Appendix

Table A.1: Descriptive Statistics of Competitive Primary Variables

	Less Than 57.5% of Receipts		
Less Than 57.5% of Votes	Uncompetitive	Competitive	Total
Uncompetitive	13,467	271	13,738
Competitive	1,452	1,091	2,543
Total	14,919	1,362	16,281

	20-Pt Receipt Margin		
20-Point Victory Margin	Uncompetitive	Competitive	Total
Uncompetitive	13,671	402	14,073
Competitive	1,427	781	2,208
Total	15,098	1,183	16,281

Note: Entries show the number of competitive and uncompetitive primaries with each measure (i.e., whether the top vote-getter received less than 57.5 percent of total votes and whether the top fundraiser raised less than 57.5 percent of total receipts; whether the top vote-getter's victory margin is within 20 points of the second highest vote-getter and whether the top fundraiser's fundraising margin is within 20 points of the second highest fundraiser). With the 57.5 percent and 20-point margin measures, 89 percent of races are either competitive or uncompetitive with both; 9 percent of races are competitive with the vote share measure but not the fundraising measure; and 2 percent are competitive with the fundraising measure but not the vote share measure. The values on the difference measure is 0 when both are the same, 1 when the race is competitive with the vote share measure but not the fundraising measure, and -1 when the race is competitive with the fundraising measure but not the vote share measure. Sixty-one percent of the primaries in which the two measures are the same are unopposed (8,889 of 14,558); the totals below exclude primaries with zero or one candidate.

Primaries With At Least Two On-Ballot Candidates

	Less Than 57.5% of Receipts		
Less Than 57.5% of Votes	Uncompetitive	Competitive	Total
Uncompetitive	3,565	236	3,801
Competitive	1,452	1,091	2,543
Total	5,017	1,327	6,344

	20-Pt Receipt Margin		
20-Point Victory Margin	Uncompetitive	Competitive	Total
Uncompetitive	3,774	362	4,136
Competitive	1,427	781	2,208
Total	5,201	1,143	6,344

Note: Entries are limited to opposed primaries. With the 57.5 percent measure, 73 percent of races are either competitive or uncompetitive with both; 23 percent of races are competitive with the vote share measure but not the fundraising measure; and 4 percent are competitive with the fundraising measure but not the vote share measure. With the 20-point margin measure, 72 percent of races are either competitive or uncompetitive with both; 22 percent of races are competitive with the vote share measure but not the fundraising measure; and 6 percent are competitive with the fundraising measure but not the vote share measure.

Data Collection and Variables

Primary and general election vote totals were collected from the America Votes series from 1980 to 2000, from the Federal Election Commission from 2002 to 2018, and from state board of elections websites for 2020. FEC election results data are available here: https://www.fec.gov/introduction-campaign-finance/election-and-voting-information/. Primary vote totals are not available from the FEC prior to 1994. The FEC provides primary vote totals in pdf format from 1994 to 2000 and in spreadsheet format from 2002 to 2018 (the Excel files include the FEC candidate identifier). The FEC candidate identifiers were attached by the author and research assistants at Duke University, Syracuse University, and the University of California, Irvine, for the other years. For 2020, the candidate list was collected from the FEC, and election returns were collected by research assistants at the University of California, Irvine. Primary returns data were also compared with Pettigrew et al.'s (2014) data for validation purposes, but the data were collected independently.

All of the campaign finance data was collected from the Federal Election Commission and is publicly available on the FEC website. Candidate receipt totals are available here: https://www.fec.gov/data/browse-data/?tab=bulk-data, under the All candidates tab. All filings and reports for House committees are available here: https://www.fec.gov/data/browse-data/?tab=filings, under the House and Senate committee reports tab. Candidate-committee linkages are available here: https://www.fec.gov/data/browse-data/?tab=bulk-data, under the Candidate-committee linkages tab. The linkages were used to additionally validate the identifiers for the years they are available (2000-2020). As noted in the article, committee reports were summed and matched with the fundraising total reported by the FEC (see discussion on pages 11-12). The DIME dataset was used to further validate the fundraising totals (Bonica 2014). FEC data were also used to calculate independent expenditures and party coordinated expenditures for the analyses in the appendix. They are available here: https://www.fec.gov/data/browse-data/?tab=spending, under the Independent expenditures and Party coordinated expenditures tabs. The vote share and receipt share data were aggregated to the primary race level as described in the text. The included data files use these author-aggregated data.

Candidate type (incumbent or non-incumbent) was collected by the research assistants and is also provided by the FEC; these data were used to construct the seat type variables (open-seat, incumbent-contested, or challenger-party primary). District partisanship was collected by Gary Jacobson from 1980 to 2018; 2020 is available from Daily Kos. District partisanship data were used to construct the partisan lean of the district (advantaged-party, parties-balanced, or disadvantaged-party primary). Hassell's (2022) data were used to calculate the total number of party-connected donors in the primary. Datasets to replicate the tables and figures in the article and appendix are available in the *American Political Science Review* Dataverse.

Additional Discussion of the Mismatches

No similar preelection ratings exist at the primary stage from, for example, the Cook Political Report or Inside Elections to compare with the fundraising measures, but we can look closer at the mismatches to see how they differ. As shown in Table A1, there are 1,452 primaries where a primary is competitive with a 57.5 percent vote share measure but not with a 57.5 percent fundraising measure.[36] The top fundraiser's margin over the second highest fundraiser in the mismatches is 64 percentage points, on average. The top vote-getter's average victory margin is 13 points and ranges from 0.02 to 41 points. In fact, 325 of them, or 22 percent, are not competitive with the 20-point victory margin measure either. In these races, the top fundraiser's margin is 66 points, and the top vote-getter's margin is 27 points, ranging from 20 to 41 points. The average number of long-shot candidates is 2.5, ranging from 0 to 8. Of the 1,452 mismatches, 308 are incumbent-contested, and the incumbent won in 282, or 92 percent, of the races. The discrepancy in incumbent-contested races is driven in large part by blanket primaries (134 of 308), where the average number of long-shot candidates is 2.6 but incumbents nonetheless win by significant margins.

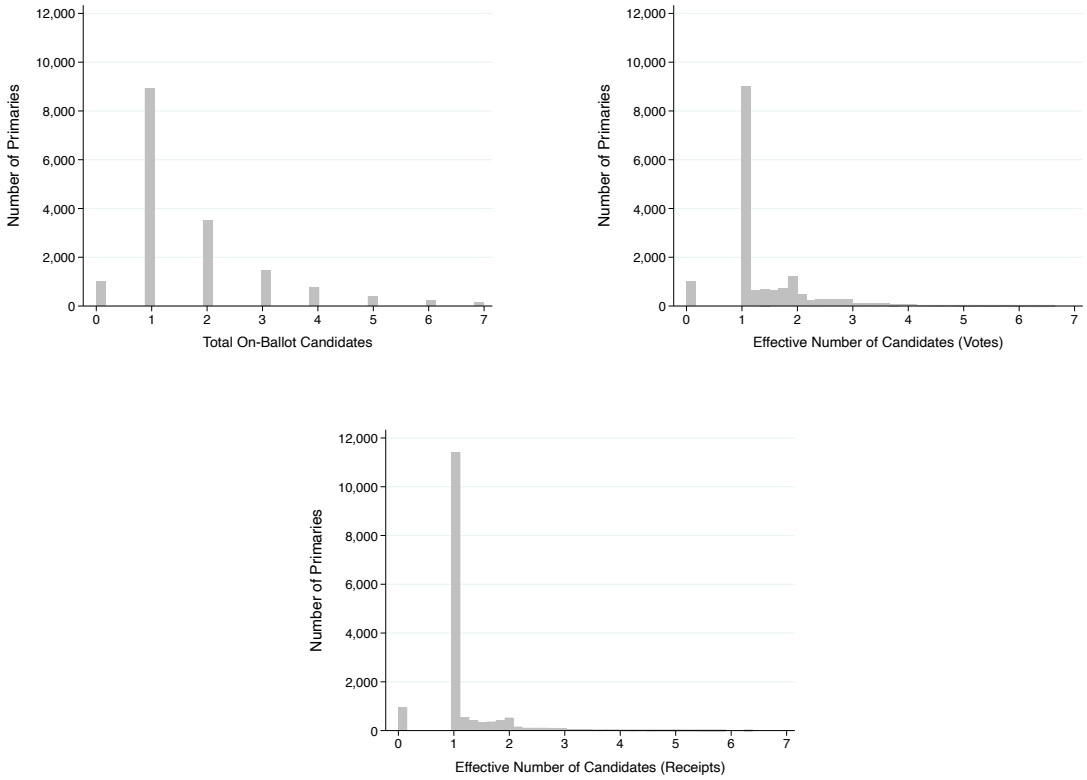
Of the 1,452 mismatches, 324 are open-seat races.[37] Top fundraisers win less often in more competitive races, and we can see if top fundraisers in these contexts are as likely to win when the measures match and when they do not. In the open-seat contests that are competitive with both the vote share and fundraising measures, the top fundraiser won in 57 percent of races, compared to 72 percent of races that are competitive with the vote share measure but not the fundraising measure. The top fundraiser's margin over the second highest fundraiser in the open-seat mismatches is 54 points, on average, and the top vote-getter's margin is 13 points and ranges from 0.02 to 40 points. The number of long-shot candidates in the open-seat mismatches is 2.2, on average, and ranges from 0 to 12.

As detailed in the article, the discrepancy between the vote share and fundraising measures is driven in large part by long-shot candidates. Candidates at the bottom of the fundraising pack are able to obtain votes in a way that outperforms their fundraising totals, but these individuals overwhelmingly lose and usually by large margins. Future work should examine how candidates perceive the relative difficulty of obtaining votes versus receipts. It appears easier to garner a negligible amount of votes than it is to raise a negligible amount of receipts, perhaps because primary voters use different metrics than donors when deciding who to support.

[36] There is no agreed upon victory margin at the primary stage. Boatright (2013) uses a lower threshold of whether the incumbent received less than 75 percent of the vote. I use Hirano and Snyder's (2019) threshold because they provide the most comprehensive account of primary competition to date, but a 10 or 20-point margin is most common in studies of general elections.

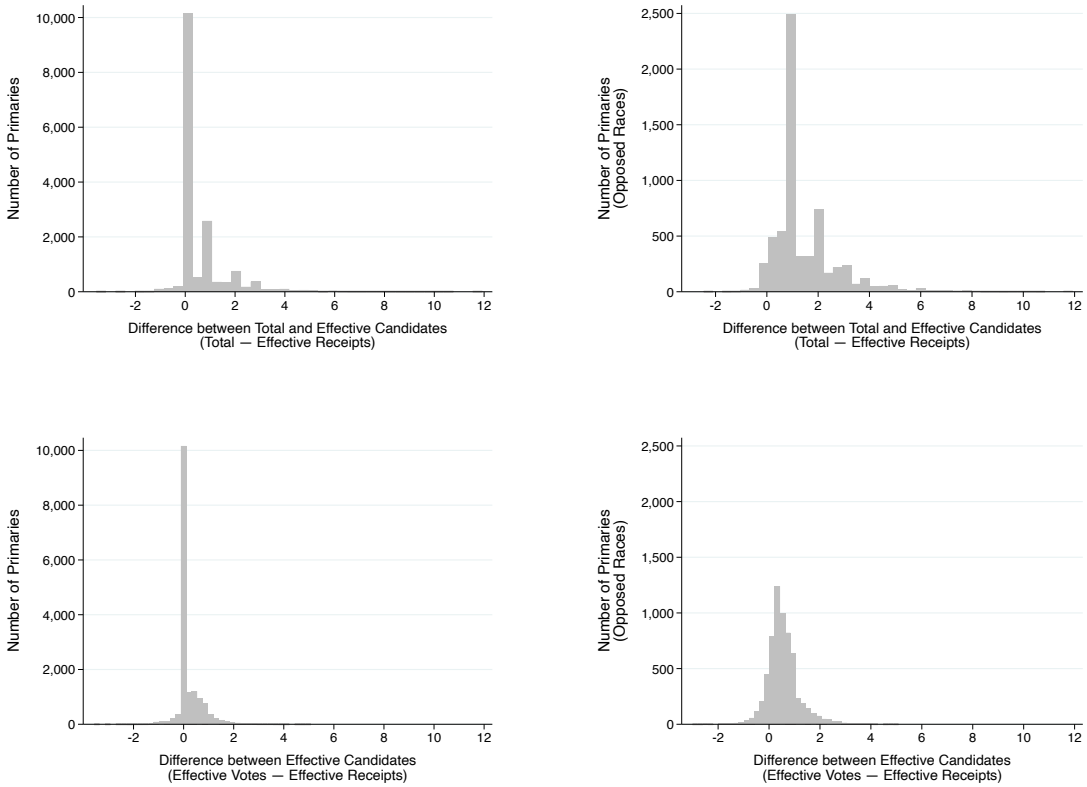
[37] Open seats constitute 10 percent of the full sample but 22 percent of the mismatches.

Figure A.1: Distributions of Number of Candidates Variables



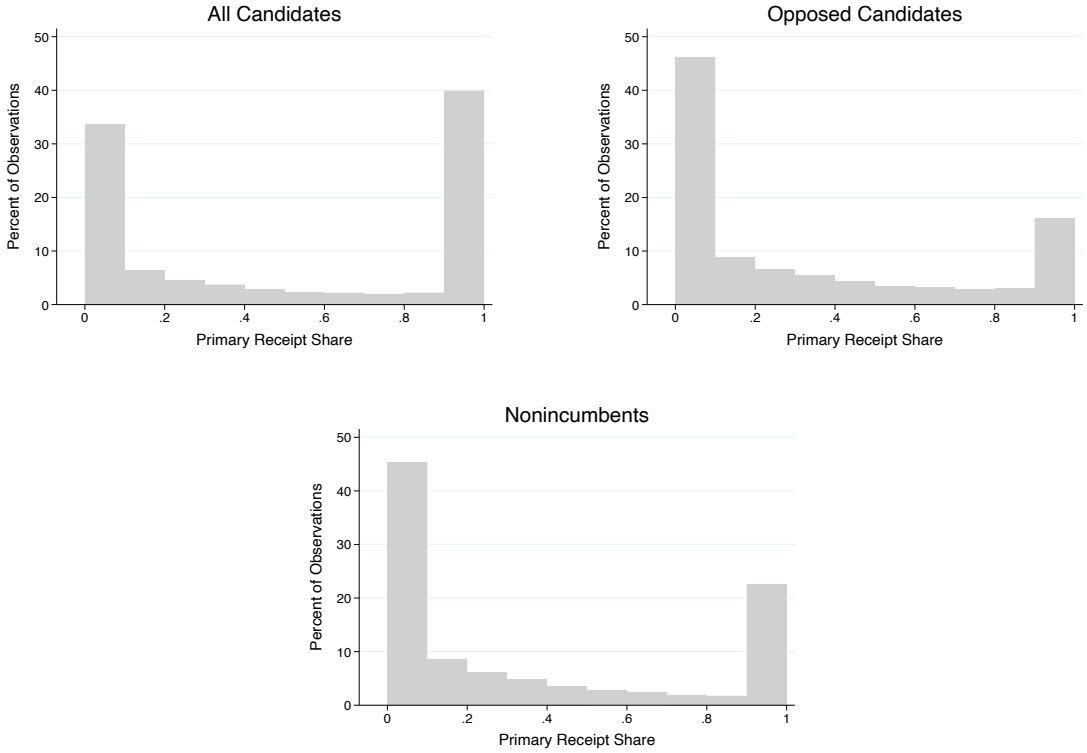
Note: The graphs show the distribution of the three number of candidates measures: the total number of candidates on the ballot (top left), the effective number of candidates based on vote shares (top right), and the effective number of candidates based on receipt shares (bottom). The zero values are the primaries with zero candidates on the ballot.

Figure A.2: Distributions of Difference Between Number of Candidates Variables



Note: The graphs show the distribution of the difference between the number of candidates measured with votes and receipts. The x-axis in the top graphs is the difference between the total and effective number of candidates (based on receipts), and the x-axis in the bottom graphs is the difference between the effective number of candidates based on votes and the effective number of candidates based on receipts. The left graphs include all primaries; approximately 90 percent of the zero values are uncontested primaries. The right graphs are limited to primaries with at least two on-ballot candidates. Positive (negative) values indicate that the number of candidates is higher (lower) with vote share measures than with fundraising measures.

Figure A.3: Histograms of Primary Receipt Share (At the Candidate Level)



Note: The graphs show the distribution of primary receipt share for the full sample of House candidates, for opposed House candidates, and for nonincumbent candidates. Across samples, a large proportion of candidates raise either all or nothing in campaign receipts. Top vote-getters raise an average of 88 percent of total receipts, and if unopposed candidates are excluded, the average share for winners is 71 percent. Among nonincumbent primary winners, these figures are 78 and 58 percent, respectively. The gap between those at the top and bottom is large, with primary losers raising an average of 13 percent of preprimary receipts.

Figure A.4: Four Measures of Primary Competition Reported in Hirano and Snyder (2019)

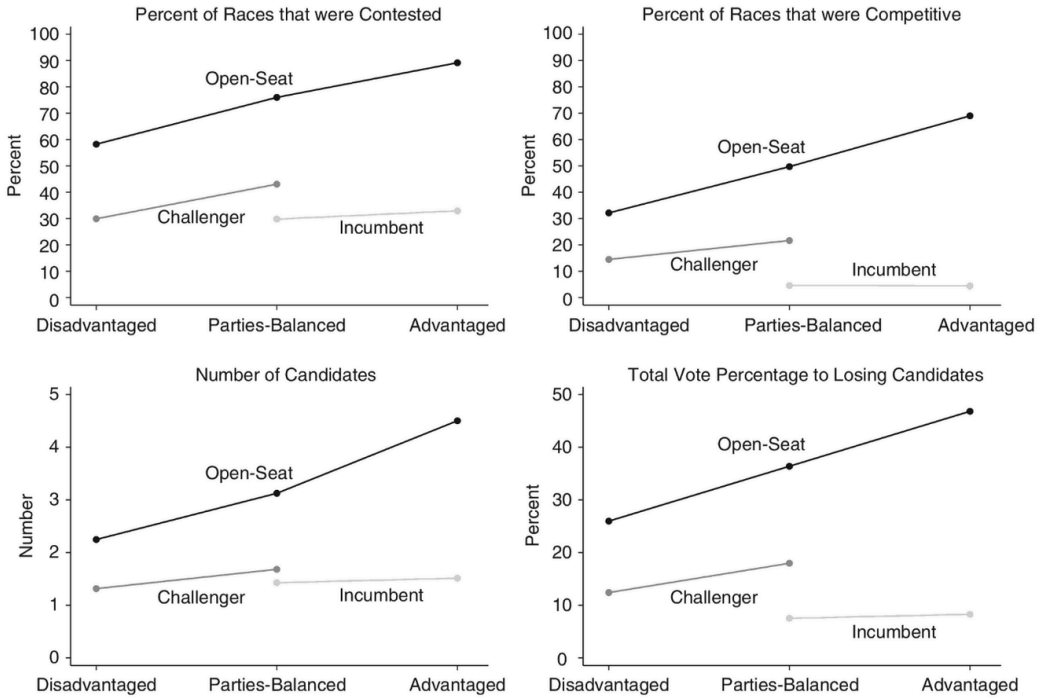
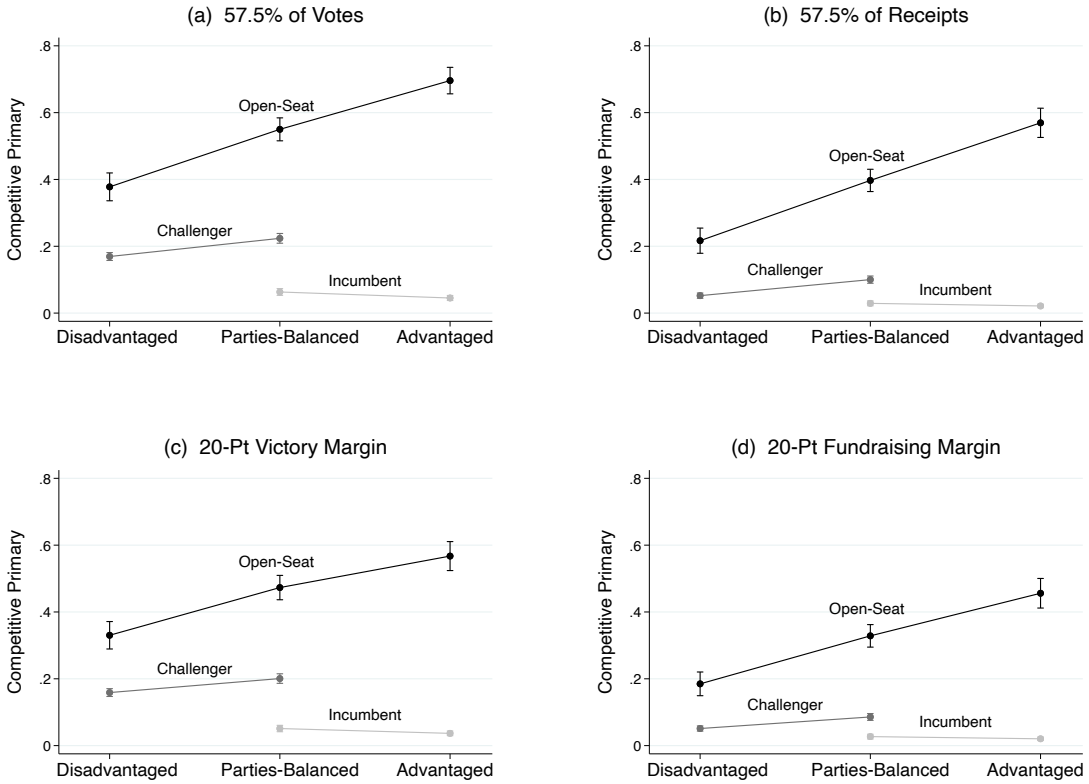


FIGURE 7.4 Primary Competition for the US House by Party Type and Incumbency

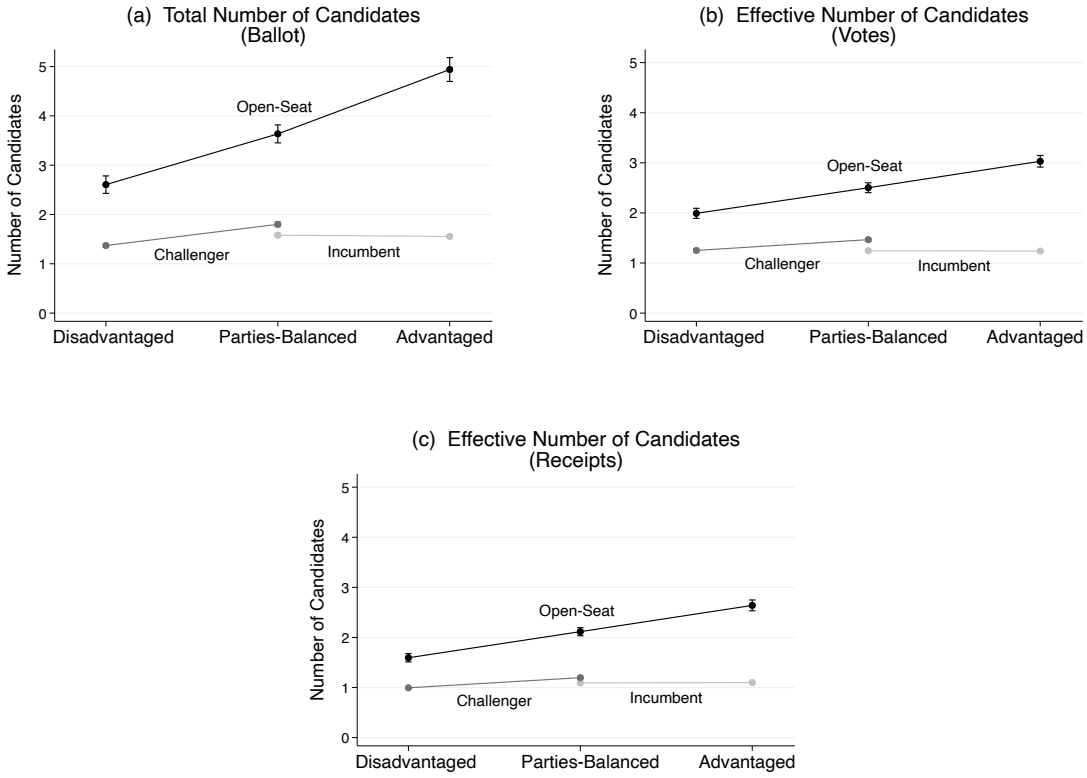
Note: This figure is taken from Hirano and Snyder (2019, 179). The top left graph shows the percentage of primaries that were contested, where at least two candidates received more than 1 percent of the vote. The top right graph shows the percentage of primaries that were competitive, where the winner received less than 57.5 percent of total votes. The bottom left graph shows the number of candidates who received more than 1 percent of the vote. The bottom right graph shows the votes cast for all losing candidates as a percentage of total votes.

Figure A.5: Likelihood of Competitive Race By Primary Type With Vote Share and Fundraising Measures, From Table 1



Note: Values are generated from the models in Table 1. The dependent variable in graph (a) and (b) is whether the winner received less than 57.5 percent of total votes and whether the top fundraiser raised less than 57.5 percent of total receipts, respectively. The dependent variable in graph (c) and (d) is whether the winner's victory margin is within 20 percentage points of the second highest vote-getter and whether the top fundraiser's fundraising margin is within 20 points of the second highest fundraiser, respectively. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies.

Figure A.6: Expected Number of Candidates By Primary Type With Vote Share and Fundraising Measures, From Table 2



Note: Values are generated from the models in Table 2. The dependent variable in graph (a) is the total number of candidates on the ballot, and the dependent variable in graphs (b) and (c) is the effective number of candidates based on votes and receipts, respectively, calculated with the formula outlined in the article. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies.

Table A.2: Difference Between Vote Share and Fundraising Measures of Competition, By Race Type

	(1) Difference in Competitive (57.5%)	(2) Difference in Competitive (20-Pt Margin)	(3) Difference in Candidates (Total-Effective)	(4) Difference in Effective (Votes-Receipts)
Open Seat	1.33**	1.26**	0.78**	0.27**
	(0.19)	(0.19)	(0.07)	(0.04)
Challenger Party	0.91**	0.85**	0.10**	0.10**
	(0.09)	(0.08)	(0.02)	(0.01)
Parties-Balanced	0.13	0.14	0.25**	0.04*
	(0.09)	(0.09)	(0.02)	(0.01)
Advantaged-Party	-0.02	0.05	0.22**	0.02
	(0.11)	(0.10)	(0.03)	(0.02)
Open Seat x Parties-Balanced	-0.11	-0.07	0.25**	-0.03
	(0.22)	(0.23)	(0.10)	(0.04)
Open Seat x Advantaged-Party	-0.15	-0.19	1.07**	-0.02
	(0.26)	(0.27)	(0.11)	(0.05)
Constant			-0.05	0.02
			(0.14)	(0.08)
Cut Point 1	-3.97**	-3.22**		
	(0.48)	(0.41)		
Cut Point 2	3.26**	3.42**		
	(0.48)	(0.41)		
Number of Observations	16,281	16,281	16,281	16,281
Pseudo R-squared	0.10	0.08		
R-squared			0.30	0.16

Note: The results in Models 1 and 2 are from ordinal logistic regressions, and the results in Models 3 and 4 are from OLS regressions (1980-2020). The dependent variable in Models 1 and 2 is the difference between whether the primary is competitive with the 57.5 percent vote share and fundraising measures and the difference between whether the primary is competitive with the 20-point victory and fundraising margin measures, respectively. The dependent variable in Models 3 and 4 is the difference between the total and effective number of candidates (based on receipts) and the difference between the effective number of candidates based on votes and receipts, respectively. Positive coefficients indicate that primaries are more competitive with vote share measures than with fundraising measures. The models include district and year fixed effects. *p<0.05, **p<0.01. Predicted values are plotted in Figure 3.

Table A.3: Relationship Between Seat Type and Competitive Primary and Number of Candidates, with Preprimary Disbursements

	(1) Competitive 57.5% Disbursements	(2) Competitive 20-Pt Disbursement Margin	(3) Effective Number of Candidates, Disbursements
Open Seat	0.25**	0.20**	0.71**
	(0.02)	(0.02)	(0.05)
Challenger Party	0.07**	0.06**	0.11**
	(0.01)	(0.01)	(0.01)
Parties-Balanced	0.05**	0.03**	0.21**
	(0.01)	(0.01)	(0.02)
Advantaged-Party	0.04**	0.02**	0.21**
	(0.01)	(0.01)	(0.02)
Open Seat x Parties-Balanced	0.14**	0.12**	0.33**
	(0.03)	(0.03)	(0.06)
Open Seat x Advantaged-Party	0.30**	0.23**	0.80**
	(0.03)	(0.03)	(0.07)
Constant	0.00	0.01	0.73**
	(0.04)	(0.04)	(0.08)
Number of Observations	16,278	16,278	16,278
R-squared	0.25	0.19	0.33

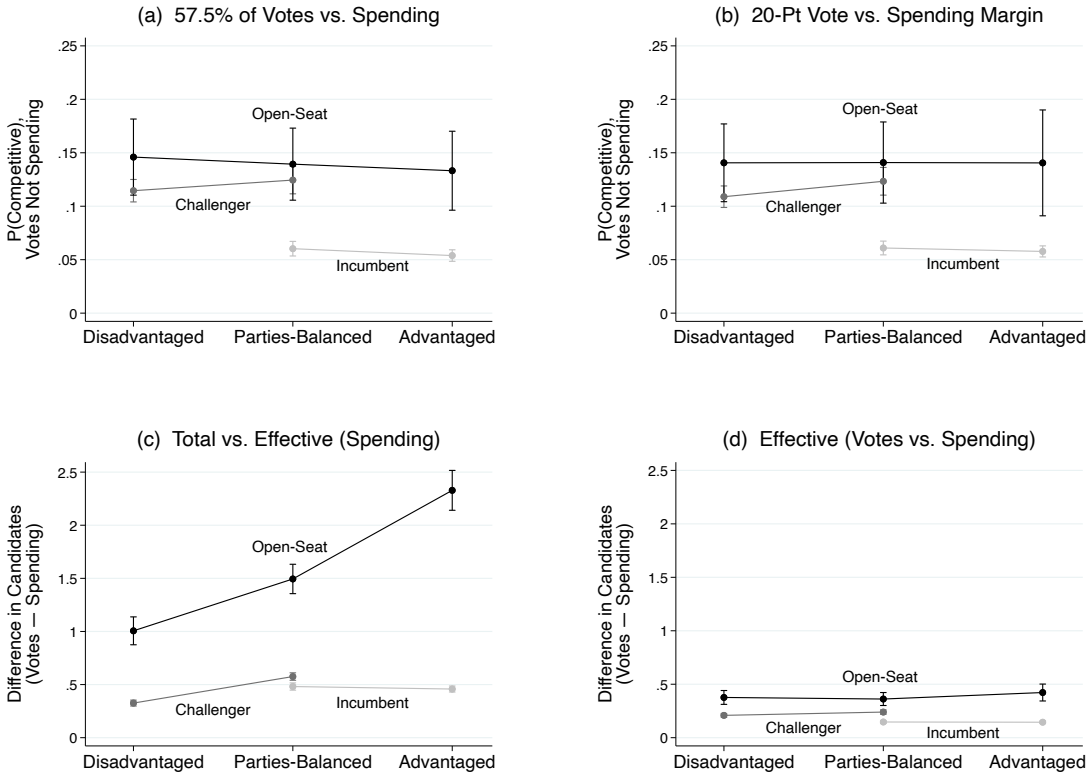
Note: Results are from OLS regressions from 1980 to 2020. Robust standard errors are in parentheses. The dependent variable in Models 1 and 2 is whether the top spender spent less than 57.5 percent of all disbursements and whether their spending margin is within 20 points of the second highest spender, respectively. The dependent variable in Model 3 is the effective number of candidates based on spending. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. *p<0.05, **p<0.01.

Table A.4: Difference in Competition Between Measures, with Preprimary Disbursements

	(1) Difference in Competitive (57.5%)	(2) Difference in Competitive (20-Pt Margin)	(3) Difference in Candidates (Total-Effective)	(4) Difference in Effective (Votes-Disb)
Open Seat	1.14**	1.11**	0.77**	0.26**
	(0.19)	(0.19)	(0.07)	(0.04)
Challenger Party	0.84**	0.81**	0.09**	0.09**
	(0.08)	(0.08)	(0.02)	(0.01)
Parties-Balanced	0.10	0.15	0.25**	0.03*
	(0.09)	(0.09)	(0.02)	(0.01)
Advantaged-Party	-0.02	0.09	0.23**	0.03
	(0.11)	(0.10)	(0.03)	(0.02)
Open Seat x Parties-Balanced	-0.16	-0.15	0.24*	-0.05
	(0.24)	(0.25)	(0.10)	(0.05)
Open Seat x Advantaged-Party	-0.09	-0.09	1.10**	0.02
	(0.25)	(0.27)	(0.11)	(0.05)
Constant			-0.07	-0.00
			(0.15)	(0.08)
Cut Point 1	-3.67**	-3.15**		
	(0.46)	(0.53)		
Cut Point 2	3.42**	3.30**		
	(0.46)	(0.53)		
Number of Observations	16,278	16,278	16,278	16,278
Pseudo R-squared	0.10	0.07		
R-squared			0.30	0.16

Note: The results in Models 1 and 2 are from ordinal logistic regressions, and the results in Models 3 and 4 are from OLS regressions (1980-2020). The dependent variable in Models 1 and 2 is the difference between whether the primary is competitive with the 57.5 percent vote share and spending measures and the difference between whether the primary is competitive with the 20-point victory and spending margin measures, respectively. The dependent variable in Models 3 and 4 is the difference between the total and effective number of candidates (based on spending) and the difference between the effective number of candidates based on votes and spending, respectively. Positive coefficients indicate that primaries are more competitive with vote share measures than with spending measures. The models include district and year fixed effects. *p<0.05, **p<0.01.

Figure A.7: Difference in Competition Between Measures, with Preprimary Disbursements



Note: Predicted values are calculated from the models in Table A4. The top graphs show the probability the primary is competitive with the vote share measure but not the spending measure (for the 57.5 percent and 20-point margin measures, respectively). The bottom graphs show the difference between the total and effective number of candidates (based on spending) and the difference between the effective number of candidates based on votes and spending, respectively. The results are the same with measures of competition based on disbursements.

Table A.5: Relationship Between Seat Type and Competitive Primary Across Measures, Excluding Candidate Loans from Preprimary Receipts

	(1) Competitive 57.5% Votes	(2) Competitive 57.5% Receipts	(3) Competitive 20-Pt Margin Votes	(4) Competitive 20-Pt Margin Receipts
Open Seat	0.37**	0.22**	0.32**	0.20**
	(0.02)	(0.02)	(0.02)	(0.02)
Challenger Party	0.16**	0.07**	0.15**	0.06**
	(0.01)	(0.01)	(0.01)	(0.01)
Parties-Balanced	0.05**	0.05**	0.04**	0.04**
	(0.01)	(0.01)	(0.01)	(0.01)
Advantaged-Party	0.04**	0.04**	0.03**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)
Open Seat x Parties-Balanced	0.12**	0.14**	0.10**	0.08**
	(0.03)	(0.03)	(0.03)	(0.03)
Open Seat x Advantaged-Party	0.28**	0.33**	0.21**	0.23**
	(0.03)	(0.03)	(0.03)	(0.03)
Constant	0.00	-0.00	0.00	-0.01
	(0.05)	(0.03)	(0.05)	(0.04)
Number of Observations	16,635	16,266	16,635	16,266
R-squared	0.24	0.23	0.19	0.18

Note: Results are from OLS regressions from 1980 to 2020. Robust standard errors are in parentheses. The dependent variable in Models 1 and 2 is whether the winner received less than 57.5 percent of total votes and whether the top fundraiser raised less than 57.5 percent of total receipts, respectively. The dependent variable in Models 3 and 4 is whether the winner's victory margin is within 20 percentage points of the second highest vote-getter and whether the top fundraiser's fundraising margin is within 20 points of the second highest fundraiser, respectively. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. $^{*}p<0.05$, $^{**}p<0.01$.

Table A.6: Relationship Between Seat Type and Number of Candidates Across Measures, Excluding Candidate Loans from Preprimary Receipts

	(1) Total Number of Candidates, Ballot	(2) Effective Number of Candidates, Votes	(3) Effective Number of Candidates, Receipts
Open Seat	1.46**	0.96**	0.64**
	(0.10)	(0.06)	(0.04)
Challenger Party	0.22**	0.22**	0.10**
	(0.03)	(0.02)	(0.01)
Parties-Balanced	0.43**	0.22**	0.19**
	(0.03)	(0.02)	(0.02)
Advantaged-Party	0.41**	0.21**	0.20**
	(0.04)	(0.02)	(0.02)
Open Seat x Parties-Balanced	0.60**	0.30**	0.33**
	(0.13)	(0.07)	(0.06)
Open Seat x Advantaged-Party	1.93**	0.83**	0.83**
	(0.15)	(0.08)	(0.07)
Constant	0.70**	0.77**	0.71**
	(0.17)	(0.11)	(0.07)
Number of Observations	16,635	16,635	16,266
R-squared	0.37	0.34	0.32

Note: Results are from OLS regressions from 1980 to 2020. Robust standard errors are in parentheses. The dependent variable in Model 1 is the total number of candidates on the ballot, and the dependent variable in Models 2 and 3 is the effective number of candidates based on votes and receipts, respectively, calculated with the formula outlined above. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. *p<0.05, **p<0.01.

Table A.7: Difference in Competition Between Measures, Excluding Candidate Loans from Preprimary Receipts

	(1) Difference in Competitive (57.5%)	(2) Difference in Competitive (20-Pt Margin)	(3) Difference in Candidates (Total-Effective)	(4) Difference in Effective (Votes-Receipts)
Open Seat	1.51**	1.28**	0.84**	0.33**
	(0.18)	(0.20)	(0.08)	(0.04)
Challenger Party	0.96**	0.83**	0.11**	0.11**
	(0.09)	(0.08)	(0.02)	(0.01)
Parties-Balanced	0.14	0.12	0.27**	0.05**
	(0.09)	(0.09)	(0.03)	(0.01)
Advantaged-Party	0.01	0.02	0.24**	0.04*
	(0.11)	(0.11)	(0.03)	(0.02)
Open Seat x Parties-Balanced	-0.17	0.11	0.24*	-0.05
	(0.21)	(0.22)	(0.10)	(0.05)
Open Seat x Advantaged-Party	-0.34	-0.10	1.07**	-0.01
	(0.25)	(0.27)	(0.11)	(0.05)
Constant			-0.04	0.02
			(0.15)	(0.09)
Cut Point 1	-4.04**	-3.59**		
	(0.51)	(0.57)		
Cut Point 2	3.42**	3.23**		
	(0.50)	(0.57)		
Number of Observations	16,266	16,266	16,266	16,266
Pseudo R-squared	0.11	0.09		
R-squared			0.30	0.18

Note: The results in Models 1 and 2 are from ordinal logistic regressions, and the results in Models 3 and 4 are from OLS regressions (1980-2020). The dependent variable in Models 1 and 2 is the difference between whether the primary is competitive with the 57.5 percent vote share and fundraising measures and the difference between whether the primary is competitive with the 20-point victory and fundraising margin measures, respectively. The dependent variable in Models 3 and 4 is the difference between the total and effective number of candidates (based on receipts) and the difference between the effective number of candidates based on votes and receipts, respectively. Positive coefficients indicate that primaries are more competitive with vote share measures than with fundraising measures. The models include district and year fixed effects. *p<0.05, **p<0.01.

Table A.8: Relationship Between Seat Type and Competitive Primary Across Measures, Only On-Ballot Candidates

	(1) Competitive 57.5% Votes	(2) Competitive 57.5% Receipts	(3) Competitive 20-Pt Margin Votes	(4) Competitive 20-Pt Margin Receipts
Open Seat	0.37**	0.22**	0.32**	0.18**
	(0.02)	(0.02)	(0.02)	(0.02)
Challenger Party	0.16**	0.06**	0.15**	0.05**
	(0.01)	(0.01)	(0.01)	(0.01)
Parties-Balanced	0.05**	0.04**	0.04**	0.03**
	(0.01)	(0.01)	(0.01)	(0.01)
Advantaged-Party	0.04**	0.03**	0.03**	0.02**
	(0.01)	(0.01)	(0.01)	(0.01)
Open Seat x Parties-Balanced	0.12**	0.12**	0.10**	0.11**
	(0.03)	(0.03)	(0.03)	(0.03)
Open Seat x Advantaged-Party	0.28**	0.30**	0.21**	0.25**
	(0.03)	(0.03)	(0.03)	(0.03)
Constant	0.00	0.01	0.00	0.03
	(0.05)	(0.03)	(0.05)	(0.04)
Number of Observations	16,635	16,270	16,635	16,270
R-squared	0.24	0.22	0.19	0.18

Note: Results are from OLS regressions from 1980 to 2020. Robust standard errors are in parentheses. The dependent variable in Models 1 and 2 is whether the winner received less than 57.5 percent of total votes and whether the top fundraiser raised less than 57.5 percent of total receipts, respectively. The dependent variable in Models 3 and 4 is whether the winner's victory margin is within 20 percentage points of the second highest vote-getter and whether the top fundraiser's fundraising margin is within 20 points of the second highest fundraiser, respectively. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. $^{*}p<0.05$, $^{**}p<0.01$.

Table A.9: Relationship Between Seat Type and Number of Candidates Across Measures, Only On-Ballot Candidates

	(1) Total Number of Candidates, Ballot	(2) Effective Number of Candidates, Votes	(3) Effective Number of Candidates, Receipts
Open Seat	1.46**	0.96**	0.62**
	(0.10)	(0.06)	(0.04)
Challenger Party	0.22**	0.22**	0.05**
	(0.03)	(0.02)	(0.01)
Parties-Balanced	0.43**	0.22**	0.18**
	(0.03)	(0.02)	(0.02)
Advantaged-Party	0.41**	0.21**	0.18**
	(0.04)	(0.02)	(0.02)
Open Seat x Parties-Balanced	0.60**	0.30**	0.32**
	(0.13)	(0.07)	(0.06)
Open Seat x Advantaged-Party	1.93**	0.83**	0.83**
	(0.15)	(0.08)	(0.07)
Constant	0.70**	0.77**	0.78**
	(0.17)	(0.11)	(0.08)
Number of Observations	16,635	16,635	16,270
R-squared	0.37	0.34	0.32

Note: Results are from OLS regressions from 1980 to 2020. Robust standard errors are in parentheses. The dependent variable in Model 1 is the total number of candidates on the ballot, and the dependent variable in Models 2 and 3 is the effective number of candidates based on votes and receipts, respectively, calculated with the formula outlined above. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. *p<0.05, **p<0.01.

Table A.10: Difference in Competition Between Measures, Only On-Ballot Candidates

	(1) Difference in Competitive (57.5%)	(2) Difference in Competitive (20-Pt Margin)	(3) Difference in Candidates (Total-Effective)	(4) Difference in Effective (Votes-Receipts)
Open Seat	1.57**	1.45**	0.87**	0.36**
	(0.18)	(0.19)	(0.07)	(0.03)
Challenger Party	1.11**	0.99**	0.15**	0.15**
	(0.09)	(0.09)	(0.02)	(0.01)
Parties-Balanced	0.19*	0.19*	0.28**	0.06**
	(0.09)	(0.09)	(0.02)	(0.01)
Advantaged-Party	0.04	0.08	0.25**	0.05**
	(0.11)	(0.11)	(0.03)	(0.01)
Open Seat x Parties-Balanced	-0.03	-0.08	0.24*	-0.04
	(0.21)	(0.22)	(0.10)	(0.04)
Open Seat x Advantaged-Party	-0.09	-0.19	1.07**	-0.01
	(0.24)	(0.27)	(0.11)	(0.05)
Constant			-0.11	-0.04
			(0.14)	(0.08)
Cut Point 1	-4.15**	-3.25**		
	(0.53)	(0.44)		
Cut Point 2	3.56**	3.66**		
	(0.52)	(0.44)		
Number of Observations	16,270	16,270	16,270	16,270
Pseudo R-squared	0.12	0.09		
R-squared			0.32	0.20

Note: The results in Models 1 and 2 are from ordinal logistic regressions, and the results in Models 3 and 4 are from OLS regressions (1980-2020). The dependent variable in Models 1 and 2 is the difference between whether the primary is competitive with the 57.5 percent vote share and fundraising measures and the difference between whether the primary is competitive with the 20-point victory and fundraising margin measures, respectively. The dependent variable in Models 3 and 4 is the difference between the total and effective number of candidates (based on receipts) and the difference between the effective number of candidates based on votes and receipts, respectively. Positive coefficients indicate that primaries are more competitive with vote share measures than with fundraising measures. The models include district and year fixed effects. *p<0.05, **p<0.01.

Table A.11: Difference Between Vote Share and Fundraising Measures of Competition, Controlling for Party Donors (Hassell 2022)

	(1) Difference in Competitive (57.5%)	(2) Difference in Competitive (20-Pt Margin)	(3) Difference in Candidates (Total-Effective)	(4) Difference in Effective (Votes-Receipts)
Open Seat	0.77**	0.62	0.79**	0.19**
	(0.30)	(0.33)	(0.10)	(0.05)
Challenger Party	0.64**	0.66**	0.10*	0.05*
	(0.15)	(0.15)	(0.04)	(0.02)
Parties-Balanced	-0.01	0.13	0.41**	0.06*
	(0.17)	(0.17)	(0.05)	(0.03)
Advantaged-Party	-0.24	-0.08	0.32**	0.02
	(0.18)	(0.18)	(0.05)	(0.03)
Open Seat x Parties-Balanced	0.34	0.74	0.33*	0.05
	(0.40)	(0.38)	(0.16)	(0.07)
Open Seat x Advantaged-Party	-0.02	0.25	1.15**	0.02
	(0.42)	(0.43)	(0.17)	(0.08)
Total Party Donors (10s)	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Constant			-0.21*	-0.01
			(0.11)	(0.04)
Cut Point 1	-4.36**	-2.82**		
	(0.84)	(0.19)		
Cut Point 2	3.32**	4.03**		
	(0.83)	(0.22)		
Number of Observations	6,465	6,465	6,465	6,465
Pseudo R-squared	0.16	0.13		
R-squared			0.36	0.21

Note: The results in Models 1 and 2 are from ordinal logistic regressions, and the results in Models 3 and 4 are from OLS regressions (2004-2018). Party donor data are from Hassell (2022). The dependent variables are the same as Table 3 in the paper. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. *p<0.05, **p<0.01. The statistically insignificant relationships across models are unsurprising. As Hassell (2022) shows, factors like seat type and district partisanship influence whether party donors contribute. Party donors respond to the political and electoral context and give accordingly.

Table A.12: Difference Between Vote Share and Fundraising Measures of Competition, Controlling for Party Coordinated and Independent Expenditures

	(1) Difference in Competitive (57.5%)	(2) Difference in Competitive (20-Pt Margin)	(3) Difference in Candidates (Total-Effective)	(4) Difference in Effective (Votes-Receipts)
Open Seat	1.33**	1.24**	0.82**	0.27**
	(0.19)	(0.20)	(0.07)	(0.04)
Challenger Party	0.88**	0.84**	0.14**	0.09**
	(0.09)	(0.09)	(0.02)	(0.01)
Parties-Balanced	0.13	0.16	0.26**	0.04**
	(0.10)	(0.09)	(0.03)	(0.02)
Advantaged-Party	-0.05	0.05	0.23**	0.02
	(0.11)	(0.11)	(0.03)	(0.02)
Open Seat x Parties-Balanced	-0.13	-0.04	0.23*	-0.03
	(0.23)	(0.23)	(0.10)	(0.04)
Open Seat x Advantaged-Party	-0.20	-0.22	1.01**	-0.02
	(0.26)	(0.28)	(0.11)	(0.05)
Constant			-0.33*	-0.11
			(0.15)	(0.08)
Cut Point 1	-3.04**	-2.52**		
	(0.49)	(0.41)		
Cut Point 2	4.22**	4.14**		
	(0.49)	(0.42)		
logsumprepri_coordparty_adjusted				
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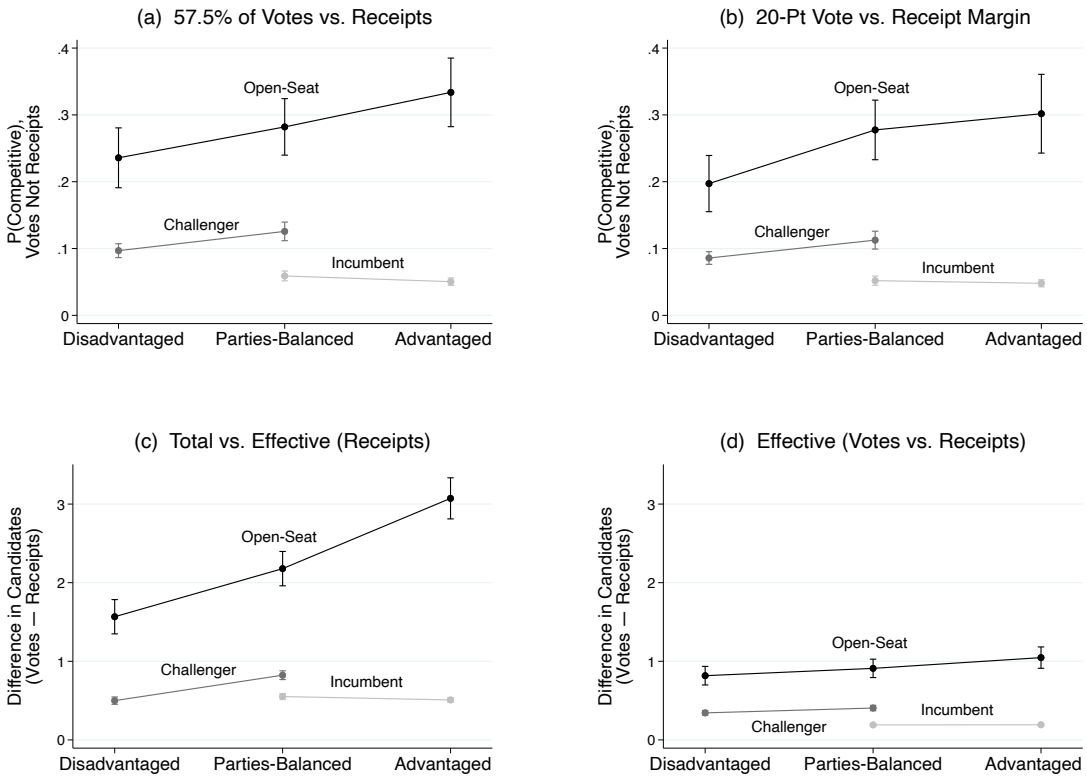
Number of Observations	15,547	15,547	15,547	15,547
Pseudo R-squared	0.11	0.08		
R-squared			0.31	0.17

Note: The results in Models 1 and 2 are from ordinal logistic regressions, and the results in Models 3 and 4 are from OLS regressions (1982-2020). The dependent variables are the same as Table 3 in the paper. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. *p<0.05, **p<0.01.

Measures of Competition with Early Money

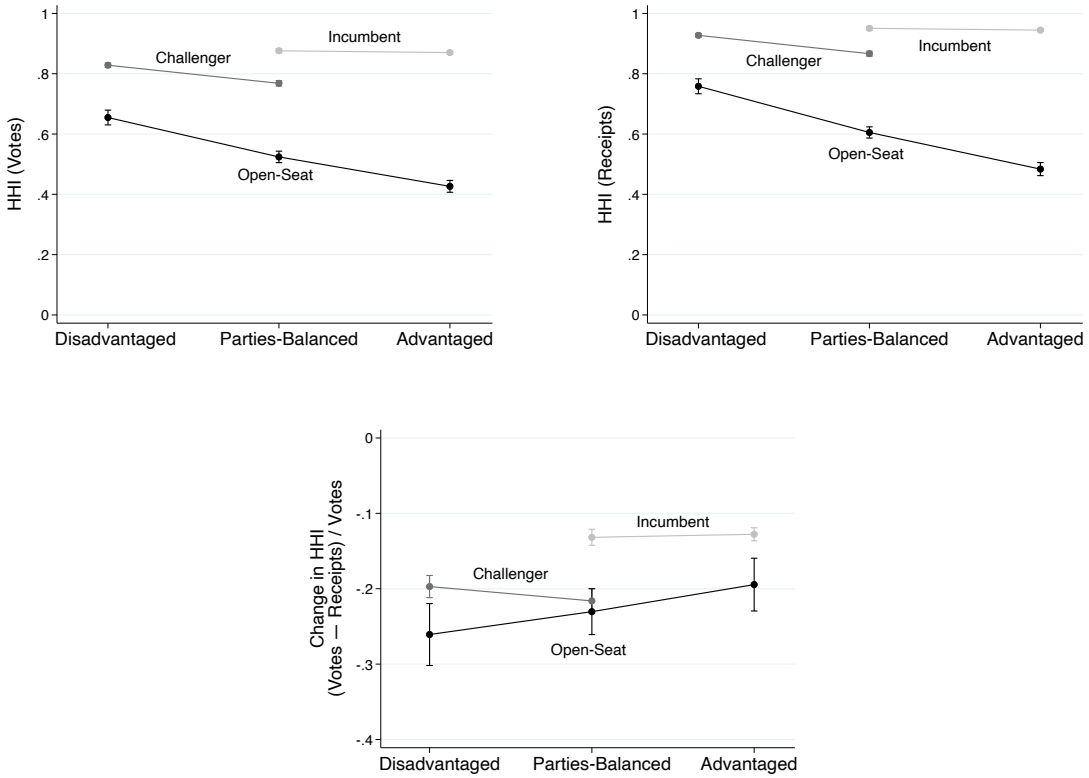
Here we are interested in the overall level of competition, but I explored the difference between vote share and fundraising measures with early fundraising totals as well. As noted in the article, we would expect fundraising measures later in the cycle to more closely map onto (or differ less from) vote totals than fundraising measures earlier in the cycle. I constructed competition measures with fundraising totals at the end of the first year of the election cycle. The results are shown in Figure A8. The same general patterns are apparent with previous year-end receipts, with the largest difference between measures emerging in open-seat races. Yet as expected, the difference between vote share and fundraising measures is even larger earlier in the election cycle, particularly in open seats.

Figure A.8: Difference in Competition Between Measures, with Fundraising Totals at End of First Year



Note: The top graphs show the predicted probability the primary is competitive with the vote share measure but not the fundraising measure (for the 57.5 percent and 20-point margin measures, respectively). The bottom graphs show the difference between the total and effective number of candidates (based on receipts) and the difference between the effective number of candidates based on votes and receipts, respectively. The results are the same when fundraising measures of competition are calculated with previous year-end receipts, and the difference between measures in open seats is even larger earlier in the election cycle.

Figure A.9: Measures of Competition Calculated with the Herfindahl Index



Note: The top graphs show the results with the Herfindahl index of competition, or HHI, calculated with vote shares and receipt shares (left and right graphs, respectively). The values range from 0 to 1, with higher values indicating lower levels of competition (or more concentrated vote and receipt shares). The Herfindahl measure similarly shows that competition looks better with vote shares than with receipt shares. The consistency across measures provides further evidence that vote share and receipt share measures result in markedly different views of competition. I use the measures defined in the article to allow for comparisons with recent work, but it is notable that, across primary types, the average HHI is well above 0.25, the threshold of what is considered a moderately concentrated or competitive market. The bottom graph shows the percentage change in HHI values when we use receipts instead of votes, calculated as the HHI with votes minus the HHI with receipts divided by the HHI with votes. Lower values indicate that the percentage change is largest in open-seat primaries.

Variation in Vote Price at the Candidate Level

While most of the analyses are at the race level, I also provide descriptive statistics of the variation in the amount raised per vote at the candidate level in the article. Here I further examine variation in vote price at the candidate level and incorporate seat type and district partisanship as well. The sample is limited to candidates in contested elections because vote totals are not available for all unopposed candidates. The dependent variable is vote price, measured as total preprimary receipts (in 2020 dollars) divided by total primary votes; higher values indicate that candidates raised more money per vote. The main independent variables are whether the candidate is a long shot (raised less than 10 percent of preprimary receipts) and the seat type and district partisanship variables from the main analyses. The patterns are expected to echo those in Figure 1, with long-shot candidates raising less for votes, but vote price is also likely to vary across contexts. The results are shown in Table A13.

Table A.13: Relationship between Long-Shot Candidates and Vote Price

	(1) Vote Price (in 2020 Dollars)
Long-Shot Candidate	-17.78**
	(1.01)
Open Seat	1.16
	(1.36)
Challenger Party	-3.13**
	(0.99)
Parties-Balanced	7.86**
	(1.24)
Advantaged-Party	2.42**
	(0.90)
Open Seat x Parties-Balanced	6.52**
	(1.78)
Open Seat x Advantaged-Party	21.80**
	(3.33)
Constant	0.61
	(3.52)
Number of Observations	20,292
R-squared	0.12

Note: Results are from OLS regressions from 1980 to 2020. Robust standard errors are in parentheses. The dependent variable is preprimary receipts (in 2020 dollars) divided by primary votes. The sample is limited to candidates in contested elections because vote totals are not available for all unopposed candidates. The baseline categories are incumbent-contested primaries and disadvantaged-party constituencies. The models include district and year fixed effects. *p<0.05, **p<0.01.

We can see that long-shot candidates raise much less money per vote ($18 less, on average) than non-long shots. It is also clear that the amount raised per vote varies across contexts.

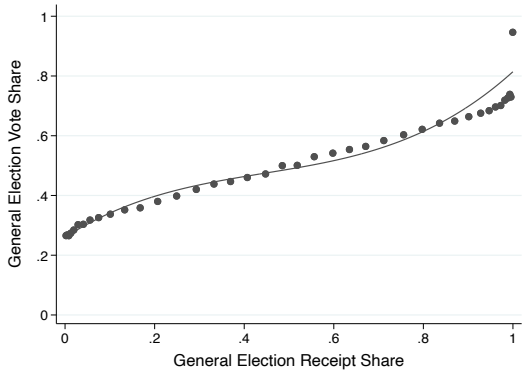
Advantaged-party open-seat races are the most expensive, with candidates raising much more per vote, followed by parties-balanced open seats. Candidates in challenger-party primaries raise less money per vote, and those in parties-balanced primaries raise more, on average. The patterns echo the variation in competition by seat type and district partisanship highlighted by Hirano and Snyder (2019) and illustrated with the fundraising measures as well.

Here I do not delve into why long-shot candidates receive cheaper votes than their competitors who raise more money. The results are consistent with voters being more supportive of long-shot candidates than donors, perhaps because the costs of voting are lower than the costs of giving money or because primary voters use different criteria than donors when deciding who to support. At the very least, it appears easier to garner a negligible amount of votes than it is to raise a negligible amount of receipts. Future work should also examine how candidates perceive the difficulty of obtaining votes versus receipts in light of the emphasis on fundraising in the current political context.

General Election Competition through a Fundraising Lens

While general elections are not our main focus here, we can use the total receipts raised by the major-party general election candidates to examine whether competition in general elections looks better with vote share measures than fundraising measures. Figure A10 shows the relationship between general election receipt shares and vote shares. Indeed, the same patterns appear in general elections, with candidates who raise very little money still receiving around 30 percent of the vote. Indeed, the "floor" for long-shot candidates is even higher in general elections because of the strong association between partisanship and vote choice.

Figure A.10: Relationship Between General Election Receipt Share and Vote Share



Note: The graph shows a binned scatter plot of the relationship between general election receipt share and vote share for U.S. House candidates from 1980 to 2020. The lower correlation between receipt share and vote share among long-shot candidates provides motivation for why vote share measures result in a more optimistic view of competition than fundraising measures.

The analyses below follow the same structure as those in the article. The dependent variables are the difference between whether the general election is competitive with the 57.5 percent vote share and fundraising measures, the difference between the total and effective number of candidates (based on receipts), and the difference between the effective number of candidates based on votes and receipts. (The margin measure is not included here, because in general elections, a 57.5 percent vote share measure indicates a 15-point victory margin.) The independent variables are seat type and district partisanship: incumbent-contested and open-seat contests in competitive and uncompetitive districts. Seat type and district partisanship are measured the same as above. The results are shown in Table A14.

Predicted values by race type are plotted in Figure A11. Graph (a) shows the probability the general election is competitive with the vote share measure but not the fundraising measure (with the 57.5 percent measure). Graphs (b) and (c) show the difference between the total and effective number of candidates (based on receipts) and the difference between the effective

Table A.14: Difference Between Vote Share and Fundraising Measures of Competition, General Elections

	(1) Difference in Competitive (57.5%)	(2) Difference in Candidates (Total-Effective)	(3) Difference in Effective (Votes-Receipts)
Open Seat	0.45**	-0.08**	-0.04**
	(0.14)	(0.02)	(0.01)
Competitive District	0.60**	-0.07**	-0.02*
	(0.08)	(0.01)	(0.01)
Open Seat x Competitive District	0.47*	-0.16**	-0.13**
	(0.19)	(0.02)	(0.02)
Constant		0.28**	0.17*
		(0.09)	(0.07)
Cut Point 1	-3.08**		
	(0.76)		
Cut Point 2	3.15**		
	(0.76)		
Number of Observations	9,122	9,122	9,122
Pseudo R-squared	0.14		
R-squared		0.21	0.21

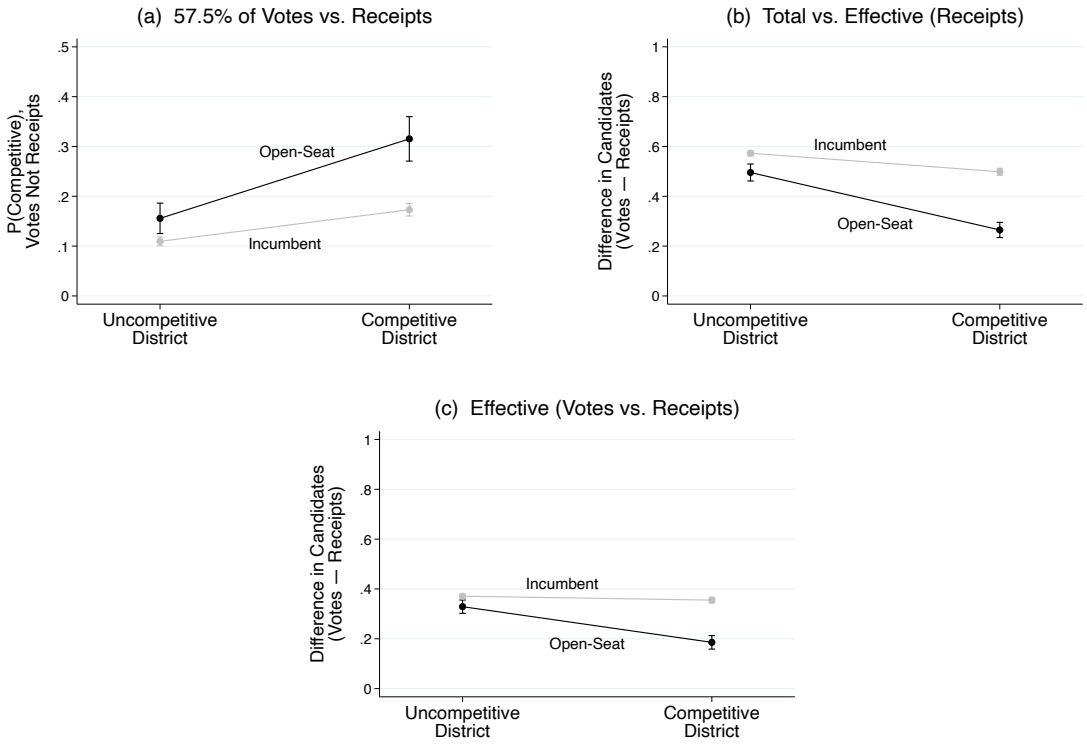
Note: The results in Model 1 are from ordinal logistic regressions, and the results in Models 2 and 3 are from OLS regressions (1980-2020). The dependent variable in Model 1 is the difference between whether the general election is competitive with the 57.5 percent vote share and fundraising measures. The dependent variable in Models 2 and 3 is the difference between the total and effective number of candidates (based on receipts) and the difference between the effective number of candidates based on votes and receipts, respectively. The models include district and year fixed effects. *p<0.05, **p<0.01.

number of candidates based on votes and receipts, respectively. Across race types, the quality of competition is higher with vote share measures than fundraising measures in general elections as well. For the competition measures, the difference between measures is again largest in open-seat races. The predicted probability that a race is competitive with the vote share measure but not the fundraising measure increases by 0.31 in open-seat races in competitive districts. Yet for the number of candidate measures, the difference is smallest in open-seat races because both of the two-party candidates are more viable than in uncompetitive districts.

Lastly, I also compared the fundraising and vote share measures of competition with the toss-up races from Cook Political Report. One important note is that both the vote share and fundraising measures suggest that far more races are competitive than Cook Political Report rates as toss-ups. Nonetheless, Cook's toss-up races make up a greater share of competitive races with the fundraising measure (33 percent) than with the vote share measure (30 percent). Fundraising and vote share measures are likely to be useful for different scholarly endeavors, but the results suggest that competition is better with vote share measures than with fundraising measures in both primary and general elections.

A final note is that I also examined expenditure type for general elections from 2004 to 2014 in light of Ansolabehere and Gerber's (1994) article distinguishing among total expenditures,

Figure A.11: Predicted Difference Between Vote Share and Fundraising Measures, General Elections



Note: Predicted values are calculated from the models in Table A14. Graph (a) shows the probability the general election is competitive with the 57.5 percent vote share measure but not the fundraising measure. Graphs (b) and (c) show the difference between the total and effective number of candidates (based on receipts) and the difference between the effective number of candidates based on votes and receipts, respectively. Across measures, general elections are more competitive with vote share measures than with fundraising measures.

general campaign expenditures, and communications expenditures. Limbocker and You (2020) generously shared their data on types of expenditures across categories, and I examined whether the results changed when communications spending was used rather than total spending. Limbocker and You (2020) break down spending into six types: Administrative, Wages, Fundraising, Media, Polling, and Consultants. I combined Wages and Media to approximate Ansolabehere and Gerber's (1994) category of communications spending. The patterns are very similar, and general election competition is lower with communications spending as well. Although the data cover a shorter time period and are limited to general elections, there is little indication that the results would change with the use of communications spending versus receipts or total spending.

In sum, vote share measures (weighted and unweighted alike) suggest that competition is better than fundraising measures in primaries and general elections. While few political observers would suggest that contemporary general elections are competitive, fundraising measures indicate that the quality of competition is even lower yet.

A Brief Look at Combined Primary and General Election Competition

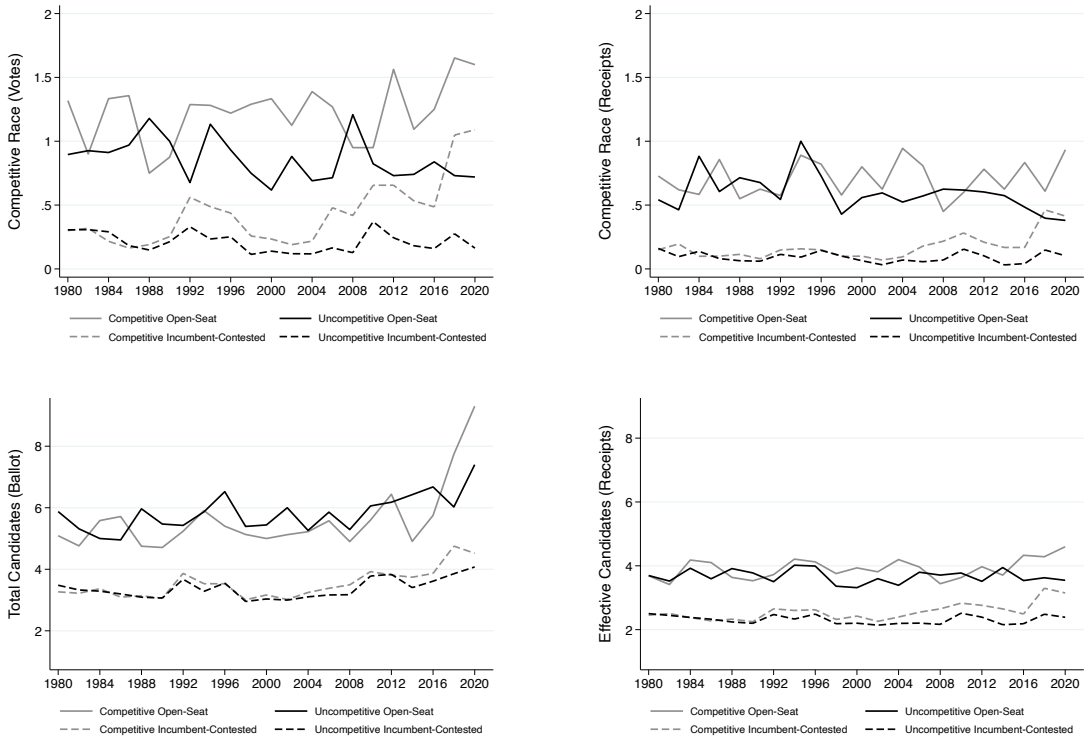
As noted in the article, one of the main reasons why primary competition has attracted more attention in recent years is due to the decline in general election competition. An important implication of any increases in primary competition is that primaries may serve as a substitute for general elections or at least temper the negative consequences of the rise in safe seats. This section provides a brief look at this question. I am unaware of a previous measure of competition that incorporates both primary and general election competition, but I create a district-level measure of overall competitiveness with the vote share and fundraising measures. I take the sum of whether the top vote-getter or top fundraiser received or raised less than 57.5 percent of the vote or receipts in the primary and general election. The value ranges from 0 when both the primary and general election are uncompetitive to 1 when either the primary or general election is competitive to 2 when both are competitive. I then calculate the average at the district level so the variable can take five different values (0, 0.5, 1, 1.5, and 2).

For the fundraising measure of the overall number of primary and general election candidates, I take the sum of the effective number of primary and general election candidates at the primary level and then generate the average at the district level. For the vote share measure, I similarly add the total number of primary and general election candidates at the primary level and generate the district average. The fundraising measure ranges from 1 to 8 (mean of 2.5), and the vote share measure ranges from 1 to 29 (mean of 3.6).

The averages are shown by year and seat type in Figure A12. The vote share measures are on the left, and the fundraising measures are on the right. The vote share measures again indicate that competition is better across seat types than the fundraising measures, but we are more interested here in overall trends over time. We can see in the top graphs that, with both measures, competition has increased in competitive incumbent-contested races (dashed gray line) and decreased slightly in open-seat races in uncompetitive districts (solid black line). The vote share measures in the top left graph show that competition has increased in open-seat races in competitive districts in recent years (solid gray line) and decreased in incumbent-contested races in uncompetitive districts (dashed black line). We see similar trends with the number of candidate measures in the bottom graphs, with the overall number of primary and general candidates highest in open-seat races in competitive districts (solid gray line), followed by open-seat races in uncompetitive districts (solid black line). There is a recent increase in the overall number of candidates in incumbent-contested races in competitive districts with both measures (dashed gray line). The number of candidates is lowest in incumbent-contested races in uncompetitive districts (dashed black line) and has remained low across this period.

We are also interested in the share of lawmakers elected in each context. Whereas 42 percent of lawmakers in the 1980s were elected from safe districts, nearly 70 percent of those elected in the 2010s were. Moreover, open seats are a small minority of races (on average, 10 percent of races) so their impact on overall levels of competition is limited. For example, in 2020, of the 435 congressional races, 273 were incumbent-contested in uncompetitive districts (63 percent), 122 were incumbent-contested in competitive districts (28 percent), 25 were open-seat in uncompetitive districts (6 percent), and 15 were open-seat in competitive districts (3 percent).

Figure A.12: A Combined Measure of Primary and General Election Competition, By Seat Type and District Partisanship



Note: The top graphs show the overall level of primary and general election competition with the vote share and fundraising measures (left and right graphs, respectively). The bottom graphs show the overall total and effective number of primary and general election candidates (left and right graphs, respectively).

In 1980, these figures were 47 percent, 44 percent, 6 percent, and 3 percent, respectively. The number of incumbent-contested races in competitive districts has declined dramatically from the 1980s to the 2010s, so the recent increase in competition in these contexts applies to a much smaller number of races than if we had seen this level of competition in the 1980s. Similarly, the recent increase in competition in open-seat races in competitive districts also has a limited impact on competition due to the minimal number of races. In short, more and more lawmakers are selected in districts depicted by the black lines in Figure A12, where competition is for the most part decreasing over time or remaining at low levels. Competitive general elections might be normatively preferable to competitive primaries for many reasons, but there is little indication that primary competition is likely to serve as a substitute for general election competition.