$ Optimal Bandwidth (5)	2 Percent (6)	Full Sample (7)
A. Brazil							
Candidacy, $t + 1$ (%)	30.27	11.56 [N = 5,556]	9.397*** (2,589)	6.295* (3,596)	11.90*** (1,868)	11.05*** (3,040)	14.06*** (1,912)
Winner, $t + 1$ (%)	9.448	12.57 [N = 5,946]	8.310*** (1,809)	7.010*** (2,541)	8.844*** (1,290)	9.091*** (2,265)	10.46*** (1,395)
B. India State							
Candidacy, $t + 1$ (%)	31.92	9.139 [N = 22,518]	4.391*** (1,131)	5.743*** (1,567)	5.037*** (834)	5.755*** (1,175)	5.490*** (,790)
Winner, $t + 1$ (%)	7.781	7.807 [N = 19,868]	3.351*** (,812)	3.297*** (1,149)	3.502*** (,594)	3.453*** (,775)	4.412*** (,528)

		C. India Federal					
Candidacy, $t + 1$ (%)	23.57	16.29 [$N = 4,394$]	4.847** (2.432)	2.374 (3.262)	5.748*** (1.773)	5.539* (3.243)	5.817*** (2.178)
Winner, $t + 1$ (%)	6.155	15.93 [$N = 4,294$]	2.676* (1.393)	2.811 (1.903)	3.211*** (1.022)	2.915 (1.881)	3.247*** (1.229)
D. Canada							
Candidacy, $t + 1$ (%)	16.79	12.22 [$N = 5,190$]	4.617** (1.841)	4.452* (2.548)	4.591*** (1.471)	4.990** (2.250)	5.986*** (1.606)
Winner, $t + 1$ (%)	2.373	10.64 [$N = 4,612$]	-.195 (.863)	-.163 (1.220)	.424 (.576)	.599 (.999)	.414 (.662)

NOTE.—Standard errors clustered at the constituency level are in parentheses. The unit of observation is a candidate. Outcomes are measured as percentages. Each figure in cols. 3–7 reports a separate local polynomial regression estimate with the specified bandwidth and polynomial order. Separate polynomials are fitted on each side of the threshold. Third-place mean is the estimated value of the dependent variable for a third-place candidate who “ties” with the second-place candidate, based on the specification in col. 3. The optimal bandwidth is based on Imbens and Kalyanaraman’s (2012) procedure, with the associated number of observations reported in brackets.

* Statistically significant at the 10 percent level.

** Statistically significant at the 5 percent level.

*** Statistically significant at the 1 percent level.

context (compared to Brazilian and Indian state elections) mirrors our conclusions from the graphical analysis and can be attributed to the smaller sample size.

The Canadian data also show a sizable (and in some cases statistically significant) effect of running again: a 4.6 percentage point increase over a 17 percent third-place mean. The effects on winning the next election are close to zero and statistically insignificant. However, we caveat a conclusion of no effect. As previously discussed, the overall chance of a third- or second-place candidate winning is smaller in the Canadian context, with barely third-place candidates winning the next election only 2.4 percent of the time. This can be attributed to incumbents being more likely to be reelected in Canada compared to other contexts. Hence a potential effect might likely be small and difficult to detect given the smaller sample. For example, the standard error in column 3 is 0.9 percentage points, implying that an effect of 1.7 percentage points (increasing the probability of winning the next election by more than 70 percent) would not be significant at the 5 percent level.²⁰

It is also of interest to compare the differences between estimated runner-up effects across contexts, as those will be discussed in light of the model in Section IV.A. The effect for Brazil is the largest, and the difference in the effect on winning from all other contexts is statistically significant (at the 5 percent level). The effect on running is significantly different (at the 10 percent level) only from that of the Indian state case. We cannot reject that the runner-up effect (for both outcomes) is the same in both Indian contexts and, in the case of candidacy, also in Canada. The smallest runner-up effect on winning occurs in Canada, and we can reject that it is equal to the Indian federal case (at the 10 percent level) and the Brazilian and Indian state contexts (at the 1 percent level).

To test for covariate smoothness (or balance), table 2 checks whether close second- and third-place candidates differ on preexisting characteristics. The results confirm the graphical evidence in figure 2 that close runners-up are not more likely to have run in or won the previous election. The table also tests whether close second-place candidates are more likely to have received greater vote shares in the previous election or whether they are more likely to be from the major party in the country.²¹ While vote shares are missing for any candidate who did not run in the previous election, this is unlikely to affect the results given the evidence

²⁰ Table A.5 reproduces table 1 using the Calonico et al. (2014) standard errors in appropriate specifications. While standard errors become larger, the significance and qualitative conclusions (of significant effects for Brazilian and Indian state elections and less robust effects in Indian federal and Canadian races) remain similar.

²¹ We define the major party as the party with the most candidates overall in each data set. Congress is the major party in India, Liberal is the major party in Canada, and the Brazilian Democratic Movement (PMDB) is the major party in Brazil.

TABLE 2
PLACEBO TESTS AND COVARIATE SMOOTHNESS: SECOND VERSUS THIRD PLACE

	Third-Place Mean (1)	Optimal Bandwidth Value (2)	Polynomial Order One: Optimal Bandwidth (3)	Polynomial Order Two: Full Sample (4)
A. Brazil				
Candidacy, $t - 1$ (%)	31.26	21.80 [$N = 8,816$]	.839 (1.856)	.0623 (1.846)
Winner, $t - 1$ (%)	13.65	21.89 [$N = 8,840$]	-.243 (1.438)	-.750 (1.430)
Vote share, $t - 1$ (%)	38.89	13.20 [$N = 1,761$]	.769 (1.251)	1.108 (1.085)
PMDB Party, t (%)	16.24	26.53 [$N = 13,400$]	-.475 (1.283)	-1.008 (1.395)
B. India State				
Candidacy, $t - 1$ (%)	34.93	18.17 [$N = 36,722$]	.965 (.869)	.285 (.823)
Winner, $t - 1$ (%)	13.48	13.80 [$N = 30,262$]	1.100 (.788)	.654 (.655)
Vote share, $t - 1$ (%)	27.55	11.69 [$N = 9,158$]	.697 (.661)	.294 (.524)
Congress Party, t (%)	19.87	12.39 [$N = 32,238$]	.0587 (.913)	-1.391* (.732)
C. India Federal				
Candidacy, $t - 1$ (%)	33.85	23.66 [$N = 6,036$]	-.940 (2.403)	-.748 (2.502)
Winner, $t - 1$ (%)	15.70	15.33 [$N = 4,120$]	-2.032 (2.244)	.117 (1.941)
Vote share, $t - 1$ (%)	32.00	14.02 [$N = 1,203$]	-.464 (1.985)	-2.692 (1.713)
Congress Party, t (%)	10.74	18.43 [$N = 5,850$]	1.328 (1.695)	.582 (1.648)
D. Canada				
Candidacy, $t - 1$ (%)	23.65	12.03 [$N = 5,322$]	-.464 (2.365)	-.811 (1.833)
Winner, $t - 1$ (%)	6.702	13.77 [$N = 6,000$]	.821 (1.318)	.196 (1.224)
Vote share, $t - 1$ (%)	30.15	13.94 [$N = 1,371$]	-1.555 (1.551)	-1.478 (1.324)
Liberal Party, t (%)	26.55	11.39 [$N = 5,656$]	-1.477 (2.617)	.629 (2.095)

NOTE.—See table 1 notes for further description. Outcomes are measured as percentages.
* Statistically significant at the 10 percent level.

that close second- and third-place candidates are equally likely to have run in the previous election. Finally, note that any variable that does not vary across candidates within an election (e.g., turnout, votes for the winner, constituency demographics) is, by construction, balanced.

The only instance in which we find an imbalance at the cutoff in table 2 is that Congress Party candidates appear less likely to have come in second place than third place in Indian state elections when we use the full sample and a quadratic model. This result is not apparent when we estimate it in the more relevant region (under the optimal bandwidth); also, visual inspection suggests that the quadratic model using the full sample finds a difference because it fits the curve better away from the cutoff and poorly around it, generating a case of mistaking a nonlinearity for a discontinuity (fig. A.12a).

In addition to showing balance on the fraction of candidates from the major parties in each of our samples, we also conduct a general test for imbalance based on parties as follows. We regress a dummy for whether the candidate came in second on indicators for every party in the sample. We then take the predicted values from this regression and test whether these predicted values jump discretely at the cutoff. If certain parties were more likely to come in second or third place around the cutoff, we expect these predicted values to increase discretely around the cutoff. In all four of our contexts we find no evidence that party can predict candidate rank.²²

D. Comparison of Runner-Up, Incumbency, and Third-Place Effects

Third versus fourth place.—Using the same approach applied to visualize the runner-up effect, figure 3 plots our main outcomes against the vote share difference in samples of third- and fourth-place candidates. We find no evidence of a jump around the cutoff. These figures do show what appears to be a discrete increase in slope around the cutoff between third and fourth place. However, this increase in slope was also apparent in the corresponding figures where the outcome variables are defined on the basis of the previous election (fig. A.8). This change in slope therefore most likely reflects increasing unobservable quality of third-place candidates as the vote share difference between third- and fourth-place candidates increases.

Table A.1 presents our regression discontinuity estimates of the effect of coming in third versus fourth. There are a few specifications that show economically small but statistically significant effects, but, overall, there is no robust evidence that coming in third place instead of fourth has a causal impact on candidates' future outcomes.

Incumbency.—Table A.2 provides results on the incumbency effect (close first- vs. second-place candidates) for each of our samples. Figure A.9

²² These tests are reported in fig. A.6; a similar test is discussed in Fujiwara (2015), which builds on a procedure from Card, Dobkin, and Maestas (2009). In the Indian cases we treat the parties that make up less than 0.1 percent of observations together as a single party.

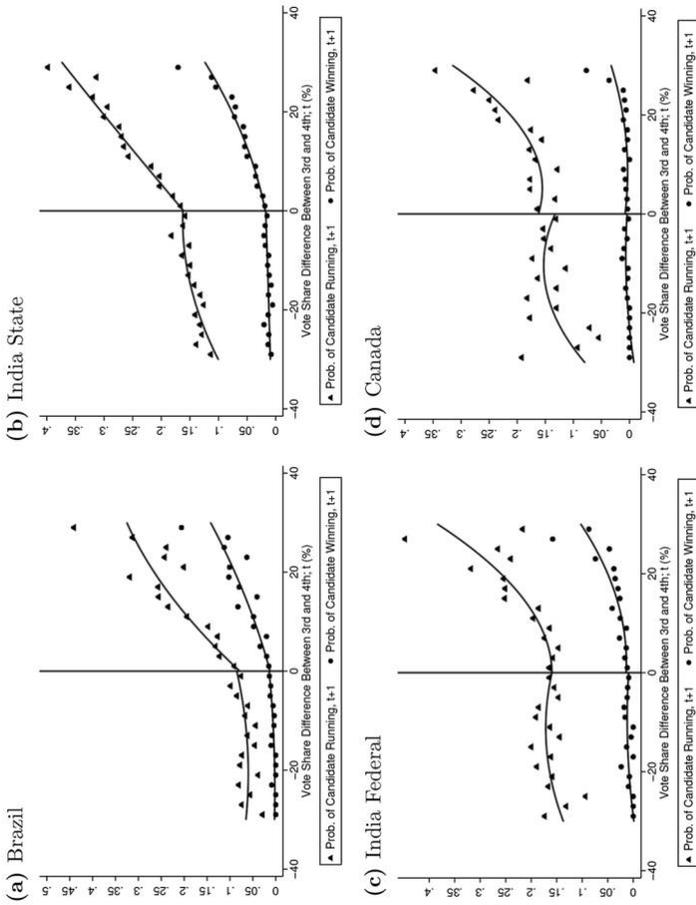


FIG. 3.—Effect of third versus fourth place. Triangles (circles) represent the local averages of a dummy indicating whether the candidate ran in (won) the next ($t + 1$) election. Averages are calculated within 2 percentage point-wide bins of vote share difference (x -axis). Continuous lines are a quadratic fit over the original (“unbinned”) data. The sample includes only candidates who placed third and fourth at election t .

provides the respective graphical analysis. In all contexts, incumbency increases the probability of running again.²³

Regarding the effect on winning again, we find, consistent with Linden (2004) and Uppal (2009), that incumbents are slightly disadvantaged in future Indian elections. While the point estimates are fairly sizable and statistically significant in Indian state elections, they are closer to zero (and statistically indistinct from it) in the federal case. The effects for Brazil are also close to zero. Interestingly, this implies that we find the runner-up effect on both running again and winning in contexts in which the incumbency effect is varied. In particular, the results from Indian states indicating positive effects of coming in second place, but a negative effect of coming in first place, suggest that our runner-up effects are not driven by a mechanical reason that causes candidates with higher ranks to perform better in future elections. We find large incumbency advantages in Canada, consistent with Kendall and Rekkas (2012).

Summary.—Table 3 summarizes our estimates for incumbency, runner-up, and third-place effects in the four contexts. In the cases with the larger samples (Brazil and India state), the difference between the runner-up and third-place effects is positive and significant, as is the difference between runner-up and incumbency effects on winning. The incumbency effect on running is larger than the runner-up effect, but only significantly so in India.

For federal Indian elections, the differences have p -values between .15 and .23, except for the third-place effect being significantly smaller than the runner-up effect for candidacy (at the 10 percent level). In the Canadian case, the incumbency effects are clearly larger, and the runner-up and third-place effects are not statistically distinct.

E. Bounds on Effects Conditional on Candidacy

Assuming a candidate will choose to run, how much does being the runner-up increase the probability that she will win? While the RDD ensures that barely second- and third-place candidates are, on average, similar, it does not imply that those who run again after barely coming in second are similar to those who run again after barely coming in third. Moreover, some possible explanations for the runner-up effect may involve only an effect on candidacy (e.g., some parties follow a rule of thumb of nominating all second-place candidates), which then translates to effects on winning mechanically (i.e., without affecting probabilities conditional on running).

Note, however, that most explanations for candidates' entry decisions would involve their responding to their probability of victory. This is the

²³ Figure A.10 provides corresponding plots for $t - 1$ outcomes, indicating a balance in covariates. In Brazil, mayors are subject to a two-term limit. We limit the estimation to candidates who are not incumbents at t and hence, in the case in which they win, would be able to run for reelection at $t + 1$.

TABLE 3
 RUNNER-UP VERSUS INCUMBENCY AND THIRD- VERSUS FOURTH-PLACE EFFECTS

	Runner-Up Effect	Incumbency Effect	Runner-Up vs. Incumbency p -Value	Third vs. Fourth Effect	Runner-Up vs. Third vs. Fourth p -Value
A. Brazil					
Candidacy, $t + 1$	9.397*** (2.589)	8.685*** (2.665)	.852	.0116 (1.358)	.001
Winner, $t + 1$	8.310*** (1.809)	-1.208 (2.441)	.002	-.340 (.749)	.000
B. India State					
Candidacy, $t + 1$	4.391*** (1.131)	9.565*** (1.368)	.005	1.106 (.723)	.015
Winner, $t + 1$	3.351*** (.812)	-4.554*** (1.147)	.000	.148 (.244)	.000
C. India Federal					
Candidacy, $t + 1$	4.847** (2.432)	10.05*** (3.449)	.226	-.506 (1.905)	.086
Winner, $t + 1$	2.676* (1.393)	-1.712 (2.887)	.181	.537 (.466)	.149
D. Canada					
Candidacy, $t + 1$	4.617** (1.841)	36.21*** (2.421)	.000	2.148 (1.837)	.347
Winner, $t + 1$	-.195 (.863)	26.54*** (2.398)	.000	-.0458 (.308)	.871

NOTE.—Outcomes are measured as percentages. All specifications use a local linear specification with the optimal (Imbens-Kalyanaram) bandwidth. See table 1 notes for further description.

* Statistically significant at the 10 percent level.

** Statistically significant at the 5 percent level.

*** Statistically significant at the 1 percent level.

case of the model we develop in Section IV.A. Under such explanations, one would expect the previous results to directly imply a runner-up effect on winning conditional on candidacy. Even in this case, the magnitude of these conditional effects cannot be inferred directly from the previous estimates.

We adapt a method by Lee (2009) to provide bounds on the runner-up effect on the probability of winning the next election, conditional on running in it. Let S denote if a candidate finished second (as opposed to third) in a race at time t . The terms R_0 and R_1 are “potential outcome” binary indicators for the candidate running at the next ($t + 1$) election when $S = 0$ or $S = 1$, respectively. We observe only a given candidate’s decision to run as either the second- or third-place candidate (only $R = SR_1 + [1 - S]R_0$ is observed). Similarly, let W_0 and W_1 denote winning the election at $t + 1$ had the candidate chosen to run. Only $W = R[SW_1 + (1 - S)W_0]$ is observed: a candidate is observed only after one specific rank, and we observe only if she can win if she runs.²⁴

There are four types of candidates in our sample: (i) “always takers,” those who always run again; (ii) “never takers,” those who never run again; (iii) “compliers,” those who would choose to run again if they came in second but not third place; and (iv) “defiers,” candidates who would run again after a third-place finish but would not run again if they came in second place. Our key assumption, which follows Lee (2009), is that there are no defiers; all candidates who come in third and choose to run again would also have run again if they had come in second place.

The variables S , R_0 , R_1 , W_0 , and W_1 can be thought of as functions of the candidate and the RDD running variable (x), and their limits at the cutoff ($x = 0$) can be estimated. Omitting the *ict* subscripts, we get

$$\begin{aligned}
 &\text{Effect on win, cond. on being always taker/complier} \\
 &E[W_1 - W_0 | x = 0, R_1 = 1] = \frac{1}{\underbrace{E(R_1 | x = 0)}_{\lim_{x \downarrow 0} E[R|x]}} \\
 &\quad \cdot \underbrace{[(E(W_1 R_1 - W_0 R_0 | x = 0))]}_{\text{RD effect on } W} \\
 &\quad - \underbrace{\text{Prob}(R_1 > R_0 | x = 0)}_{\text{RD effect on } R} \\
 &\quad \cdot \underbrace{E(W_0 | x = 0, R_1 > R_0)}_{\text{Unobservable}}. \tag{3}
 \end{aligned}$$

²⁴ This implies that, e.g.,

$$E[W | x > 0] = E[W_1 \cap R_1 | x > 0] \neq E[W_1 | x > 0]$$

since the last term is the expected probability of winning of all second-place candidates, had they chosen to run, and we observe only whether candidates who run can win or not.

Derivations are in appendix A.1. The only unobservable term is $E[W_0 | x = 0, R_1 > R_0]$, the probability of winning after a close third-place finish for a complier (who, by definition, does not run after a third-place finish). Given assumptions of the largest and smallest possible values for this probability, a lower and upper bound can be calculated (and its standard error computed under the delta method).

The upper bound can be obtained by plugging $E[W_0 | x = 0, R_1 > R_0] = 0$ into equation (3). Intuitively, the largest possible effect occurs under the assumption that close third-place compliers would never win the next election had they chosen to run in it. We argue that a reasonable assumption for calculating the lower bound is that third-place compliers would have at most the same probability of winning as second-place finishers who did choose to run. We would expect compliers (who decided not to run) to have even lower odds of winning than the always takers, since we are inputting the probability of the more successful second-place candidates.²⁵

On the basis of the estimates in column 3 of table 1 for the Brazilian case, the lower bound is 10.3 percentage points (standard error [SE] = 3.4). Analogously, the most conservative upper bound would be 20.9 percentage points (SE = 4.2). These effects are substantial, given that close third-place candidates win less than a third of the time when they run again. In Indian state elections the lower and upper bounds under the same procedure are 5.5 percentage points (SE = 1.9) and 9.2 percentage points (SE = 2.2), respectively. For Indian federal elections the respective estimates are 4.1 percentage points (SE = 4.2) and 9.4 percentage points (SE = 4.7). These are sizable increases, since close third-place candidates who run again have approximately a 33 percent chance of winning in the Brazilian context and a 25 percent chance of winning an election in the Indian contexts. In the Brazilian and Indian state samples, we can reject the null hypothesis that our lower-bound estimate of the runner-up effect on winning conditional on running is equal to zero. Overall, the results in our Brazilian and Indian samples suggest that barely coming in second place has a sizable impact on a candidate's probability of winning beyond just the effect on running. In Canada, however, the conditional effect is bounded between -3.1 percentage points (SE = 3.4) and -0.9 percentage points (SE = 4.0).

²⁵ The most conservative possible choice for a lower bound would be to assume that all compliers would win for sure after finishing third. However, this number is unreasonably high. First, this would imply that a large number of candidates who would win for sure decide not to run. Second, the probability that a close third-place candidate who runs again wins the next election is 31 percent in Brazil, around 25 percent in both Indian contexts, and below 15 percent in Canada. It is unlikely that the chances of winning for third-place candidates who decided not to run would be more than three or four times larger than for those who chose to run again.

Another related approach would be to use equation (3) to calculate how large the unobservable probability of a close third-place complier would have to be in order for all the effect on winning to be explained by selection into candidacy. In the Brazilian case, a close third-place complier would have to win with a probability of 88.4 percent (SE = 21.3) to imply that there is no runner-up effect on winning conditional on running. In the Indian state and federal cases, the respective values are 76.3 percent (SE = 20.4) and 55.2 percent (SE = 31.4). These numbers are too large to be plausible. For the effects on winning to be explained entirely by selection into running, the probability of compliers winning would have to be extremely large: many times the probability of the third-place candidates we observe that run (the always takers) and, in the case of Brazil and Indian states, well above that observed for very safe incumbents.

IV. Mechanisms I: Strategic Coordination

A. A Model of Strategic Coordination

1. Setup

Consider a model with four potential candidates: the incumbent candidate I , as well as challengers A , B , and C . Candidates receive a utility of one if elected. The challengers must pay a cost r to enter the election. We assume that candidate I runs with certainty.

Voters are instrumentally rational, with preferences defined over the winning candidate. There are four types of loyal voters labeled A , B , C , and I , with a loyal voter of type i having utility $u_i(i) > 0$ and $u_i(j) = 0$ for all candidates $i \neq j$. There are also two additional types of voters, 1 and 2. We assume that $u_1(A) \geq u_1(B) > u_1(I) = 0$ and $u_2(B) \geq u_2(A) > u_2(I) = 0$. This captures the strategic coordination incentives: voters 1 and 2 prefer candidate A or B over I but may disagree on their preferences over A and B . Voters are group rule utilitarians (Harsanyi 1977; Feddersen and Sandroni 2006) and follow a rule that maximizes the welfare of their type. Since all voters within a group are homogeneous, we further simplify the analysis by modeling each of the six types as a representative voter.²⁶ We assume that “loyal” types (A , B , C , and I) abstain from voting when their preferred candidate does not enter the race.²⁷

Agents do not observe the number of each type of voter. However, they observe the vote shares from the past election, which had A , B , C , and I

²⁶ Coate and Conlin (2004) provide evidence of group rule utilitarianism in elections. Another interpretation is that coordination issues within each group of voters of the same type have been successfully solved (e.g., each group is a faction within the society that follows the voting recommendation of a prominent member).

²⁷ Since these types are indifferent about any candidate but their preferred one, the main consequence of this assumption is ruling out multiple equilibria driven by indifference.

as candidates. Let the vector $\mathbf{v} = (v_A, v_B, v_C, v_I)$ denote these vote shares. Hence, the mapping from strategies to election outcomes is also uncertain. In other words, for a given set of candidates running and voters' choices, agents do not know certainly who will win the race but form expected probabilities over possible election outcomes. These probabilities depend on past vote shares, as they contain information on current group sizes.

In particular, let $q_k(\mathbf{v}, \Omega)$ denote the probability candidate k wins when all loyal types play their dominant strategy (or abstain) and voters 1 and 2 vote for I ; Ω is the set of candidates that entered the race. We assume that all $q_k(\mathbf{v}, \Omega)$ are increasing in v_k and decreasing in v_j , for $j \neq k$ (and $j, k \in \Omega$). If $v_k = v_j$, then $q_k(\mathbf{v}, \Omega) = q_j(\mathbf{v}, \Omega)$ if $j, k \in \Omega$. These assumptions capture larger vote shares in the past signaling a candidate's popularity in the present. Additionally, we assume that $q_k(\mathbf{v}, \Omega) > 0$ if, and only if, $k \in \Omega$ (any candidate that runs has a nonzero chance of winning) and that removing a candidate from a race increases the probability the remaining candidates are elected: if Ω' is a proper subset of Ω , then $q_k(\mathbf{v}, \Omega') > q_k(\mathbf{v}, \Omega)$ if $k \in \Omega'$.²⁸

To simplify and add tractability to the analysis, we further impose the following condition on $q_k(\mathbf{v}, \Omega)$. The expected number of voters 1 and 2 is the same, and the probability of candidate $k \in \{A, B, C\}$ winning is $\lambda^{x_k} q_k(\mathbf{v}, \Omega)$, where $x_k = 1[s_1 = k] + 1[s_2 = k]$, $\lambda > 1$, and s_i denotes voter i 's strategy. For example, when all four candidates run and voters 1 and 2 vote for A , agents expect the probabilities that A and B win are $\lambda^2 q_A(\mathbf{v}, \{A, B, C, I\})$ and $q_B(\mathbf{v}, \{A, B, C, I\})$, respectively. Similarly, if only C does not enter the race, the probabilities A and B win when $s_1 = A$ and $s_2 = B$ are $\lambda q_A(\mathbf{v}, \{A, B, I\})$ and $\lambda q_B(\mathbf{v}, \{A, B, I\})$, respectively.²⁹

While simplified, this setup captures the main features of strategic coordination in elections. In particular, an additional vote from a type 1 or

²⁸ An example of a stochastic process that would lead to this model is the following. Let n_i^p be the number of voters of type i in the past election. The current number is given by $n_i^c = \pi + \rho n_i^p + \zeta_i$, where ζ_i is an independent and identically distributed (i.i.d.) shock with zero mean, and $0 < \rho < 1$. Moreover, in the past election every loyal type voted for his preferred candidate, and type 1 voted for A and type 2 voted for B . This setup also highlights the interpretation of the last election as a coordination failure (since types 1 and 2 did not vote for the same candidate). Other assumptions on loyal voters' behavior when their preferred candidate does not enter the race (instead of abstention) that maintain these properties of $q_k(\mathbf{v}, \Omega)$ would not affect the main results.

²⁹ Note that this parameterization is defined only for candidates A, B , and C . The probability of I winning is always one minus the sum of the probabilities that other entrants win. Since I always runs (by assumption), it is well defined for all possible races. It also imposes that candidate I "bears the brunt" of coordination: e.g., switching from a case in which $s_1 = s_2 = I$ to one in which $s_1 = s_2 = A$ increases the probability A wins at the expense of I 's probability, leaving B and C 's chances unchanged. While simplistic, this assumption reinforces the notion that successful coordination benefits those involved (as voters 1 and 2 do prefer A and B over I).

2 voter multiplies the probability of winning by a factor larger than one (λ). This captures the convexity in the relationship between a candidate's expected vote share and the probability additional votes will be pivotal. For example, increasing a candidate's vote share from 35 percent to 40 percent is more likely to make her a winner than increasing her vote share from 5 percent to 10 percent. In models of strategic voting under plurality rule (Myerson and Weber 1993; Cox 1997; Myerson 2002), this manifests itself as candidates with fewer expected votes having lower pivot probabilities than those with higher vote shares (hence leading to "Duvergerian" equilibria).

To analyze the possible equilibria in this game, we impose two further assumptions. First, we assume that $u_1(A) = u_2(B)$ and $u_1(B) = u_2(A)$. This imposes a symmetry between the relative payoffs of 1 and 2 over A and B . To derive empirical predictions, we will compare the case in which A is a close runner-up and B is a close third-place candidate (or vice versa), so we would like to make them similar, without candidate A having an advantage or disadvantage over B . Second, we label B as having outperformed C ($v_b > v_c$) and further assume that, if both B and C run, $q_B > \lambda q_C [u_1(C)/u_1(B)]$ and $q_B > \lambda q_C [u_2(C)/u_2(A)]$. Hence, both types 1 and 2 find that voting for B dominates voting for C : this captures that, in cases in which two candidates almost tie for second and third place, the fourth-place candidate has a small vote share and probability of winning the next election.

If both A and B run and $q_A < (q_B/\lambda)[u_1(B)/u_1(A)]$, then voting for B is a dominant strategy for voters 1 and 2. If $q_A > \lambda q_B [u_2(B)/u_2(A)]$, voting for A is their dominant strategy. If

$$\frac{q_B}{\lambda} \frac{u_1(B)}{u_1(A)} \leq q_A \leq \lambda q_B \frac{u_2(B)}{u_2(A)},$$

there are two pure-strategy Nash equilibria in a subgame in which both A and B enter the race: one in which both 1 and 2 vote for A and another in which they both vote for B . Hence, as in other models of strategic coordination, there are multiple equilibria and coordination on either candidate is possible. However, this hinges on common knowledge of q_k . Adding (a small amount of) aggregate uncertainty leads to a unique equilibrium.

2. Aggregate Uncertainty and Equilibrium

The probability candidate A wins a race she enters— $q_A(v, \Omega)$ —is itself uncertain. This can be motivated by a shock to A 's ability to obtain votes (e.g., weather shocks that affect the turnout of type A voters disproportionately or candidate A 's unobserved ability to mobilize turnout). While the analysis could be performed assuming that all candidates have uncertain probabilities of winning, we focus on the case in which this applies only

to A to simplify exposition. Moreover, we add (arbitrarily) only small uncertainty, as voters will observe very precise signals of $q_A(\mathbf{v}, \Omega)$. The relevant issue is relaxing common knowledge (all voters know that all other voters know $q_A(\mathbf{v}, \Omega)$ exactly) to reduce the number of equilibria, following the global games approach (Carlsson and van Damme 1993; Morris and Shin 2002).³⁰

In particular, $q_A(\mathbf{v}, \Omega)$ is drawn from a distribution with support $[0, 1 - q_B(\mathbf{v}, \Omega) - q_C(\mathbf{v}, \Omega)]$.³¹ Voters do not observe $q_A(\mathbf{v}, \Omega)$ directly. Instead a voter of type i observes a private signal $z_i(\mathbf{v}, \Omega) = q_A(\mathbf{v}, \Omega) + \epsilon_i$, where $\epsilon_i \sim N(0, \sigma_\epsilon)$ and $\sigma_\epsilon \downarrow 0$.

The timing of the game is as follows:

1. Nature draws the cost of running r . Candidates observe r and decide to run or not.
2. Given the set of candidates running (Ω'), nature draws $q_A(\mathbf{v}, \Omega')$. Voters observe signals z_i and choose a candidate among the entrants (or abstain). The election outcome (and payoffs) is realized.

We study the equilibrium for this game by backward induction and iterated deletion of strictly dominated strategies. By imposing one additional technical condition in any subgame in which A and B run,

$$\lambda q_B \frac{u_2(B)}{u_2(A)} < 1 - q_B - q_C,$$

a useful lemma for the subgame equilibria can be proved.

LEMMA. In any subgame in which both A and B run, the essentially unique set of strategies surviving iterated deletion of dominated strategies has both voters 1 and 2 voting for A if $v_A > v_B$ and for B if $v_A < v_B$, for σ_ϵ sufficiently small. (The proof is in the Appendix.)

Hence, when both A and B enter the race, voters 1 and 2 coordinate on the candidate who had the higher vote share in the past election. Since $v_C < v_B < v_A$, such a candidate is the runner-up. Intuitively, voters 1 and 2 prefer to coordinate on the challenger with an (ex ante) larger probability of winning, and past vote shares are signals of this probability. Hence the runner-up has a higher probability of winning than the third-place candidate and will be coordinated on, even when her vote share is close to the third-place vote share. The lemma is an application of the main global games result (Carlsson and van Damme 1993): adding uncertainty to a game that would have multiple equilibria under perfect information can

³⁰ Note also that q_k 's are defined only for $k \in \{A, B, C\}$, and the probability for I is defined as $1 - q_A - q_B - q_C$, so there is also uncertainty about the probability I wins too.

³¹ We also assume that this distribution has an expectation equal to $q_B(\mathbf{v}', \Omega)$, where $\mathbf{v}' = (v_B, v_A, v_C, v_I)$. Hence, the expected value of q_A (before a signal is realized) is candidate B 's probability of winning if B had A 's vote share, and vice versa. This determines candidates' payoff expectations (since they do not observe signals).

lead to a unique equilibrium.³² Moreover, this equilibrium will be risk dominant (Harsanyi and Selten 1988), which in this case involves coordination on the candidate with higher ex ante chances of winning.

Furthermore, this lemma captures a key feature of the runner-up effect. Candidates' ex ante winning probabilities are continuous functions of past performance. However, equilibrium strategies are discontinuous at $v_A = v_B$, since a small increase (decrease) in v_A makes that candidate more (less) likely to win. As $v_A \rightarrow v_B$, close third-places and runners-up become identical in the model, but voters still prefer to vote for the runner-up.

Finally, to study candidate entry and the entire game's equilibrium, we assume that the cost of running r can take three values: $\{0, r^m, 1\}$, with $q_B(\mathbf{v}, \{A, B, I\}) < r^m < \lambda^2 q_B(\mathbf{v}, \{A, B, C, I\})$. The following proposition characterizes the equilibrium.

PROPOSITION. For σ_ϵ sufficiently small, the unique equilibrium is such that (i) if $r = 0$, all candidates enter the race; (ii) if $r = r^m$, only candidates A and I run if $v_A > v_B$, and only candidates B and I run otherwise; (iii) if $r = 1$, only candidate I runs. Types A, B, C , and I vote for their preferred candidate (or abstain when she does not run). If both A and B run, types 1 and 2 vote for A when $v_A > v_B$, and for B otherwise. If only one of A or B runs, voters of types 1 and 2 vote for her. (Proof is in the Appendix.)

3. Connecting the Theory to Empirical Results

Given $v_C < v_B < v_A$, by varying v_A from values below v_C to close to v_B , we can analyze the effects of multiple ranks. First, let $x = v_A - v_B$. Given the proposition, the probability candidate A enters the race is $\Pr(r = 0)$ if $x < 0$ and $\Pr(r = 0) + \Pr(r = r^m)$ if $x > 0$. The probability she wins the race is $\Pr(r = 0)q_A(\mathbf{v}, \{A, B, C, I\})$ if $x < 0$ and

$$\Pr(r = 0)\lambda^2 q_A(\mathbf{v}, \{A, B, C, I\}) + \Pr(r = r^m)\lambda^2 q_A(\mathbf{v}, \{A, I\}).$$

This implies, that, if y_A^r and y_A^w are indicators for A running in and winning the race,

$$E(y_A^r | x \downarrow 0) - E(y_A^r | x \uparrow 0) = \Pr(r = r^m), \tag{4}$$

$$E(y_A^w | x \downarrow 0) - E(y_A^w | x \uparrow 0) = (\lambda^2 - 1) \Pr(r = 0)q_A(\mathbf{v}', \{A, B, C, I\}) + \Pr(r = r^m)\lambda^2 q_A(\mathbf{v}', \{A, I\}), \tag{5}$$

where $\mathbf{v}' = (v_A, v_A, v_C, v_I)$.

³² The equilibrium is "essentially" unique because strategies are indeterminate when $v_A = v_B$ and $z_i(\mathbf{v}, \Omega) = q_B(\mathbf{v}, \Omega)$: candidates A and B tied, and voter i receives a signal that A and B are ex ante equally likely to win. We abstract from this issue and refer to the equilibrium as "unique" henceforth.

This matches our main empirical result: there is a positive runner-up effect on both running in and winning the next election. Similarly, the case in which v_A is smaller than v_B and close to v_C allows a similar analysis of the effect of being a close third (opposed to fourth) place. If $v_A < v_B$, candidate A (as well as C) runs only if the cost of running is zero, whether or not v_A is smaller or greater than v_C . Additionally,

$$E(y_A^w | v_A \downarrow v_C) = E(y_A^w | v_A \uparrow v_C) = \Pr(r = 0)q_A(v', \{A, B, C, I\}),$$

where $v' = \{v_A, v_B, v_A, v_I\}$, which leads to our model predicting no effect of a close third (instead of fourth) place, as suggested by the empirical results in Section III.³³

To analyze incumbency advantage, we can focus on the case in which $v_A \uparrow v_B$, when A barely lost and I barely won the race:³⁴

$$E(y_I^r | v_I \downarrow v_A) - E(y_A^r | v_A \uparrow v_I) = \Pr(r = 1), \tag{6}$$

$$\begin{aligned} E(y_I^w | v_I \downarrow v_A) - E(y_A^w | v_A \uparrow v_I) \\ = \Pr(r = 1) + \Pr(r = r^m)[1 - 2\lambda^2 q_A(v, \{A, I\})] \\ + \Pr(r = 0)[1 - 2\lambda^2 q_A(v, \Omega') - q_B(v, \Omega') - q_C(v, \Omega')], \end{aligned} \tag{7}$$

where $\Omega' = \{A, B, C, I\}$. The two equations indicate that the incumbency effect (being a close winner instead of a close runner-up) on running is positive, but its sign is ambiguous for the case of winning, consistent with our empirical results.

4. Effect Magnitudes in Light of the Model

The different magnitudes of the runner-up effects in the contexts we study can be rationalized with the above model. First, the runner-up effect on winning is increasing in the probability a third-place candidate wins at $t + 1$ ($\Pr(r = 0)q_A(v', \{A, B, C, I\})$). This result follows from the assumption that the effects of coordination are increasing in a candidate's probability of winning: q_A would be the probability A wins when

³³ Note that this result does not follow from assuming that voters 1 and 2 dislike candidate C . For example, if voter 1 (or 2) was indifferent between A (or B) and C , the proposition and the predictions above still hold. The key assumption is that v_B is substantially larger than v_C , to an extent that voting for B dominates C since his expected probability of winning is much larger. This assumption is not at odds with our data: in races in which third- and fourth-place candidates are close, they obtain 5–7 percentage points of the votes (depending on context), while the runners-up obtain 21–27 percentage points of the votes.

³⁴ Note that, by assumption, v_I must be larger than v_A , since I won the past election, and we assume that being the incumbent leads to inherent differences in behavior (i.e., incumbents always run again).

voters 1 and 2 do not vote for her, and the effect of coordination (λ^2) is proportional to this.

This is consistent with the results in table 1. The ranking of contexts by third-place mean and estimated effects on winning at $t + 1$ is exactly the same. Second, equation (5) also indicates that it is increasing in $v_A = v_B$. Again, the ranking of our context by mean vote share of second and third (at time t) and the size of the runner-up effects line up. Close runners-up (third-places) obtain over 25 percent of the votes, on average, in Brazil, compared to approximately 22 percent in the Indian contexts and 20 percent in Canada. Third, equations (5) and (7) indicate a negative relationship between the runner-up and incumbency effects. While this association is not perfect across our contexts (India has the most negative incumbency effect), we find positive runner-up effects on winning only in the contexts in which there are negative incumbency effects (Brazil and India), but not in those with a positive incumbency effect (Canada).

In light of the model's primitives, the three comparative statics above (probability of third-place winning, vote share of close runners-up, low incumbency advantage) map into larger shares of type A and B voters compared to type I . Hence, our model suggests that Brazil has relatively higher runner-up effects because, on average, a large number of voters prefer the second- and third-place candidates over the winner (many type A and B voters). Canada, on the other hand, has relatively fewer type A and B voters and more of type I , and the Indian contexts can be seen as in between cases.

So far we have avoided rationalizing the effects in different contexts using λ (which can be seen as the relative number of voter types 1 and 2), given that it is not directly measurable in the data. However, variation in the number of voters that are not loyal, but strategic, may play a role in explaining the results. This is particularly interesting in the Canadian case. Compared to other contexts, Canadian parties have more clearly defined platforms, and it is more plausible that more voters are "loyal" to a party, which would translate to a small λ . Interestingly, λ approaching its minimum value (one) in our model leads to a zero runner-up effect on winning but does not affect the effect on running. The results for Canada are consistent with this in the sense that we find positive (zero) point estimates for running (winning). Of course, this discussion is by nature speculative, as we do not have any direct measures of λ , and we have only a stylized model of candidate entry decisions.

5. The Runner-Up Effect and Coordination Failures

An interesting component of the runner-up effect (eq. [7]) is $\lambda^2 q_A(v', \{A, I\})$, which equals the probability a candidate that tied for second (or third) place in the last election has of winning a two-candidate race against the incumbent. This suggests that our model can be used to identify the share of election winners who are not Condorcet winners. More precisely,

if $\lambda^2 q_A(\mathbf{v}', \{A, I\})$ equals not only the probability A wins a two-candidate race with the incumbent in the current, but also the past, election, it is also a lower bound on the share of elections with a winner who is not a Condorcet winner (among those in which the second- and third-place candidates tied).³⁵ In other words, if the past elections had been two-candidate races between the eventual winner and runner-up (or third place), eventual winners would lose a share $\lambda^2 q_A(\mathbf{v}', \{A, I\})$ of them, indicating how often coordination issues directly affect election results.

We can identify $\lambda^2 q_A(\mathbf{v}', \{A, I\})$ by rearranging equations (4) and (5):

$$\lambda^2 q_A(\mathbf{v}', \{A, I\}) = \frac{E(y_A^w | x \downarrow 0) - E(y_A^r | x \uparrow 0) \lambda^2 q_A(\mathbf{v}', \{A, B, C, I\})}{E(y_A^r | x \downarrow 0) - E(y_A^r | x \uparrow 0)}. \quad (8)$$

The right side of equation (8) includes only objects that are estimated and reported in table 1. The only exception is $\lambda^2 q_A(\mathbf{v}', \{A, B, C, I\})$, which we can estimate as $E(y_A^w | x \downarrow 0, y_A^r = y_B^r 1)$.³⁶ In the Brazilian case, we estimate $\lambda^2 q_A(\mathbf{v}', \{A, B, C, I\}) = 60.8$ percentage points (SE = 19.7). Hence, under the assumptions described above, in 60 percent of the races in which second- and third-places tie, the winner was not a Condorcet winner, as she would have lost a two-candidate race against the runner-up. The equivalent figure for Indian state elections is similar: 53.2 percentage points (SE = 15.4).

The large magnitude of these effects suggests that coordination failures that lead to victories by non-Condorcet winners are empirically relevant. This highlights that the large literature on strategic voting (discussed in the introduction) deals with a phenomenon with possibly large direct impacts on election results. For Indian federal elections, the estimate is 37.4 percentage points (SE = 30.7), which is a substantial point estimate, although imprecise. As expected, the estimate for Canada is smaller and insignificant: 14.5 percentage points (SE = 17.6).

6. Discussion of Assumptions and Further Empirical Implications

The first set of further predictions from our model is that the runner-up effect on winning is increasing in $v_A = v_B$ and λ (eq. [5]). Given that past

³⁵ A set of sufficient conditions for $\lambda^2 q_A(\mathbf{v}', \{A, I\})$ being equal in both the past and current elections is the expected change in the share of each voter type between the past and current elections being zero and every voter type casting a vote for its preferred candidate in the past election. The expression $\lambda^2 q_A(\mathbf{v}', \{A, I\})$ is a lower bound since it does not address the possibility that candidate C could beat the incumbent in a two-candidate race. Note also that $\lambda^2 q_A(\mathbf{v}', \{A, I\}) = \lambda^2 q_B(\mathbf{v}', \{B, I\})$ when \mathbf{v}' is such that $v_A = v_B$.

³⁶ This is the limit as of the probability of winning at $t + 1$ as the running variable approaches zero from the right, conditional on both the second- and third-place candidates running again. The estimated values for Brazil, India state, India federal, and Canada are, respectively, 39.8, 27.6, 29.8, and 9.0 percentage points.

vote shares are observable, approximating the first case is straightforward. Isolating variation in (unobservable) λ is more difficult. In principle, the periods in which voters' loyalty to parties is reduced and strategic incentives are heightened can be seen as "high- λ " cases.

Another approach to evaluate the model is to estimate whether the runner-up effects are larger in subsamples in which we expect that the model's assumptions are more likely to apply. There are four assumptions of the model that deserve further discussion, in the sense that we can identify subsamples of the data in which it is plausible that these assumptions hold.

First is the assumption that the voters with incentives to act strategically (1 and 2) prefer *A* and *B* over the incumbent. In reality, it is possible that multiple groups with different preference orderings are attempting to coordinate, possibly on the incumbent too. Ideally, with rich enough information on candidates' positions and voters' preferences, the empirical analysis could focus only on elections in which a large group of voters preferred last election's runner-up or third-place over the incumbent. While such information is not available, we can approximate this ideal by constructing indicators for cases in which the runner-up and third-place parties have similar platforms and test if the effect is larger in those cases.

Furthermore, this assumption restricts the possibility that strategic considerations drive incumbency effects. For example, in a variant of our model in which voters want to coordinate on either the runner-up or the incumbent, strategic considerations can increase the incumbent's advantage. While a detailed analysis of the many possible causes of the incumbency effects is beyond the scope of this paper, we provide a first step in exploring this possibility. Appendix A.7 tests if the effect is larger when the incumbent and runner-up have similar ideological platforms.

Second, the model assumes that incumbents always run for reelection. Of course, this cannot be literally true in the data.³⁷ However, the relevant issue is whether there is a candidate who, in the electorate's view, is similar to the incumbent and will inherit his supporters. For example, there are likely many elections in which an incumbent does not seek reelection but endorses a candidate who will maintain his policies. Again, it is difficult to empirically identify these cases. However, to test whether the model's predictions are more salient in cases that better fit its assumptions, Section IV.B leverages the presence of term limits in Brazilian elections to create a subsample in which reelection is not possible. Given the

³⁷ In elections in which the vote share difference between second and third place is less than 2 percentage points, incumbents run in the next election 59 percent, 61 percent, 56 percent, and 82 percent of the time in the Brazilian, Indian state, Indian federal, and Canadian samples, respectively.

discussion above, the test should be interpreted with caution but may shed light on the strategic consideration behind the model.³⁸

Third, the model is motivated by the existence of both Duvergerian and non-Duvergerian equilibria in strategic voting models. It is particularly interested in explaining how a constituency moves from the latter case (characterized by a tie between second- and third-place candidates) to the former case. The model does not address the process that generates non-Duvergerian equilibria in the first place. In relation to its empirical counterparts, it aims to explain why runners-up outperform close third-place candidates, and not why they are close to start with. While this is an interesting question in itself, it is beyond the scope of this paper. However, guided by this interpretation, Section IV.B provides evidence on the dynamics of vote shares. The evidence is consistent with non-Duvergerian equilibria becoming Duvergerian in the next period.

Fourth, the model assumes that voters perfectly recall candidates' past vote shares, and past vote shares are the only information voters use in choosing whom to vote for. In reality, additional signals of candidate quality may appear, although in our context it is unlikely that these should matter since, on average, they should affect close third- and second-place candidates similarly. And, even if individual voters forget past vote shares, they may still take cues from other individuals who do recall vote shares (e.g., prominent community or religious leaders). However, the discussion above does suggest the possibility that the runner-up effect becomes weaker as time between elections grows (and new information arises and memory fades).

We highlight that the above predictions do not, individually, test the role of strategic coordination against other explanations (e.g., heuristics). For example, a finding of effect sizes decreasing with time between elections is also consistent with a heuristic-based explanation in which agents forget the information they act on heuristically. Our objective is to show that the evidence is broadly consistent with multiple additional implications of the model and an argument based on strategic coordination more generally.

B. Testing Further Predictions of Strategic Coordination

Given the above discussion, this subsection provides evidence on the following predictions of the strategic coordination model: (i) within-election results suggest that supporters of the third-place candidate tend to switch

³⁸ We avoid comparing effects from cases in which the incumbent chose to run again and in which she chose not to, as the incumbent's selection into running is likely based on unobservable shocks to her (and the runner-up's) popularity. Moreover, the model provides little guidance on the incumbent's decision to run.

to the runner-up; (ii) the general election-level patterns in vote shares are consistent with non-Duvergerian equilibria at time t becoming more stable Duvergerian equilibria at time $t + 1$; (iii) the runner-up effect on winning is increasing in the vote share at which second- and third-place candidates tie; the runner-up effects are larger when (iv) the electoral period can be characterized as having larger λ , (v) the incumbent faces a binding term limit, (vi) the runner-up and third-place candidate have similar platforms, and (vii) a longer period has elapsed between t and $t + 1$ elections.

1. Strategic Switching from Third- to Second-Place Candidates

The most direct prediction of the strategic coordination mechanism is that the runner-up effect should be driven by voters who supported the third-place candidate at t switching toward voting for the runner-up at time $t + 1$. Ideally, we would use data on individual vote choices over time to measure this directly. However, data on individual votes are typically not available given ballot secrecy, so we approximate them using data from Brazilian subconstituency-level results.³⁹

Brazilian municipalities are divided into “electoral sections,” which are the specific ballot boxes in which a voter must cast her vote. Sections have between 50 and 500 voters (averaging 256 votes per election in our sample), with the average municipality having approximately 60 sections. Since a citizen can vote only in her registered section and voters are unlikely to change sections between elections, this allows us to track small groups of voters over time.⁴⁰ We are interested in the descriptive pattern of whether electoral sections that tended to vote for third-place at time t are more likely to be voting for the runner-up at time $t + 1$, relative to sections that tended to vote for other candidates. We estimate the following regression model to test this hypothesis:

$$v_{ij,t+1}^2 = \alpha_1 v_{ij,t}^1 + \alpha_2 v_{ij,t}^2 + \alpha_3 v_{ij,t}^3 + \gamma_{j,t} + \epsilon_{ij,t}, \quad (9)$$

³⁹ Similar (subconstituency) data are not available for the Indian cases.

⁴⁰ A voter can change her section only if she moves to an address sufficiently far from the original one (either within or outside the municipality). Moreover, the voter has to request the change of the voting section herself, so citizens who find it more convenient to continue to vote in their original section (as opposed to going through the reregistration process) will do so. There is no “redistricting” of electoral sections, and new sections are usually created to accommodate newly registered voters. There are no available data allowing us to identify voters in an electoral section across years and assess the magnitude of migration across sections. Turnout is mandatory in Brazil, reducing concerns that the sets of voters that turn out in a particular section differ from previous years. Corroborating the notion that electoral sections mostly involve the same group of voters across years, we find a strong correlation between the vote share of specific candidates in a section across years, even when controlling for municipality-year (election) fixed effects.

where $v_{ij,t}^k$ is the vote share of the k th-place candidate in electoral section i , in constituency (municipality) j , in the time t election. Note that the k th-place candidate is defined at the constituency level at time t .⁴¹ The variable $\gamma_{j,t}$ is a constituency-time (election) fixed effect: we focus on comparisons within a specific election across different sections. The variable $\gamma_{j,t}$ captures the effect of any factor that does not vary across sections within an election, such as which candidates from time t decided to run again, as well as the overall strength of particular candidates.

To interpret the coefficients, it is important to note that vote shares add to unity. Hence, $\alpha_3 > \alpha_1$ implies that sections that tended to vote for the third-place candidate, as opposed to voting for the first-place candidate, are more likely to be voting for the runner-up at time t . An increase in a section's vote share of the third-place of 1 percentage point (at the expense of a 1 percentage point decrease in the vote share of the first-place) is associated with an $\alpha_3 - \alpha_1$ percentage point higher vote share for the runner-up at time $t + 1$. Since the category omitted to avoid collinearity is the vote share of fourth and lower candidates, $\alpha_3 > 0$ indicates that sections that tended to vote for third-place at t (as opposed to voting for fourth and lower candidates) are more likely to vote for the runner-up at $t + 1$.

We estimate the equation above only for "close" elections, which are the focus of our analysis, restricting the sample to cases in which the vote share differences between second and third are below 2 percentage points (defined at the overall, constituency-wide result). The dependent variable in equation (9) is observable only when the runner-up runs at $t + 1$. Our estimation exploits only within constituency-time variation, and the decision to run cannot vary at this dimension. Hence, sample selection does not affect the estimation of our objects of interest. Our main sample is formed by 8,738 sections from 144 elections.⁴²

Equation (9) has an interpretation in light of the model. This interpretation requires the assumption that all loyal types voted for their preferred candidate and type 1 (2) voted for A (B) at time t . Let $n_{ij,t}^k$ denote the share of voter type $k \in \{A, B, I, 1, 2\}$ in section i of municipality j at time t . If A (B) was the runner-up (third-place) and both run at $t + 1$ (i.e., $r = 0$), equation (9) becomes⁴³

⁴¹ For example, $v_{ij,t+1}^2$ is the vote share at time $t + 1$ of the runner-up of the election that happened at time t (not $t + 1$) in municipality j (she may not be the second-most-voted candidate in electoral section i).

⁴² The number of elections is smaller than in the overall municipal-level data set not only because elections in which the runner-up did not run are not included but also because electoral section data are not available for all municipalities in all elections, particularly in the first year of data (1996).

⁴³ The model abstracts from the choices of loyal types when their preferred candidate does not run (by assuming they abstain). Equation (9) has a clear interpretation only under the model in which both A and B run.

$$\begin{aligned}
 n_{ij,t+1}^A + n_{ij,t+1}^1 + n_{ij,t+1}^2 &= \alpha_1 n_{ij,t}^1 + \alpha_2 (n_{ij,t}^A + n_{ij,t}^1) \\
 &+ \alpha_3 (n_{ij,t}^B + n_{ij,t}^2) + \gamma_{j,t} + \epsilon_{ij,t+1}.
 \end{aligned}
 \tag{10}$$

Now also assume $n_{ij,t+1}^k = \pi^k + \rho n_{ij,t}^k + \zeta_{ij,t+1}^k$, where $0 < \rho < 1$ and $\zeta_{ij,t+1}^k$ is an i.i.d. shock with zero mean.⁴⁴ This setup implies $\alpha_1 = 0$ and $\alpha_2 = \rho$.⁴⁵ Moreover, it also implies that α_3 is an attenuated estimate of ρ .⁴⁶ If the left-side variable of equation (9) is $v_{ij,t+1}^3$, the left-side variable for an equivalent equation (10) is only $n_{ij,t+1}^B$. In this case, the model implies $\alpha_1 = \alpha_2 = 0$ and $\alpha_3 = \rho$. This provides our sharpest test informed by the model: we expect a positive coefficient between voting for the third-place at t and the runner-up at $t + 1$, but no association from voting for the runner-up at t and for the third-place at $t + 1$.

Table 4 presents the results. Columns 1–5 present specifications in which the dependent variable is the runner-up vote share at time $t + 1$. As a robustness check, columns 2 and 3 reduce the sample to elections in which the vote share difference between second and third was less than 1 percent and 0.5 percent, respectively. Column 4 returns to column 1’s sample, dropping elections with exactly three candidates at time t , to check if the results are driven by elections in which voting for a fourth candidate was not an option. In column 5, we further restrict the sample to elections in which both the second- and third-place candidates chose to run again. This specification is useful because it allows us to test whether sections that voted for the third-place candidate are more likely to switch to the runner-up even in the case in which the third-place candidate is in the race. It is also the case that can be interpreted in light of the model.

Columns 1–5 show similar results: conditional on the vote share the runner-up received at time t , switching a 1 percentage point vote share

⁴⁴ Note that we defined the process for all group types except C , so $n_{ij,t}^C$ equals one minus the other voter type shares. This assumption also implies that there is no correlation between type shares across sections (e.g., no correlation between $n_{ij,t}^C$ and $n_{ij,t}^B$). While this may not hold in the data, note that the regressions always control for the vote shares of other ranked candidates, as well as a dummy for each municipality-year, so all coefficients “partial out” the effect of other vote shares. Moreover, by keeping the vote share of C as this residual category, we maintain the interpretation of α_k as increases in the vote share of the k th-ranked candidate at the expense of the vote share of the fourth-place candidate.

⁴⁵ For $\alpha_2 = \rho$, note that

$$n_{ij,t+1}^A + n_{ij,t+1}^1 = \pi^A + \pi^1 + \rho(n_{ij,t}^A + n_{ij,t}^1) + \zeta_{ij,t+1}^A + \zeta_{ij,t+1}^1.$$

Note that $n_{ij,t+1}^2$ also appearing in the left side of eq. (10) does not affect the estimate since it is uncorrelated with $n_{ij,t}^A + n_{ij,t}^1$.

⁴⁶ This occurs since $v_{ij,t}^3 = n_{ij,t}^B + n_{ij,t}^2$ can be interpreted as an observation of $n_{ij,t}^2$ with measurement error $n_{ij,t}^B$; and since these two group type shares are not correlated, this measurement error is of the “classical” type that introduces attenuation bias proportional to the variance of $n_{ij,t}^B$.

TABLE 4
ELECTORAL SECTION REGRESSIONS: BRAZIL

	(1)	(2)	(3)	(4)	(5)	THIRD-PLACE VOTE SHARE, $t + 1$ (6)
First-place vote share, t (α_1)	-.016 (.038)	.188*** (.052)	.217 (.154)	-.011 (.038)	.291* (.153)	.143 (.108)
Second-place vote share, t (α_2)	.509*** (.038)	.650*** (.056)	.542*** (.163)	.495*** (.040)	.379** (.153)	-.039 (.112)
Third-place vote share, t (α_3)	.142*** (.039)	.338*** (.055)	.346** (.163)	.150*** (.040)	.441*** (.148)	.468*** (.114)
$\alpha_3 - \alpha_1$.158*** (.024)	.150*** (.034)	.129** (.056)	.161*** (.029)	.150* (.090)	.324*** (.059)
Dependent variable mean	34.6	33.6	35.2	32.4	28.5	20.8
Bandwidth (percentage points)	2	1	.5	2	2	2
Municipality-time effects	Yes	Yes	Yes	Yes	Yes	Yes
Excludes three-candidate elections				Yes	Yes	Yes
Second and third both run, $t + 1$				Yes	Yes	Yes
Number of elections	144	65	29	83	19	19
Observations (sections)	8,738	4,113	1,785	5,958	1,177	1,177

NOTE.—Standard errors clustered at the electoral section level are in parentheses. The unit of observation is an electoral section-year. Each column provides the estimate from a separate regression, with the dependent variable in the header and explanatory variables in rows. A bandwidth of x indicates that only elections with a vote share difference between second and third places smaller than x is included in the sample. All specifications include municipality-time fixed effects.

* Statistically significant at the 10 percent level.

** Statistically significant at the 5 percent level.

*** Statistically significant at the 1 percent level.

from first to third is correlated with approximately a 0.15 percentage point increase in the runner-up's $t + 1$ vote share. The difference $\alpha_3 - \alpha_1$ is significant at the 5 percent level in columns 1–4 and at the 10 percent level in column 5, where the sample is smaller. The coefficient α_3 is large and significant, indicating that sections in which the third-place candidate received a large vote share at time t are more likely to vote for the runner-up at time t , relative to electoral sections that voted for candidates who came in fourth or below. We also consistently find a large and positive coefficient α_2 , indicating the expected serial correlation.

Column 6 repeats the analysis from column 5; however, the dependent variable is now the vote share of the third-place candidate. Interestingly, α_2 is close to zero. There is no correlation between voting for the runner-up at time t and for third-place at time $t + 1$. On its own, this result suggests that our finding in column 5 is not due to second- and third-place candidates simply being more substitutable, as in that case substantial switching from second to third would also be expected (especially given that second- and third-place candidates are similar in their characteristics and time t electoral performance).

The small and insignificant α_2 in column 6 also confirms the main prediction from the model, especially when compared to the large α_3 in column 5.⁴⁷ Further theoretical predictions are also matched. The estimated α_2 in column 5 and α_3 in column 6, which are estimates of ρ , have a similar magnitude.⁴⁸ Interestingly, α_3 in column 1 has a magnitude similar to that of α_2 , although the former is an attenuated estimate of ρ , of which α_2 is an unbiased estimate.⁴⁹ This suggests that the attenuation bias (i.e., relative variance of $n_{ij,t}^B$) is not sizable. Taken together, all three separate estimates of ρ are remarkably consistent in their magnitude, suggesting a value in the 0.38–0.47 range. Note also that the other prediction of the model ($\alpha_1 = 0$) cannot be rejected at the 5 percent level, although in column 5 the estimate is statistically significant at the 10 percent level.

Finally, the findings in table 4 are difficult to reconcile with a mechanism entirely based on agents acting heuristically and without strategic coordination. Such a mechanism would have to disproportionately affect the supporters of third-place candidates. For example, suppose that parties use a heuristic in which they choose candidates on the basis of rankings instead of underlying vote share and also provide more campaign inputs to higher-ranked candidates. For this to explain the results in table 4, it would also have to be the case that, at $t + 1$, candidates use these additional inputs to specifically target those who voted for third-place at t .

⁴⁷ The t -statistic of the equality between the two coefficients is 3.86 (p -value below .001).

⁴⁸ The t -statistic of the equality between the two coefficients is 0.67 (p -value = .503).

⁴⁹ It is not possible to reject the equality between the two coefficients, with a t -statistic of 0.61 (p -value = .544).

While it might be plausible that parties would prefer not to target those who voted for time t 's winner, the results ($\alpha_3 > 0$) would also imply that they are more likely to target supporters of the third- than the fourth- (and lower-) place candidates and would behave similarly when the third-place candidate runs again.

2. Duvergerian and Non-Duvergerian Equilibria

As discussed in Section IV.A, theories of strategic voting under simple plurality (Myerson and Weber 1993; Cox 1997; Myerson 2002) suggest two possible types of equilibria: the Duvergerian type, in which two candidates attract most of the votes, and the non-Duvergerian type, in which coordination fails and there is a tie between second- and third-place candidates. Our model suggests that the runner-up effect can be seen as part of the process in which constituencies move from the latter equilibria to the former. Moreover, since the non-Duvergerian equilibria are “knife-edge” or “expectationally unstable” (Palfrey 1988; Fey 1997), it is expected that this process occurs within the time span of one election.

There are two aspects of our data that further match this interpretation. First, figure A.1 shows that the distribution of the running variable (the vote share difference between second- and third-place candidates) in India and Brazil has two modes: one in which the candidates tie and one in which the second-place has a large margin over the third. This implies that the modal cases match the description of both types of equilibria.⁵⁰

Second, this interpretation suggests that elections in which the third- and second-place candidates are close are followed by elections in which the second-place receives substantially more votes than the third and also in which the top two candidates increase their vote share relative to time t . In other words, finding that constituencies repeatedly have elections in which the second- and third-place candidates are close would be difficult to reconcile with the idea that constituencies are moving between two types of equilibria.

Figure 4a explores this issue in the Brazilian context. The x -axis is the vote share difference between the second- and third-place candidates in an election at time t (i.e., the RDD running variable). The y -axis units are vote shares, and the solid circles plot the 45-degree line for reference. We first focus on the fraction of votes the second- and third-place candidates receive in the election at $t + 1$ (diamonds). Comparing it to the 45-degree line indicates that constituencies that had close races at t become, on average, much further apart at $t + 1$. In particular, elections in which

⁵⁰ Cox (1997) names this pattern the “bimodality hypothesis” and documents it in other contexts. He also interprets this finding as evidence of strategic coordination.

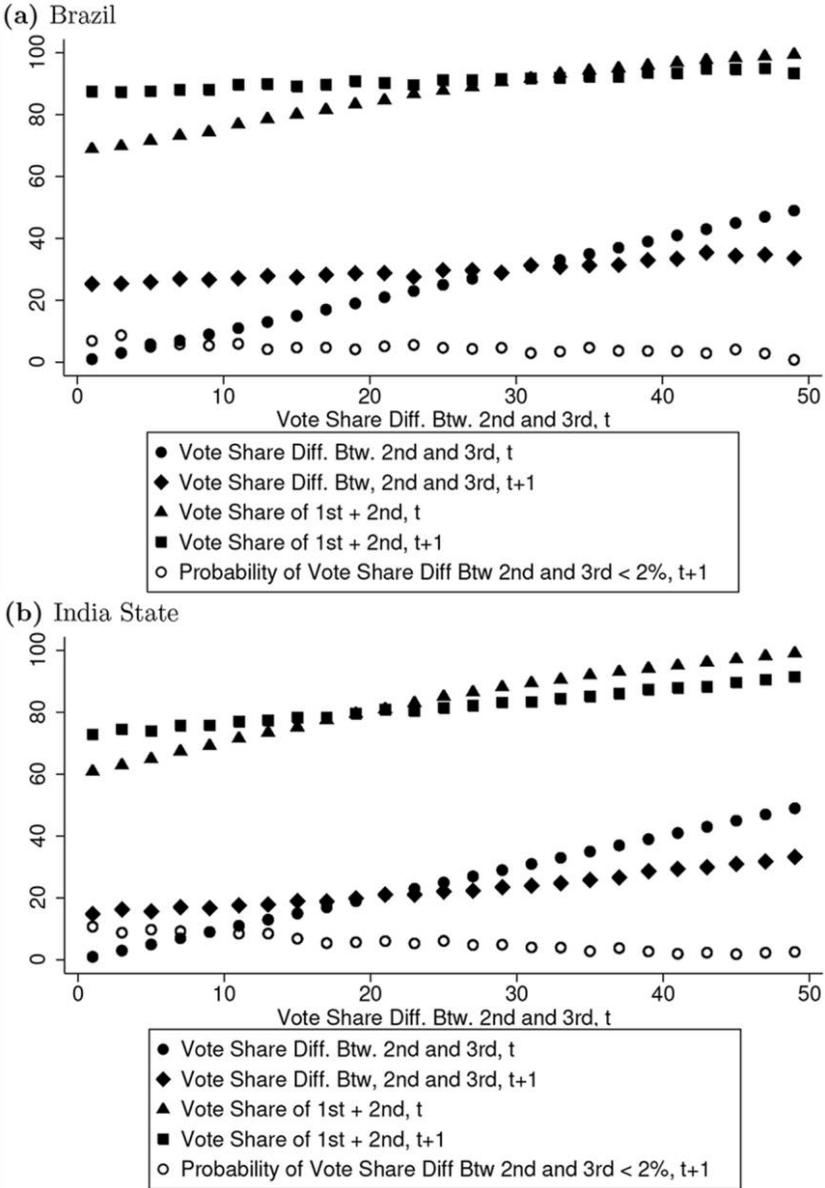
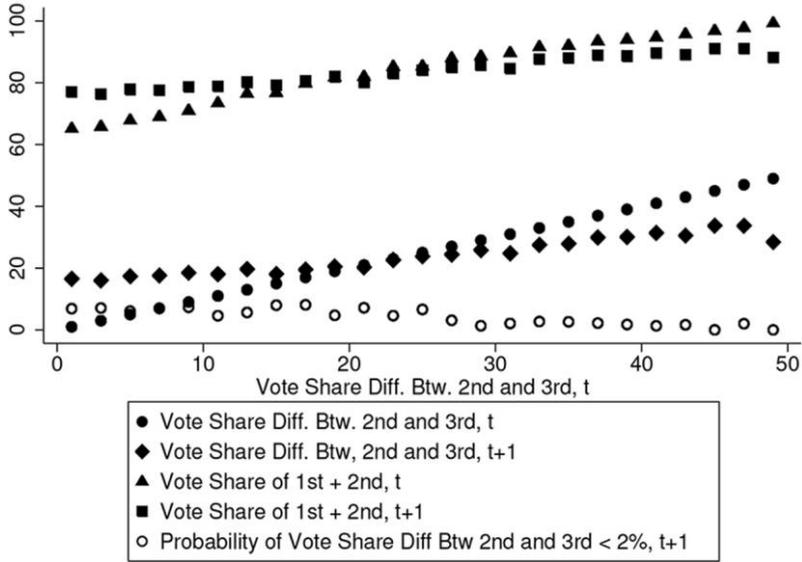


FIG. 4.—Vote share dynamics by vote share difference between runner-up and third-place. Solid circles (diamonds) represent the local averages of a constituency's vote share difference between the second- and third-place candidates in the current (t) and next ($t + 1$) elections. Triangles (squares) represent the local averages of the sum of the vote share of a constituency's top two candidates in the current and next elections. Empty circles represent the local averages of an indicator of whether the next election will have a vote share difference between second- and third-place candidates below 2 percentage points. Averages are calculated within 2 percentage point-wide bins of vote share difference (x -axis). The sample includes all elections with three or more candidates at election t .

(c) India Federal



(d) Canada

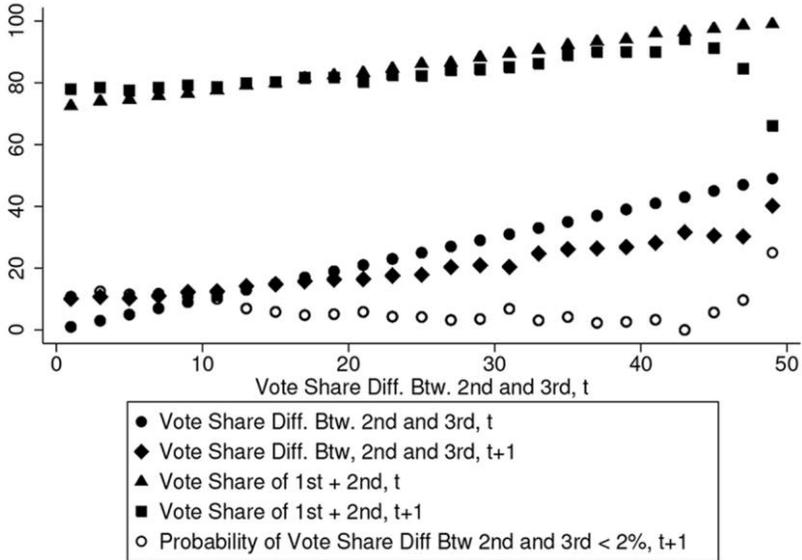


FIG. 4 (Continued)

the vote share difference was below 2 percent at t have a mean difference of 25 percentage points at $t + 1$.

These figures can also be used to understand longer-run dynamics (i.e., effects on elections at time $t + 2$, $t + 3$, etc.). For example, to estimate the average vote share difference in the second election after a very close second- versus third-place election, one can take the estimate of the average vote share difference in the $t + 1$ election (approximately 25 percentage points) and then plug that value in at the x -axis to read off the prediction for the average vote share difference (from the diamond curve) in the time $t + 2$ election (approximately 27 percentage points in this case). Following this logic, the stable point is where the diamond and 45-degree lines intersect. It is interesting to note that the time $t + 1$ vote share of 25 percentage points is fairly close to the stable vote share difference of 29 percentage points. Within one period, the average election in which third and second are close covers 93 percent of the gap between it and the stable point.⁵¹

The triangles and squares denote the vote share of the top two candidates at t and $t + 1$, respectively. They also provide a pattern consistent with the interpretation of non-Duvergerian equilibria becoming Duvergerian. A race in which second- and third-place are close has, on average, the top two candidates obtaining 69 percent of the votes at t . By time $t + 1$ this has become 88 percent. This is also close to the stable point of approximately a 90 percent vote share for the top two candidates.

So far we have focused on transitions out of non-Duvergerian equilibria. The empty circles provide some insight into transitions into cases in which the second and third are close. It shows the probability that the next race will have a vote share difference between runner-up and third-place below 2 percent. This probability hovers between 4 percent and 10 percent. While there is a negative correlation between the running variable and this probability, it is not very pronounced.⁵² This is consistent with non-Duvergerian equilibria quickly transitioning into “more stable” Duvergerian equilibria and this more “stable” state having a small probability of switching to non-Duvergerian equilibria in the next election.

⁵¹ Note that the plotted $t + 1$ vote share of the second and third candidates in fig. 4*a* is the vote share of the candidates that placed second and third at $t + 1$ (regardless of whether they ran in the previous election). Note also that perfect persistence (vote share differences at t and $t + 1$ are the same for all constituencies) would lead to the diamonds perfectly overlapping the solid circles.

⁵² A very close race has a 7 percent probability of continuing to be close; a race in the “stable” 25–30 percent running variable range has a 5 percent chance of becoming close the next period.

Figures 4*b* and 4*c* repeat the analysis for the Indian (state and federal) samples. The exact magnitudes differ, but the overall patterns and qualitative conclusions are similar.⁵³

One important issue in interpreting these results is that it is difficult to separate strategic coordination effects from mean reversion because of shocks in vote shares without detailed knowledge of their statistical processes. Two features of figure 4 are difficult to reconcile with simple mean reversion. First, the magnitude of the top two vote share increase from t to $t + 1$ for elections in which second- and third-place were close is generally larger than the magnitude of the decrease in the top two vote share when the runner-up beats third by a large amount.⁵⁴ Unless the persistence of vote share shocks varies in specific patterns given its previous value, mean reversion should create a more symmetric pattern. Extreme (large or small) values should regress to the mean at similar speeds.

Second, the Canadian case suggests more persistence in vote shares. When second- and third-place are close, the expected top two vote share is just below 80 percent at both t and $t + 1$. This implies that in the context with no evidence suggesting a runner-up effect on winning, the cases in which the second- and third-place are close do not fit the description of non-Duvergerian transitioning into Duvergerian equilibria. On the other hand, if mean reversion was the only driving force behind these patterns, it is not clear why the Canadian context should be an exception.

3. Effect Heterogeneity by Strength of Second- and Third-Place Candidates

A further prediction of the model is that the runner-up effect should be stronger in cases in which the second- and third-place candidates together received a larger number of votes. Table 5 presents estimates of the runner-up effect separately for elections in which the second- and third-place candidates jointly received more votes than the winner and elections in which second- and third-place jointly received fewer votes than the winner. We fo-

⁵³ In the state (federal) case, constituencies in which second- and third-place candidates are close at time t move from a top two vote share of 61 percent (65 percent) to 72 percent (76 percent). The chance of a close (<2 percent) $t + 1$ election is 10.7 percent (6.9 percent) for close elections at t and approximately 6 percent (7 percent) for one with a 20 percentage point running variable.

⁵⁴ This pattern is strongest for Brazil but also statistically significant and economically meaningful for the Indian state and federal elections. Appendix A.4 presents formal significance tests of these differences.

TABLE 5
THE RUNNER-UP EFFECT BY STRENGTH OF SECOND- AND THIRD-PLACE CANDIDATES

	$v_2 + v_3 > v_1$		$v_2 + v_3 < v_1$	
	Candidacy, $t + 1$	Winner, $t + 1$	Candidacy, $t + 1$	Winner, $t + 1$
A. Brazil				
Runner-up effect	10.76*** (3.026)	9.333*** (2.243)	3.468 (4.669)	3.591 (2.501)
Close third-place mean	32.79	10.92	20.62	3.796
p -value relative to $v_2 + v_3 > v_1$.186	.092
Imbens-Kalyanaraman bandwidth (%)	11.56 4,174	12.57 4,436	11.56 1,382	12.57 1,510
Observations				
B. India State				
Runner-up effect	4.732*** (1.412)	3.828*** (1.072)	3.417* (1.826)	1.945* (1.088)
Close third-place mean	35.89	9.487	22.93	3.847
p -value relative to $v_2 + v_3 > v_1$.566	.217
Imbens-Kalyanaraman bandwidth (%)	9.14 14,776	7.81 13,120	9.14 7,740	7.81 6,746
Observations				
C. Brazil and India Pooled				
Runner-up effect	5.088*** (1.365)	4.154*** (1.014)	4.272** (1.818)	2.298** (1.038)
Close third-place mean	35.58	10.15	22.52	3.822
p -value relative to $v_2 + v_3 > v_1$.718	.201
Imbens-Kalyanaraman bandwidth (%)	8.36 16,956	7.69 15,876	8.36 8,122	7.69 7,496
Observations				

NOTE.—Standard errors clustered at the constituency level are in parentheses. Outcomes are measured as percentages. Estimates are based on local linear regression estimates. See table 1 notes and main text for further description. The expression $v_2 + v_3 > v_1$ ($v_2 + v_3 < v_1$) indicates the subsample in which second- and third-place candidates obtain more (fewer) votes than the winner.

* Statistically significant at the 10 percent level.

** Statistically significant at the 5 percent level.

*** Statistically significant at the 1 percent level.

cus this heterogeneity test on the Brazilian and Indian state samples as these offer the most for detecting differences in subsamples.⁵⁵

In the Brazilian sample, the runner-up effect on running again is 10.8 percentage points when the combined vote share of second- and third-place is greater than the winner's vote share, but only 3.5 percentage points when

⁵⁵ This definition thus leverages the notion of a "divided majority" and has a clear intuition. For example, if the election winner received 40 percent of the votes and second- and third-place each obtained 25 percent, the effects of coordination are likely larger than if they both obtained 10 percent of the votes, since only in the former scenario could the combined second- and third-place vote share be plausibly larger than the winner's.

it is not. The analogous effects for winning the next election are 9.3 percentage points and 3.6 percentage points. These large differences are consistent with the model's prediction. In the Indian case we again find a similar pattern, also with sizable differences (the effect on winning is almost twice as large).⁵⁶

In both contexts we find no significant differences between subsamples (except in the case for winning in Brazil, where the p -value is .092), nor do we find significant differences when we pool the Brazilian and Indian samples together. It should be noted that differences in winning are more pronounced than for candidacy. This matches a prediction of the model: only the effect on winning, but not running, should increase with the runner-up vote share. However, given that this distinction is partly an artifact of the stylized candidate entry decisions of the model, we do not interpret it as a particularly sharp prediction to be tested.

Note that the "close third-place mean" outcomes are larger when the third-place candidate obtained larger vote shares. This is a borderline mechanical issue, as stronger candidates at t should be more likely to run and win at $t + 1$. Hence, we caveat that any explanation for the runner-up effect that suggests that it is proportional to close third-place means would also lead to this pattern. Nevertheless, a larger runner-up effect (on winning) when the runner-up (third-place) vote share is larger is a further prediction of the model that merits being tested.

4. Comparative Statics in λ : The Indian State of Emergency

Another prediction of the model is that higher λ should lead to higher runner-up effects on winning. The difficulty of testing this prediction is that λ is not observable. However, it captures in the model a larger proportion of type 1 and 2 voters (who have incentives to act strategically), compared to the "loyal" types. We claim that the elections after the Indian "emergency" period can be seen as a period of high λ , allowing us to test this prediction.

The Congress Party dominated Indian politics from 1951 until 1975. In 1975–77, Congress Prime Minister Indira Gandhi imposed a 21-month period of emergency in which elections were postponed, the prime minister made laws by decree, media were repressed, and civil liberties were curbed. The stated purpose of the emergency was to improve economic performance by directly controlling the economy, reducing political protests and strikes, and forcing population control programs. When elec-

⁵⁶ To facilitate comparisons between results based on different subsamples, and also on the full sample, we use the optimal (Imbens-Kalyanaraman) bandwidth estimated at the full sample (i.e., the same from col. 3 of table 1) in all cases.

tions returned, Congress lost substantial support to the opposition and new parties. For our purposes, the emergency can be seen as a period in which partisan loyalty was reduced, and many voters were strategically searching for challengers to coordinate on. In terms of the model, this translates to a smaller share of loyal types and a larger share of type 1 and 2 voters, or high λ .

Table 6 presents estimates of runner-up effects in Indian state legislature elections separately for time periods around the emergency.⁵⁷ The runner-up effect on winning is 5.3 percentage points in the elections directly after the emergency, which is larger than any other point estimate reported in the table. However, the difference between the post-emergency effect and other periods is not statistically significant. The post-emergency runner-up effect is more than four times larger than the effect in the preceding decade (1964–75), but the p -value of the difference is only .165. We do not find any evidence to suggest that the runner-up effect on running again was larger in the elections after the emergency. This is consistent with the model (larger λ does not increase the effect on running, only on winning).

5. Effect Heterogeneity by Term Limits

Section IV.A also discusses that the elections that better match the model setup are those with incumbents running for reelection. While in the model incumbents (or a candidate who inherits the incumbent's supporters) always run, in reality, standing for reelection is an endogenous choice. To avoid the confounding effects from this selection issue, we focus in this section on Brazilian incumbents who cannot run given that only two consecutive terms are allowed. The prediction is that the runner-up effect is smaller when term limits bind.⁵⁸

As previously discussed, this test should be interpreted with caution. How the runner-up effect interacts with a term limit depends on how the term limit affects candidate entry. Consider two extreme cases. A new candidate enters and voters perceive her as perfectly substitutable with the incumbent. In this case (which matches the model), we would expect the same positive runner-up by term limit status. At the other extreme, it is possible that no candidate replaces the incumbent. In this

⁵⁷ The runner-up effects after the emergency measure the benefit of being labeled second in the first post-emergency elections for outcomes in the next election (the second election after the emergency).

⁵⁸ Brazilian mayors faced a one-term limit (no reelection) until a 1997 constitutional amendment allowed one reelection. Hence all mayors elected in 1996 could seek reelection in 2000, and we can determine term limit status for the other years in the sample. These are consecutive (not lifetime) limits. There are no term limits in the other contexts we study.

TABLE 6
THE RUNNER-UP EFFECT BY PERIOD: INDIAN STATE ELECTIONS

	Elections after Emergency State				
	1951-63	1964-75	1977-78	1979-91	1992-2012
Candidacy, $t + 1$	3.300 (3.083)	3.372 (2.384)	2.406 (3.396)	4.231* (2.184)	6.079*** (2.171)
Close third-place mean	16.68	26.76	24.41	33.74	40.09
p -value vs. other years			.543		
p -value vs. 1964-75			.817		
Imbens-Kalyanaraman bandwidth	9.14	9.14	9.14	9.14	9.14
Observations	2,286	4,596	2,248	6,202	7,186
Winner, $t + 1$	4.318** (1.862)	1.191 (1.724)	5.245** (2.377)	3.512** (1.539)	3.661** (1.637)
Close third-place mean	2.928	7.995	3.981	7.951	9.990
p -value vs. other years			.407		
p -value vs. 1964-75			.165		
Imbens-Kalyanaraman bandwidth	7.81	7.81	7.81	7.81	7.81
Observations	2,010	4,064	1,956	5,488	6,350

NOTE.—Standard errors clustered at the constituency level are in parentheses. Outcomes are measured as percentages. Estimates are based on local linear regression estimates. See table 1 notes and main text for further description.

- * Statistically significant at the 10 percent level.
- ** Statistically significant at the 5 percent level.
- *** Statistically significant at the 1 percent level.

case the incentives to strategically coordinate are absent, and we expect no runner-up effect when term limits bind. This latter situation seems less plausible as new candidates should have incentives to enter and cater to the incumbent’s supporters.

Table 7 presents the results. We find that the effects on candidacy and winning when the incumbent is term limited out of the $t + 1$ election are 5.0 and 7.6 percentage points, respectively. The corresponding effects are 10.3 and 8.5 percentage points when the incumbent is not term limited out. The relative sizes of these point estimates are consistent with our prediction. The differences between subsamples, however, are not statistically significant.

6. Heterogeneity by “Platform Distance”

As discussed in Section IV.A, the elections that perfectly match the model setup are those in which strategic voters prefer the runner-up and third-place over the incumbent and stand to gain from coordination. However, in reality, it is impossible to identify those cases, given the paucity of data on politicians’ and voters’ preferences. However, as an approximation, it

TABLE 7
THE RUNNER-UP EFFECT BY TERM LIMIT HETEROGENEITY: BRAZIL

	TERM LIMIT = YES		TERM LIMIT = NO	
	Candidacy, $t + 1$	Winner, $t + 1$	Candidacy, $t + 1$	Winner, $t + 1$
Runner-up effect	5.026 (6.523)	7.569 (5.272)	10.27*** (2.851)	8.542*** (1.887)
Close third-place mean	30.95	14.06	30.18	8.609
p -value relative to term limit = yes			.464	.861
Imbens-Kalyanaraman bandwidth (%)	11.56	12.57	11.56	12.57
Observations	958	1,042	4,598	4,904

NOTE.—Standard errors clustered at the constituency level are in parentheses. Outcomes are measured as percentages. Estimates are based on local linear regression estimates. See table 1 notes and main text for further description. Term Limit = Yes indicates the subsample in which the first-place candidate in the time t election is ineligible for the next election. Term Limit = No indicates the subsample in which the first-place candidate is eligible for the next election.

*** Statistically significant at the 1 percent level.

is possible to test whether the effects differ in cases in which the second- and third-place candidates are from parties with closer platforms. Hence, we classified the parties in the Brazilian and Indian state elections into three different groups each using multiple sources described in appendix A.10.⁵⁹

This allows us to split each sample into two cases: one with the elections in which the second- and third-place parties are from the same group and another in which they are from distinct groups; we estimate runner-up effects in each of these subsamples. Since we can classify only parties and not candidates, we report results with dummies for whether or not the party ran in, and won, the $t + 1$ election as outcomes.⁶⁰

Table 8, panel A, presents our results for the Brazilian case. The runner-up effect on both outcomes is approximately 7 percentage points when both parties are in the same category but only 4 percentage points when

⁵⁹ In Brazil, the first category includes the Worker's Party as well as other parties with left-wing (communist/socialist) orientation. The second includes the centrist parties such as the PMDB and the Social Democrats. The last group includes the right-wing parties with connections to the (extinct) ARENA party supported by the military regime. In the Indian case, the first group includes parties with communist/socialist orientation; the second group includes the Congress Party, its offshoots, and associates; and the last group includes the Bharatiya Janata Party, its offshoots and associates, as well as other Hindu-nationalist parties.

⁶⁰ Hence, the results are comparable to the party-level results described in app. A.2. Using party outcomes also accommodates the impossibility of classifying independents and the need to drop them from estimations. As before, to facilitate comparisons between results based on different subsamples and also on the full sample, we use the optimal (Imbens-Kalyanaraman) bandwidth estimated at the full sample (i.e., from col. 1 of table A.3) in all cases.

TABLE 8
THE RUNNER-UP EFFECT BY PARTY PLATFORM DISTANCE

	$I^{2nd} = I^{3rd}$		$I^{2nd} \neq I^{3rd}$	
	Candidacy, $t + 1$	Winner, $t + 1$	Candidacy, $t + 1$	Winner, $t + 1$
A. Brazil (Party Outcomes)				
Runner-up effect	7.441* (4.027)	7.531** (3.147)	3.952 (2.980)	4.157* (2.262)
Close third-place mean	37.95	10.88	37.74	12.26
p -value relative to $I^{2nd} = I^{3rd}$.486	.387
Imbens-Kalyanaraman bandwidth (%)	13.75	13.24	13.75	13.24
Observations	2,132	2,056	4,242	4,112
B. India State (Party Outcomes)				
Runner-up effect	6.895*** (2.008)	4.616** (1.912)	1.198 (1.771)	2.509 (1.799)
Close third-place mean	54.23	11.87	64.25	15.98
p -value relative to $I^{2nd} = I^{3rd}$.0332	.422
Imbens-Kalyanaraman bandwidth (%)	11.92	9.19	11.92	9.19
Observations	7,054	5,766	8,914	7,344
C. Brazil and India State Pooled				
Runner-up effect	7.213*** (1.787)	5.964*** (1.599)	1.682 (1.525)	3.842*** (1.420)
Close third-place mean	51.25	11.53	57.40	14.93
p -value relative to $I^{2nd} = I^{3rd}$.0182	.320
Imbens-Kalyanaraman bandwidth (%)	12.52	10.41	12.52	10.41
Observations	9,252	8,028	13,212	11,406

NOTE.—Standard errors clustered at the constituency level are in parentheses. Outcomes are measured as percentages. Estimates are based on local linear regression estimates. See table 1 notes and main text for further description. The expression $I^{2nd} = I^{3rd}$ ($I^{2nd} \neq I^{3rd}$) indicates the subsample in which second- and third-place candidates are in the same (separate) party platform category.

- * Statistically significant at the 10 percent level.
- ** Statistically significant at the 5 percent level.
- *** Statistically significant at the 1 percent level.

the parties are from distinct groups.⁶¹ However, we cannot reject that these effects are the same.⁶² In the Indian case, the runner-up effect on running

⁶¹ It should be noted that, given the frequency of party switching by Brazilian candidates across elections, the effects using party outcomes are smaller than those using candidate outcomes (app. A.2). Using candidate outcomes in the estimation yields a runner-up effect on running (winning) of 14.7 percentage points (13 percentage points) when both parties are in the same category, but only 6.7 percentage points (6 percentage points) when the parties are from distinct groups.

⁶² In table A.9 we conduct the same analysis but define Brazilian parties as “close” ideologically if the parties were in the same gubernatorial coalition in the most recent governor’s election. We find that the runner-up effects on running and winning are larger when they are in the same coalition, but we cannot reject that they are statistically different from the case in which the parties are not in the same coalition.

at $t + 1$ is 6.9 percentage points when parties are in the same group but only 1.2 percentage points when they are in different groups. For winning, the respective effects are 4.6 percentage points and 2.5 percentage points. Only in the case of winning are the differences in effects statistically significant. Pooling the Brazilian and Indian data maintains this conclusion.

7. Heterogeneity by Time between Elections

As discussed in Section IV.A, another test suggested by the model is that the runner-up effect is larger when the time between elections is shorter. Table 9 reports on such tests using data from Indian state elections.⁶³ The estimated runner-up effects on candidacy and winning are 6.6 and 4.5 percentage points, respectively, when the next election occurred in less than 5 years. We find lower effects for the sample in which the election occurred in 5 or more years (3.1 percentage points and 2.7 percentage points). The differences across the samples are close to significant at the 10 percent level for candidacy; however, we cannot reject that the runner-up effects on winning are statistically different from each other. Hence, while imprecisely estimated, the differences in point estimates are consistent with the prediction. As discussed in Section IV.A, effect sizes decreasing with time between elections is also consistent with a heuristic-based explanation. Even though the test cannot parse between multiple explanations, it is of interest since it could have provided evidence against the model (which it does not). It also is, more broadly, consistent with the effect of a measure of candidate performance (rank) being weaker as more time lapses since that performance.

V. Mechanisms II: Heuristics

A. *Media*

1. Newspaper Mentions

A possible explanation for the results is runners-up receiving greater media attention after the election, and this translates into a higher probability of winning future elections. This is plausible as the media may choose to report on election results by mentioning only the top two candidates and also in light of the existing evidence that media can affect electoral outcomes.⁶⁴ Observing media coverage of losing candidates also gives us

⁶³ We focus on Indian state elections as it is the case with a large enough sample that has variation in time between elections (Brazilian races occur exactly every 4 years).

⁶⁴ See Strömberg (2004), Gentzkow (2006), Prior (2006), DellaVigna and Kaplan (2007), Gerber, Karlan, and Bergan (2009), Enikolopov, Petrova, and Zhuravskaya (2011), and Gentzkow, Shapiro, and Sinkinson (2011).

TABLE 9
THE RUNNER-UP EFFECT BY TIME BETWEEN ELECTIONS: INDIAN STATE ELECTIONS

	<5-YEAR GAP		≥5-YEAR GAP	
	Candidacy, <i>t</i> + 1	Winner, <i>t</i> + 1	Candidacy, <i>t</i> + 1	Winner, <i>t</i> + 1
Runner-up effect	6.627*** (1.847)	4.490*** (1.448)	3.125** (1.400)	2.691*** (.996)
Close third-place mean	31.42	8.144	32.19	7.574
<i>p</i> -value relative to <5 years			.126	.312
Imbens-Kalyanaraman bandwidth (%)	9.14	7.81	9.14	7.81
Observations	8,132	7,212	14,386	12,656

NOTE.—Standard errors clustered at the constituency level are in parentheses. Outcomes are measured as percentages. Estimates are based on local linear regression estimates. See table 1 notes and main text for further description. The heading <5-Year Gap (≥5-Year Gap) indicates the subsample in which the number of years between *t* and *t* + 1 elections is less than (greater than or equal to) 5 years.

- * Statistically significant at the 10 percent level.
- ** Statistically significant at the 5 percent level.
- *** Statistically significant at the 1 percent level.

an indirect measure of whether they secure other high-profile positions in government or the private sector that lead to more media coverage.⁶⁵

We focus on the Canadian context, as this is the only case in which it is feasible to electronically search for the mention of candidate names in a large set of local newspapers. Note that the runner-up effects in this context are small relative to our Brazilian and Indian contexts. Hence, these tests are better interpreted as an exploration of whether newspapers, in general, tend to provide differential coverage for close runners-up instead of third-place candidates. While these results cannot rule out the possibility that newspaper coverage drives the runner-up effects in other contexts, it suggests that the coverage of close runner-up and third-place candidates is not strongly different in a multiparty system in which both get substantial vote shares, as in Canada.

We begin with the set of elections after 1979, where the second- and third-place candidates finished within 1 percentage point of each other.⁶⁶ We focus on close (less than a 1 percentage point margin) elections between second- and third-place candidates as this is the sample on which our identification of runner-up effects is based. For each candidate we

⁶⁵ Previous work has found mixed evidence on the impact of media on the size of the incumbency effect. Prior (2006) and Snyder and Strömberg (2010) find a positive but modest relationship between television presence and the incumbency effect, but Ansolabehere, Snowberg, and Snyder (2006) find no effect. Gentzkow et al. (2011) find no relationship between newspaper entry and exit on incumbency effects.

⁶⁶ Lexis-Nexis, our newspaper database, provides coverage of Canadian newspapers only after 1979.

searched Lexis-Nexis for any newspaper article that included his first name, his last name, and the name of his constituency over the period 3 months prior to the election in which the candidate placed second or third through to 3 months after the next election in the same constituency.

Figure 5*a* plots the mean number of articles for second- and third-place candidates against months relative to the election at time t . The 0 point on the x -axis represents the month of the election. Given the small vote share difference between second- and third-place candidates, we would not expect any differences across these candidates prior to the election. In the months after the election, both candidates receive close to zero articles per month, on average, suggesting low and nondifferential coverage of second- and third-place candidates. Figure 5*b* shows that both second- and third-place candidates from the election at time t receive very little media attention until just 1 month before the subsequent election. On average, second- and third-place candidates receive about 0.65 and 0.3 articles per candidate in the month before the next election and 2.5 and 2 articles, respectively, in the month of the next election. Neither of these differences is statistically different at the 5 percent level, and their economic magnitudes are small.

Figure 5*c* again plots the mean number of articles mentioning the second- or third-place candidate around the time of the $t + 1$ election, but here we include only elections in which both the second- and third-place candidates at t chose to run again at time $t + 1$. Both second- and third-place candidates receive no media mentions until the month right before the next election. In the month before the $t + 1$ election, these candidates receive between one and two media mentions, and in the month of the election at $t + 1$ the candidates receive between seven and eight media mentions. The differences between second- and third-place candidates who choose to run are not statistically significant (app. A.11).

We also study more specific characteristics of the articles written about second- and third-place candidates. For example, it is possible that although the number of articles mentioning the candidate does not differ across second- and third-place candidates, the former may receive more attention within these articles. The reason might be that the articles focus on discussing the top two candidates and mention others only briefly, or that articles mentioning the second-place candidate appear closer to the front page of the newspaper. Moreover, 51 percent of these articles were simple lists of candidate outcomes across a large number of constituencies; so it is also interesting to test whether runners-up receive more coverage after removing these “results list” articles. Appendix A.11 discusses these tests in detail; overall, we find little evidence to suggest that close second-place candidates receive greater newspaper attention than close third-place candidates.

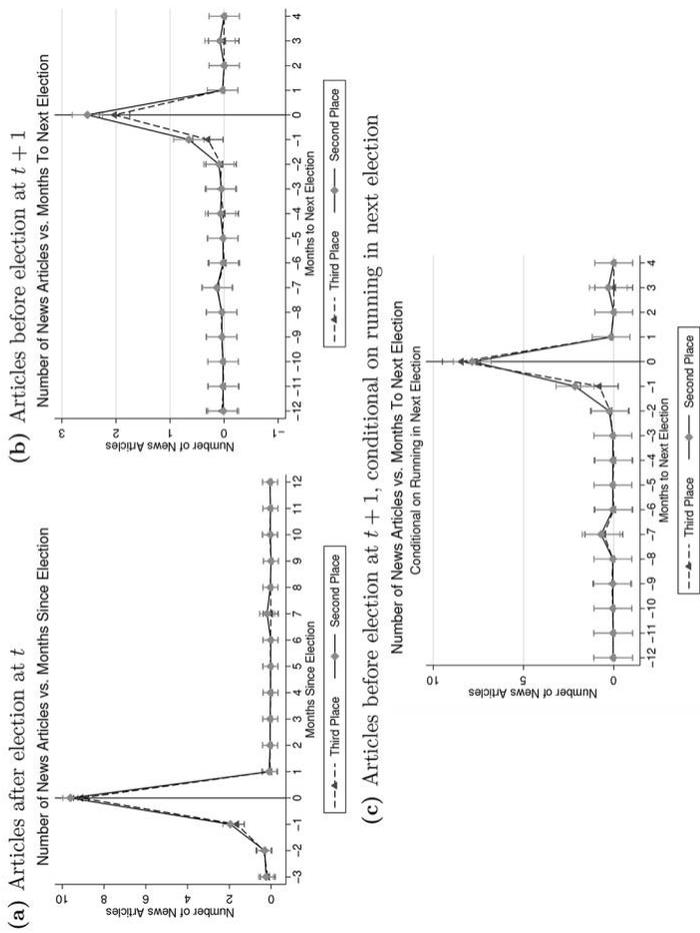


FIG. 5.—Number of newspaper articles for second- and third-place Canadian candidates. Panel *a* plots the average number of newspaper articles for close second- and third-place Canadian Parliament candidates in the months before and after the election in which they nearly tied for second place. Panel *b* plots the number of articles for those same candidates around the next election. Panel *c* is the same as panel *b*, except it includes only candidates who chose to run in the next election.

2. Heterogeneity by Media Presence

As a second test of the media hypothesis, we compare the size of the runner-up effects in constituencies with greater media presence. If media reporting drives awareness of second-place candidates versus third-place candidates, one would expect the runner-up effects to increase with the presence of local media. We focus these tests on the Brazilian and Indian state samples in which we have the sample size to potentially distinguish effects across different media environments.

In table 10, panel A, we compare Brazilian municipalities with and without AM radio stations. Ferraz and Finan (2008) find that voters are more responsive to information from municipal government audits in municipalities with AM radio stations, so there is a priori evidence that AM radio coverage can have important political impacts. Contrary to the media coverage hypothesis, the runner-up effect on candidacy is larger in municipalities without AM radio (but not significantly different). The effects on winning are similarly sized and statistically indistinguishable.

In table 10, panel B, we test whether constituencies in Indian states with greater newspaper circulation have larger runner-up effects. To ensure that our measure of media presence is a meaningful signal of media attention, we use the same measure of state-level newspaper penetration as Besley and Burgess (2002), who show that states high on this measure have greater political responsiveness. We update this measure to 2013 and match each election in our Indian state data to the newspaper circulation measure in the closest available year. We then split the sample of elections into those that happened in state-years with above- and below-median newspaper circulation per capita. We find that, if anything, elections in state-years with greater than median newspaper circulation per capita demonstrate smaller runner-up effects.⁶⁷

B. Other Political Agents

1. Elimination by Aspects

Another decision heuristic that might also be relevant to understanding runner-up effects is “elimination by aspects” (Tversky and Kahneman 1981). In this model a decision maker attempts to simplify a complicated choice problem by choosing a set of simple cutoffs and requiring any possible choices to meet all of those cutoffs.⁶⁸

⁶⁷ To facilitate comparisons between results based on different subsamples and also on the full sample, we use the optimal (Imbens-Kalyanaraman) bandwidth estimated at the full sample (i.e., the same from col. 3 of table 1) in all cases.

⁶⁸ For example, in the case of finding a house, an individual considers only houses within 20 miles of her office and with four bedrooms. Cutoff rules are added until the choice set is small enough to compare options on a broader set of characteristics.

TABLE 10
THE RUNNER-UP EFFECT BY MEDIA PRESENCE

	A. BRAZIL			
	Towns without AM Radio		Towns with AM Radio	
	Candidacy, <i>t</i> + 1	Winner, <i>t</i> + 1	Candidacy, <i>t</i> + 1	Winner, <i>t</i> + 1
Runner-up effect	10.55*** (3.139)	8.364*** (2.230)	6.977 (4.568)	8.197*** (3.091)
Close third-place mean	28.74	10.72	33.48	6.757
<i>p</i> -value relative to without radio			.519	.965
Imbens-Kalyanaraman bandwidth (%)	11.56	12.57	11.56	12.57
Observations	3,774	4,046	1,782	1,900

	B. INDIA STATE			
	< Median State Newspaper Circulation		> Median State Newspaper Circulation	
	Candidacy, <i>t</i> + 1	Winner, <i>t</i> + 1	Candidacy, <i>t</i> + 1	Winner, <i>t</i> + 1
Runner-up effect	5.371*** (1.570)	4.111*** (1.158)	3.222** (1.624)	2.422** (1.136)
Close third-place mean	35.12	8.131	28.13	7.340
<i>p</i> -value relative to < median			.341	.298
Imbens-Kalyanaraman bandwidth (%)	9.14	7.81	9.14	7.81
Observations	11,700	10,382	10,818	9,486

NOTE.—Standard errors clustered at the constituency level are in parentheses. Outcomes are measured as percentages. Estimates are based on local linear regression estimates. See table 1 notes and main text for further description.

- * Statistically significant at the 10 percent level.
- ** Statistically significant at the 5 percent level.
- *** Statistically significant at the 1 percent level.

In our case, it seems plausible that parties might use a candidate’s previous rank as a simplifying cutoff when choosing which candidates receive tickets. If the runner-up effect is primarily driven by parties using rank as an elimination aspect, then the results should be weaker for independent candidates. Figure A.11a presents graphical evidence on the size of the runner-up effect for independent candidates in Indian state elections. This is the only sample with a large number of independents. The estimated effect sizes for independents are virtually identical to those in the full sample.⁶⁹ This result makes it unlikely that a party-based heuris-

⁶⁹ Using a linear specification with the optimal bandwidth (as in col. 3 of table 1), the estimate using only independent candidates for running and winning is 4.51 (SE = 2.37) and 3.27 percentage points (SE = 1.29), respectively. Tests of this estimate with their full-sample counterparts (col. 3 of table 1) yield *p*-values of .95 and .96.

tic is the primary driver of the runner-up effect. It should also be noted that parties play a relatively smaller role in local Brazilian politics (Ames 2009).

Another possible consideration is that parties follow a similar consideration when forming multiparty coalitions supporting a candidate or that donors and other sources of campaign funding favor runners-up given elimination by aspects. Appendices A.5 and A.6 address these issues by estimating effects on coalition size and campaign spending, respectively, in the Brazilian context. We do not find evidence of large effects on either outcome.⁷⁰

2. Outcome Bias

An additional psychological explanation is that instead of judging their performance in the election objectively based on vote share, candidates judge their performance in reference to a psychologically based counterfactual. Kahneman and Varey (1982) discuss how an agent's utility from an outcome is often affected by both the outcome and the agent's perception of the counterfactual had the outcome not occurred; for example, in our context, a second-place candidate might see his counterfactual as winning the race, but a third-place candidate sees his counterfactual as second place. If candidates' perceptions of the counterfactual serve as motivation for whether to run again, then these differences in counterfactuals across second- and third-place candidates are a potential explanation for our results.⁷¹

Both outcome bias and elimination by aspects would also predict that third-place candidates should perform better than fourth-place candidates. Section III finds little evidence supporting this. However, a finding of no third- versus fourth-place effects does not rule out all possible psychological mechanisms; for example, some candidates could have a heuristic in which they consider themselves "contenders" only if they came in first or second place and otherwise just consider themselves "losers" (with no differentiation between a third, fourth, or other finish).

⁷⁰ Similar data are not available for India. These results must be interpreted with caution given the selection issues (the outcomes can be observed only for candidates who run at $t + 1$) and quality of campaign spending data. Appendices A.5 and A.6 discuss these issues in further detail.

⁷¹ Medvec, Madey, and Gilovich (1995) find that Olympians who come in second place are not as happy as those who come in third place; the authors argue that this difference in happiness occurs because silver medalists compare themselves to gold medalists, while bronze medalists compare themselves to those in fourth place, who did not receive a medal.

VI. Conclusion

This paper documents the presence of runner-up effects: barely second-place candidates are more likely than barely third-place candidates to run in, and win, subsequent elections, even though both lost the (simple plurality) election. We apply our RDD analysis to four different contexts covering multiple continents, as well as local, state, and federal elections for executive and legislative positions. We develop a simple global game model of strategic coordination to rationalize the relative magnitudes of effects across contexts, which also yields multiple additional predictions for which we (mostly) find support in the data.

The model also formalizes the relationship between runner-up and incumbency effects and allows us to estimate the role of strategic coordination in avoiding victories by non-Condorcet winners. However, further exploration of the implications of runner-up effects for incumbency effects and welfare would be interesting avenues for further research. Our results on incumbency effects by whether close winners and losers have similar or different platforms is suggestive of a role for strategic coordination.

Regarding welfare implications, we highlight that an ideal political system would choose candidates on the basis of their ability to govern; instead, we show that variation in previous electoral performance that is essentially noise has sizable consequences. Such an arbitrary rule is unlikely to be optimal, as it does not take into account politicians' ability to govern in individual cases. However, a more detailed analysis would require what other candidate characteristics can be used to coordinate on and whether these would be more informative about candidate quality than rank. In describing ancient Athens, where politicians were selected at random from the population, Besley (2005, 51) notes that "after all, selection by lot does not favor those with greater political competence over less."

Appendix

Proofs

Proof of Lemma

First, we provide a proof for the subgame in which all four candidates enter the race. Note that voters of types A , B , C , and I have a dominant strategy (and we assume that they abstain when indifferent across all entrants), and voting for C and I is also dominated for voters of types 1 and 2. By deleting these strategies, the proof can focus on a two-player, two-action game (voters 1 and 2 and strategies A and B). Since candidates do not receive a signal of q_a , entry decisions do not affect voters' beliefs.

The theorem in Carlsson and van Damme (1993, 996) shows that in two-action, two-player global games such as this one, the unique equilibrium surviving iter-

ated deletion of dominated strategies is the risk-dominant equilibrium for small enough σ_ϵ , as long as a realization of a game in which each of the actions is strictly dominant for both players is possible. This is satisfied given that q_A is distributed with support including both zero (B dominant) and values above $\lambda q_B[u_2(B)/u_2(A)]$ (A dominant).

Hence, to complete the proof, all that is required is to show that $s_1 = s_2 = A$ is the risk-dominant equilibrium of this two-action, two-player game when $q_A > q_B$, and $s_1 = s_2 = B$ is risk dominant when $q_B > q_A$.

This two-action, two-player game's payoffs for player i are given by the table below. To facilitate notation q_j denotes $q_j(v, \{A, B, C, I\})$.

	A	B
A	$\lambda^2 q_A u_i(A) + q_B u_i(B) + q_C u_i(C)$	$\lambda q_A u_i(A) + \lambda q_B u_i(B) + q_C u_i(C)$
B	$\lambda q_A u_i(A) + \lambda q_B u_i(B) + q_C u_i(C)$	$q_A u_i(A) + \lambda^2 q_B u_i(B) + q_C u_i(C)$

Risk dominance of the (A, A) equilibrium implies

$$\begin{aligned} & [\lambda(\lambda - 1)q_A u_1(A) + (1 - \lambda)q_B u_1(B)][\lambda(\lambda - 1)q_A u_2(A) + (1 - \lambda)q_B u_2(B)] \\ & > [(1 - \lambda)q_A u_1(A) + \lambda(\lambda - 1)q_B u_1(B)][(1 - \lambda)q_A u_2(A) + \lambda(\lambda - 1)q_B u_2(B)], \end{aligned}$$

which simplifies to

$$\begin{aligned} & [\lambda q_A u_1(A) - q_B u_1(B)][\lambda q_A u_2(A) - q_B u_2(B)] \\ & > [-q_A u_1(A) + \lambda q_B u_1(B)][-q_A u_2(A) + \lambda q_B u_2(B)]. \end{aligned}$$

Given the assumption of symmetry in payoffs,

$$\begin{aligned} & [\lambda q_A u_1(A) - q_B u_1(B)][\lambda q_A u_1(B) - q_B u_1(A)] \\ & > [-q_A u_1(A) + \lambda q_B u_1(B)][-q_A u_1(B) + \lambda q_B u_2(A)]. \end{aligned}$$

Collecting the terms from above, we have

$$(\lambda^2 - 1)(q_A^2 - q_B^2) > 0.$$

Note that (by assumption) $\lambda > 1$, $q_A = q_B$ when $v_A = v_B$ and q_A (q_B) is increasing (decreasing) in v_A . Hence, the inequality holds if, and only if, $v_A > v_B$. Analogously, the equilibrium with $s_1 = s_2 = B$ will be risk-dominant if $v_B > v_A$, completing the proof for the case in which all four candidates enter the race.

A similar argument applies to the case in which candidates A, B , and I enter the race, since this is a game similar to that above with $q_C = 0$. Since candidate I always enters the race (by assumption), this covers all subgames in which A and B enter the race, completing the proof. QED

Proof of Proposition

First, in every subgame at stage 2 of the game (after candidate entry), the voters play the strategy described by iterated deletion of dominated strategies. For the cases in which A and B enter, this is proved by the lemma. For the subgame in which only A does not enter, this follows since types A, B, C , and I have a domi-

nant strategy and (by assumption) B dominates C (and I) for types 1 and 2. For the cases in which only one candidate out of A , B , and C runs, there is also a dominant strategy for each voter (note that we assumed voters abstain when indifferent across all entrants, ruling out multiple equilibria due to indifference). The only subgame left is when only B does not run. In this case, there will be a unique (risk-dominant) equilibrium (following an argument similar to that of the lemma). However, which equilibrium occurs in this subgame does not affect final payoffs. If $q_A > q_B$, then A dominates C (by assumption) for types 1 and 2 in this subgame, defining the equilibrium. If $q_B > q_A$, then B running is a dominant strategy whenever A and C would enter the race (i.e., $r = 0$) regardless of the equilibrium in this subgame, as discussed below.

Given the equilibria in the subgames at stage 2, the unique equilibrium can be found by backward induction. When $r = 0$, running is a dominant strategy for A , B , and C , since the probability of winning in any subgame they enter is positive (by assumption). Similarly, if $r = 1$, running is dominated, since the probability of winning is below one in all subgames (given that I , by assumption, always runs). If $r = r^m$, there are two possible cases: (i) If $v_A > v_B$, then entering is a dominant strategy for A , given the assumptions on r . Moreover, our assumptions on the distribution of r also imply that once A runs, the probability of winning for B (and hence C) is below r^m . They also imply that running is dominated for C in this case. (ii) Analogously, if $v_B > v_A$, this iterated deletion of dominated strategies leaves only B entering in the equilibrium. QED

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