How Do Campaign Spending Limits Affect Electoral Competition? Evidence from Great Britain 1885-2010

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Abstract

In half of the democratic countries in the world, candidates face legal constraints on how much money they can spend on their electoral campaigns, yet we know little about the consequences of these restrictions. I study how spending limits affect electoral competition in British House of Commons elections. On the basis of archival material, I have collected new data on the more than 58,000 candidates who ran for a parliamentary seat from 1885 to 2010, recording how much money each candidate spent, and the spending limit they faced. To identify causal effects, I exploit within-constituency variation in spending caps induced by reforms of the spending-limit formula that affected some, but not all constituencies. Consistent with theoretical predictions from a contest model, the results indicate that when the level of permitted spending is raised, campaigns become more expensive, fewer candidates run for office, the proportion of wealthy candidates increases, and the financial and electoral advantages enjoyed by incumbents are amplified.

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Introduction

Imposing legal limits on candidate campaign expenditures is one the most common ways, globally, to regulate money in politics. As illustrated by the map in Figure 1, more than half of the democratic countries in the world impose limits on candidate campaign expenditures in national elections (Ohman, 2012, p. 37). In recent years, spending limits have been at the center of passionate public debate on how to prevent money from determining electoral outcomes and dictating public policies.

Scholars have long theorized about the electoral consequences of campaign spending limits (for example, Ashworth, 2006; Iaryczower and Mattozzi, 2012; Jacobson, 1978; Levitt, 1994; Pastine and Pastine, 2012; Prat, 2002; Sahuguet and Persico, 2006). However, the empirical evidence is very modest, being limited to only two cross-sectional studies of parliamentary elections in Canada (Milligan and Rekkas, 2008) and mayoral elections in Brazil (Avis et al., 2017).[1]

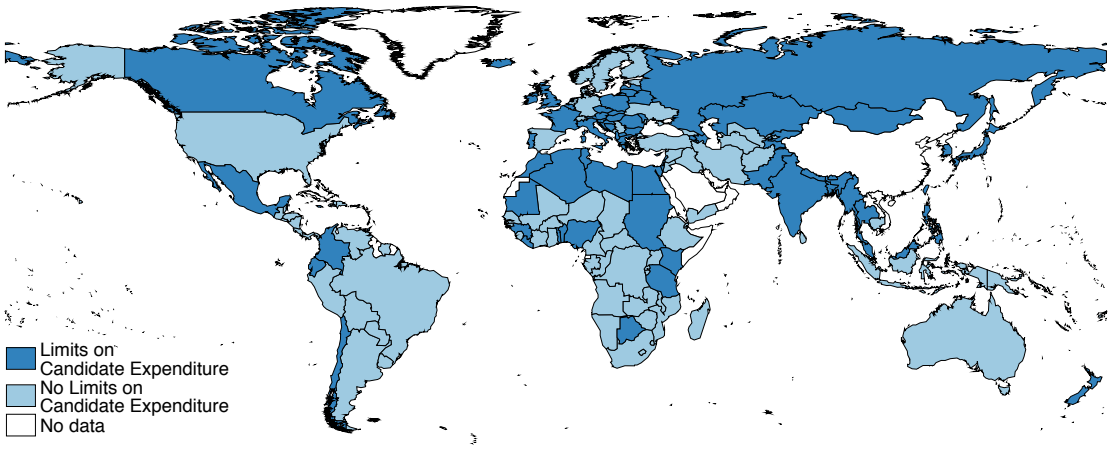
I study how campaign spending limits affect electoral competition in the context of British House of Commons elections. In order to do this, I present the longest-spanning dataset on campaign finance ever collected; based on archival material from the House of Commons, I compiled a new dataset that covers approximately 99.7% of all candidates running in general elections from 1885 to 2010, producing in total more than 58,000 candidate-election observations.[2]

[1]Exploiting non-linearities in the assignment of spending limits across districts, both studies find that relaxed spending limits reduce electoral competition.

[2]Scholars have long been interested in the role of money in politics in Britain. Pinto-Duschinsky (1981) and Ewing (1987) describe the historical development in political finance in Great Britain, and scholars have used campaign spending as a measure of constituency-level campaign intensity (Johnston, 1987; Johnston and Pattie, 2007; Johnston, Pattie, and Johnston, 1989; Johnston and Pattie, 1995, 2014; Pattie and Johnston, 2003; Johnston et al., 2011; Pattie, Johnston, and Fieldhouse, 1995; Fieldhouse and Cutts, 2009).

Although these studies are valuable, they tend to focus on recent general elections, or on a limited number of constituencies in earlier general elections. This raises questions about the generalizability of their findings. Furthermore, the institution of campaign finance limits is not the explicit focus of these studies, nor do any of them move beyond examining aggregate spending by scrutinizing the detailed composition of campaign

Figure 1: **Limits on Candidate Campaign Expenditure.** Approximately half of the democratic countries of the world impose limits on the money candidates are permitted to spend on their electoral campaigns.



NOTE: The map is constructed based on data from Ohman (2012).

Besides the value of studying the House of Commons in its own right, there are good reasons to focus on these elections. Firstly, House of Commons elections provide a unique opportunity to examine the effect of campaign spending limits over a period of more than a hundred years, permitting a study of within-constituency changes in spending limits induced by quasi-exogenous reforms. Secondly, spending limits in House of Commons elections are set according to a well-defined, mathematical formula based on the type of constituency and the number of electors. Knowing the exact conditions under which spending limits are assigned, I am able to very clearly specify and critically evaluate the assumptions under which causal effects are identified. Thirdly, Great Britain led the democratic world in the introduction of limits on campaign spending, and many countries have directly adopted the British regulatory regime. Studying the British system sheds light more broadly on the institutional blueprints upon which most other countries have based their campaign spending

expenditures.

restrictions.

I test four theoretical predictions concerning the consequences of spending limits derived by Avis et al. (2017), namely that loosened spending limits increase the cost of campaigns, reduce the number of candidates, increase wealthy candidates' share of the candidate pool, and amplify the incumbency advantages. To test these causal claims, I exploit variation induced by reforms of the spending limits formula that affect some, but not all constituencies.

Consistent with theory, the results suggest that when spending limits are raised by £100,000, on average the mean cost of a campaign increases by £43,000, 0.3 fewer candidates run for office, the percent of candidates with an upper-class background increases by 10 percentage points, and the percent of money and votes that flow to incumbents surge by approximately 10-15 percentage points. In summation, high levels of permitted spending diminish electoral competition.

The paper proceeds as follows: First, I describe the new dataset and the spending limits formula. After that, I briefly summarize the theoretical predictions. I then describe the empirical design and discuss the conditions under which I can plausibly test the predictions. Following that, I present the results related to each of the four testable predictions. Finally, I conclude with a short discussion.

New Data: House of Commons Campaign Spending 1885–2010

Against the backdrop of a historically corrupt and expensive general election in 1880, the two major parties in Great Britain at the time came together and passed the *Corrupt and Illegal Practices Prevention Act* in 1883. The Act criminalized various forms of bribery, imposed limits on candidates' campaign expenditure, and introduced significant fines and

punishments for rule violations.[3]

To monitor compliance with the new campaign spending restrictions, the Act required candidates to fully disclose and document how they spent their money, with the back-up of official receipts, within 28 days after a general election. As a precaution against the temptation to submit fabricated information, the campaign expenditure returns filed by candidates and their campaign managers were compiled by the Home Office in the months following the election and were made available for all members of the House of Commons to scrutinize. The Home Office checked the receipts submitted by each candidate and wrote up a detailed report on each constituency. These reports were then kept in the parliamentary archives. The dataset introduced in this paper is based on these reports.

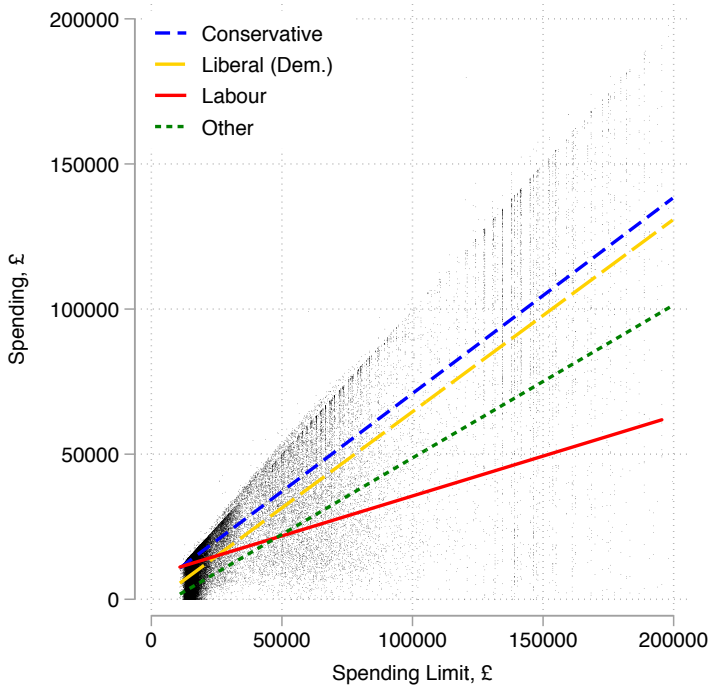
Based on the material in the parliamentary archives, I constructed a dataset in which each observation pertains to a specific candidate in a given general election from 1885 to 2010. In total, this covers more than 58,000 individual candidate-election observations. I match each return documented in the archival material to a unique candidate identifier that is further linked to information on electoral outcomes and that has been used in a series of papers by Eggers and Spirling (2014*a*,*b*,*c*). This will allow future researchers to easily link the campaign finance data with information on candidates and constituencies. To facilitate meaningful comparisons over time, all monetary variables are adjusted for inflation and reported in 2018 prices.

All campaign spending returns related to the general election of 1918 appear to have been lost, but otherwise the dataset contains near complete information on all candidates running for office.[4] As reported in Table A.1 in the Appendix, close to 99.7% of all candidates

[3]Candidates, along with their campaign managers, who failed to file the required information to the Returning Officer within a certain number of days after the election, as well as candidates who filed erroneous information, could be subject to significant fines, banned from running for office in future, or even imprisoned.

[4]The House of Commons Library is not aware of how the 1918 filings were lost. However, based on comparisons with other documents from 1918, they believe that the files were submitted by the candidates,

Figure 2: **New Data on more than 58,000 Candidates' Campaign Spending.**



complied with the regulations by reporting their spending in a timely manner.[5] In the Appendix, I discuss the reliability of the reported campaign spending in further detail.

To give a sense of how the data is distributed, I plot each candidate's total spending against the corresponding spending limit in Figure 2. I fit lines through the data for each of the major parties. On average, Conservative and Liberal (Dem.) candidates spend approximately 70 pence when the spending limit increases by £1, whereas Labour candidates only spend 30 pence.

I measure candidate entry using three different variables. The most intuitive measure simply counts the number of candidates who ran in a given election. To address the concern

but never compiled by the Home Office since the 1918 election was held only a month after the end of World War I, and presumably compiling the expenditure returns was a relatively low priority task for the British government at the time. As a consequence, I do not think that the missing files induce any notable bias in the estimates.

[5]The few candidates who did not report their spending were either non-viable candidates running as independents or candidates representing minor parties.

that this measure does not capture whether a candidate is viable or not, I calculate the effective number of electoral candidates:

$$\#\text{ Effective Electoral Candidates}_{it} \equiv \frac{1}{\sum\limits_{j \in J_{it}} v_{jit}^2}\,, \tag{1}$$

where v_{jit} is candidate j's vote share in constituency i at time t, and J_{it} is the set of candidates running for office in district i at time t. Note that this measure is simply the inverse of the Herfindahl-Hirschman Index of concentration calculated using vote shares. Using the same formula, I also calculate the # Effective Spending Candidates by substituting candidates' vote shares, v_{jit}, with their campaign spending shares, s_{jit}.

Ideally, I would like to measure each candidate's wealth and connections, but this is not feasible. As an alternative proxy, I recorded whether each candidate is considered to be a member of the British upper class. I utilized the official titles that are used when candidates declare their campaign spending; I classified candidates as members of the upper class if they are referred to as dukes, counts, viscounts, earls, barons, marquess, knights or have received the Most Excellent Order of the British Empire.

The Spending Limits Formula

The Corrupt and Illegal Practices Prevention Act stipulated that campaign spending limits would vary across constituencies depending on the type of constituency and the number of electors therein. The intent of the variation in the caps was to acknowledge that it was generally more costly to campaign in large rural constituencies than in small urban ones (Pinto-Duschinsky, 1981). The historical distinction between county and borough constituencies was used as a coarse proxy for population density and urbanization. According

Table 1: **Descriptive Statistics**

	Mean	St. Dev.	Skew.	Min.	Max.	Obs.
			Campaign Finance			
Spending Limit (£100,000)	0.38	0.39	2.28	0.11	4.26	58,830
Spending (£100,000)	0.24	0.32	2.64	0.00	4.26	57,195
Limit per Elector	1.94	3.91	2.67	0.17	35.31	58,830
Spending per Elector	1.41	3.21	3.09	0.00	37.19	57,195
% Constituency Spending	32.83	19.93	0.44	0.00	100.00	57,271
Mean Spending	0.31	0.35	2.19	0.00	4.20	18,727
Total Spending	0.75	0.68	2.12	0.00	8.40	18,728
# Effective Spending Candidates	2.45	0.72	0.54	1.00	6.27	18,805
			Electoral Variables			
# Candidates	3.05	1.45	1.53	1.00	15.00	19,322
# Effective Electoral Candidates	2.23	0.51	-0.01	1.00	4.77	19,321
% Upper-class Candidates	1.24	8.12	7.51	0.00	100.00	19,322
Upper-class Winner	0.02	0.13	7.32	0.00	1.00	19,322
% Constituency Votes	32.81	22.13	0.30	0.00	100.00	58,890
Conservative	0.31	0.46	0.82	0.00	1.00	58,891
Liberal (Dem.)	0.24	0.43	1.23	0.00	1.00	58,891
Labour	0.25	0.43	1.18	0.00	1.00	58,891
Other	0.21	0.40	1.46	0.00	1.00	58,891
Electors (100,000s)	0.53	0.22	-0.67	0.02	1.68	58,890
County	0.50	0.50	0.01	0.00	1.00	58,891
Incumbent	0.22	0.42	1.32	0.00	1.00	58,891

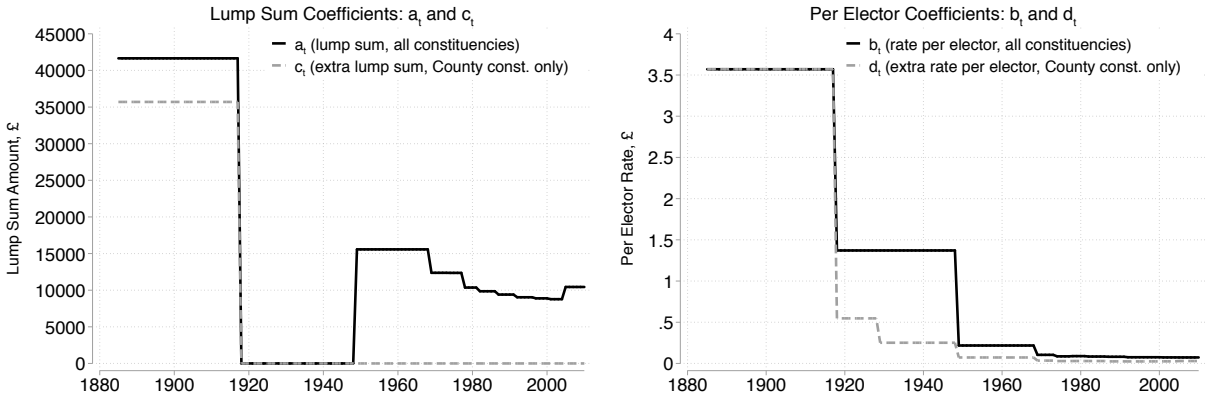
to the Act, the specific spending limit to be faced by the candidates in a given constituency, i, in a given general election, t, was determined by the following formula:[6]

$$Spending\ Limit_{it} \equiv a_t + b_t\, Electors_{it} + c_t\, County_{it} + d_t\, Electors_{it} \times County_{it}\,, \quad (2)$$

where a_t is a baseline lump sum amount allocated to all constituencies in year t; b_t represents the allowed spending rate per elector in year t; c_t is an additional lump sum amount allocated only to county constituencies; finally, d_t reflects the additional spending allowed per elector, again only in county constituencies.

The fundamental spending limit formula as initially described in the *Corrupt and Illegal Practices Prevention Act*, remained essentially the same throughout the studied period, but the four formula coefficients (a_t, b_t, c_t, d_t) were modified on twelve occasions. How they were modified is illustrated in Figure 3.

Figure 3: **Development of Spending Limit Formula Coefficients.**



NOTE: The amounts are reported in 2018 prices. All the plots in this paper are produced using Stata's `plotplainblind` module (Bischof, 2017).

[6]In some periods, the number of electors was rounded before it was plugged into the formula. During the period of 1885-1910, it was rounded down to the nearest 1,000. During the period of 1969-1978, the number of electors was rounded to the nearest 8 electors in boroughs and 6 electors in counties. The exact formulae are outlined in the Appendix.

As suggested by the development in the dashed lines in Figure 3, the reforms affected spending limits in county and borough constituencies differently. From 1885 through 1917, candidates in county constituencies were permitted to spend almost twice as much as candidates in comparable county constituencies, but a series of reforms reduced this difference significantly over the subsequent fifty years.

Theoretical Predictions

In this section, I briefly summarize the key theoretical predictions outlined by Avis et al. (2017) who study how campaign spending limits affect electoral competition in a standard contest-model framework. In the model, N candidates simultaneously choose how much money to spend on two campaign technologies: formal expenditures, x_i, which are subject to a cap, $\bar{x}$, and unrestricted informal expenditures, z_i. A candidate's total campaign input, y_i, is a weighted sum of the two types of expenditures, $y_i = a_i x_i + b_i z_i$, where formal expenditures are assumed to be more effective than informal expenditures, $a_i > b_i$. A candidate's probability of winning, s_i, is proportional to her share of aggregate input in the electoral contest, $s_i = \frac{y_i}{\sum_{k=1}^{N} y_k}$. The marginal cost of fundraising, c_i, is constant, but varies across candidates. Each candidate i solves the following maximization problem:

$$\max_{0 \leq x_i \leq \bar{x}, z_i \geq 0} s_i(x_i, x_{-i}, z_i, z_{-i}) - c_i(x_i + z_i) \tag{3}$$

The Nash equilibrium in pure strategies is unique, and comparative statics with respect to spending limits, $\bar{x}$, generate the following testable predictions:

1. *Total campaign inputs increase in the spending limit.* The intuition is that candidates who are at a corner solution ($x_i = \bar{x}$) will increase their spending if the limit is raised.

One cannot directly test the prediction since $\sum y_i$ is unobservable, but as an indirect test one can examine whether aggregate spending, $\sum x_i$, and mean spending, $\frac{1}{N}\sum x_i$, increases in the spending limit.

2. *The number of entrants decreases in the spending limit.* When total input increases, the marginal benefit of spending decreases. As a consequence, candidate entry (defined as $x_i > 0$) will no longer be optimal for certain candidates. The empirical implication is that some candidates will be deterred from entering, and that money and votes, more generally, should concentrate on fewer candidates.

3. *The share of wealthy candidates increases in the spending limit.* The entrants with the highest fundraising costs, c_i, are the first to drop out of the race when spending limits are raised because the marginal costs of raising money are greater than the marginal benefits for these candidates. If the marginal cost of fundraising is lower for wealthier or well-connected candidates, this would result in a wealthier or more well-connected candidate pool.

4. *The incumbency advantage increases in the spending limit.* If incumbency status reduces the cost of raising campaign finance, c_i, then relaxing the spending constraints should translate into a more pronounced incumbency advantage.

In the next section, I outline the empirical design that I use to test these theoretical predictions.

Empirical Design Exploiting Reforms of the Spending Limits Formula

Using the dataset described above, suppose one regressed a measure of electoral competition on the level of permitted spending. For obvious reasons, it would be not be sensible to interpret the coefficient on the spending limits variable as the average causal effect on electoral competition. A first-order concern is that the formula inputs may affect electoral competition. For example, suppose that the supply of candidates increases with the number of electors because the pool from which parties can recruit deepens when the population grows. This would induce bias in the estimated effect.

Could one address this concern by controlling for formula inputs? If only a single election was observed this would not be feasible. By construction, the level of permitted spending and the three formula inputs ($Electors_{it}$, $County_{it}$ and $Electors_{it} \times County_{it}$) would be perfectly multicollinear since the spending limit is a linear combination of these variables.

However, since we observe multiple general elections in which spending limits are assigned using different formula coefficients, one could exploit the panel structure to estimate equations of the form

$$Y_{it} \;=\; \beta_1 Spending\ Limit_{it} + \alpha_i + \theta_i Electors_{it} + \varepsilon_{it}\,, \tag{4}$$

where α_i represents constituency-fixed effects adjusting for time-invariant factors (i.e. holding constant $County_{it}$), and $\theta_i Electors_{it}$ flexibly adjusts for changes in the number of electors within each constituency (i.e. holding constant $Electors_{it}$ and $Electors_{it} \times County_{it}$). In this setting, the variation in $Spending\ Limit_{it}$ is engendered exclusively by the temporal variation in the formula coefficients (a_t, b_t, c_t and d_t in Equation 2), and not the formula

inputs ($Electors_{it}$, $County_{it}$, and $Electors_{it} \times County_{it}$).

Is it reasonable to interpret the estimated β_1 in Equation 4 as the average causal effect of spending limits on electoral competition? The answer depends on whether one is willing to assume that the variation in formula coefficients is not systematically related to other determinants of electoral competition. The estimate may be biased if the formula coefficients were modified in response to changes in the electoral environment affecting electoral competition. Suppose, for example, that the modification of the formula coefficients in 1918 was implemented to offset an increase in electoral competition induced by the enfranchisement of women in the same year; this would bias the estimated effect.

To address concern of this nature, one needs to wash out various time-specific shocks affecting all constituencies. This is possible because some reforms differentially affect county and borough constituencies. Exploiting variation from these reforms, one could estimate equations of the following form

$$Y_{it} \quad = \quad \beta_1 Spending\ Limit_{it} + \alpha_i + \theta_i Electors_{it} + \delta_t + \gamma_t Electors_{it} + \varepsilon_{it}\,, \tag{5}$$

where δ_t represents time-fixed effects washing out common shocks affecting all constituencies in a given election; $\gamma_t Electors_{it}$ represents election-specific effects of the number of electors; and all other variables are the same as those in Equation 4. In this setting, the variation in $Spending\ Limit_{it}$ comes entirely from the temporal variation in the two county-specific formula coefficients (c_t and d_t in Equation 2), and it is neither affected by variation in formula inputs ($Electors_{it}$, $County_{it}$, and $Electors_{it} \times County_{it}$), nor by variation in formula coefficients affecting all constituencies (a_t, b_t).

The design is akin to a differences-in-differences design with a relaxed common-trends

assumption, allowing for constituency- and time-specific trends in the number of electors. The effects are identified by comparing within-constituency changes in electoral competition in county and borough constituencies following formula reforms that differentially affected these two constituency types, while flexibly controlling for changes in the number of electors within and across constituencies.

Threats to Identification

The model outlined in Equation 5 addresses the most obvious threats to identification, but causal effects are not identified without assumptions. While the identifying assumption is weaker than the standard parallel-trends assumption underlying difference-in-differences designs, the assumption is not trivial, and it is indeed much stronger than the identifying assumptions made in a randomized experiment.

The key question is what motivated formula reforms that differentially affected spending limits in county and borough constituencies? Importantly, the three major reforms in 1917, 1929 and 1948 that all reduced spending limits in counties more than in boroughs were introduced by the Liberal party, the Conservative party and the Labour party, respectively. This alleviates some of the concerns about partisan motivations for reducing spending limits more in counties than in boroughs.

To further shed light on the motivation, I looked at the parliamentary debates in which these reforms were discussed. Of course, MPs are strategic about the information they reveal in these debates, but they may be informative of at least the officially stated reasons behind the reforms. In the parliamentary debates leading up to the formula reforms in 1917, 1929 and 1948, the key argument in favor of reducing spending limits more in counties than boroughs was the development in infrastructure and communications. The initial justification for the high spending limits in counties no longer applied because, as one MP expressed it, "the

transport facilities in rural areas have since been greatly improved"[7] and "improvements in the means of communication and other advantages have reduced the necessary expenditure in counties."[8]

If technological and infrastructural developments affected electoral competition more in counties than in boroughs, and if politicians in response reduced spending limits more in counties, this could induce a bias in the estimated effect. To the extent that the developments in question follow a somewhat stable trends, one can address concerns of this nature. In particular, one can relax the identifying assumption by including county- and borough-specific linear and quadratic trends in the regressions. In the appendix, I show that the findings are robust when one makes this adjustment. I further show that the results remain when one relaxes the identifying assumption by including region-by-election fixed effects and region-by-election-specific effects of electors instead of election-fixed effects and election-specific effects of the number of electors.

Results: Loose Spending Limits Diminish Electoral Competition

Consistent with the theoretical predictions discussed above, the results suggest that high levels of permitted spending reduce electoral competition. In the subsequent subsections, I document four electoral consequences of higher spending limits. First, campaigns become more expensive. Second, fewer candidates run for office. Third, the shares of upper-class candidates and upper-class winners surge. Fourth, the financial and electoral advantages

[7] http://hansard.millbanksystems.com/commons/1928/may/07/clause-5-maximum-scale-of-election#S5CV0217P0_19280507_HOC_250

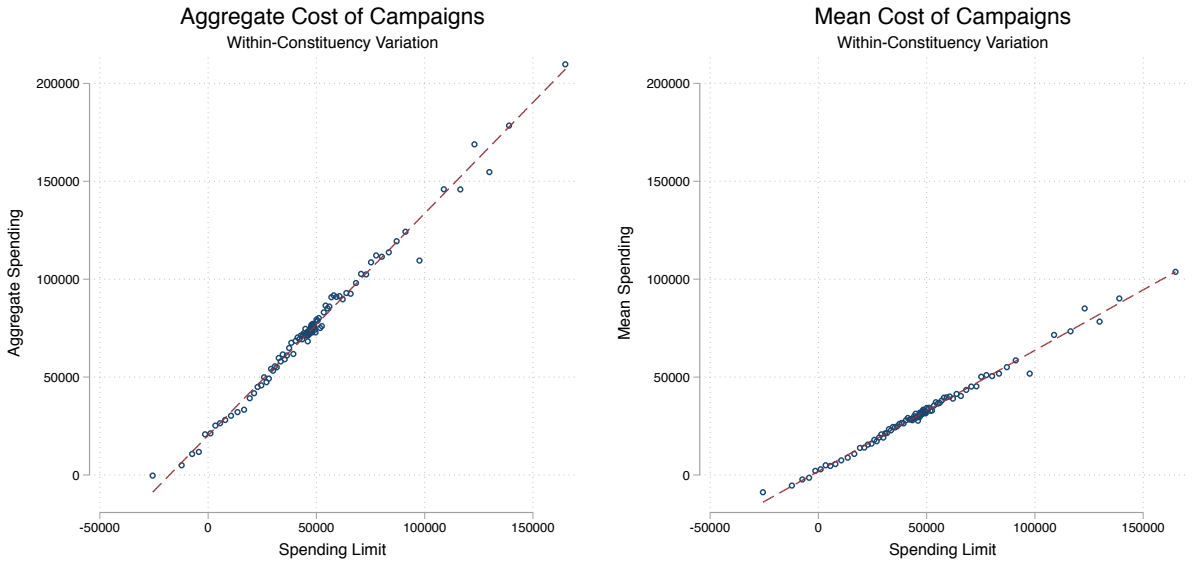
[8] http://hansard.millbanksystems.com/commons/1928/may/07/clause-5-maximum-scale-of-election#S5CV0217P0_19280507_HOC_250

enjoyed by incumbents are magnified.

Loose Spending Limits Increase the Cost of Campaigns

Figure 4 illustrates how within-constituency variation in permitted spending relates to the cost of electoral campaigns. In each panel, the x-axis reports the within-constituency variation in levels of permitted spending, while the y-axes report the within-constituency variation in aggregate and mean spending, respectively.[9] Each dot corresponds to a binned average calculated within one percentile of the distribution of spending limits. In both graphs, the dots follow a clear linear pattern with positive slopes, suggesting that aggregate and average cost of campaigns increase when the level of permitted spending goes up.

Figure 4: **Campaigns Become More Expensive when Spending Limits Are Raised**



NOTE: In each plot, the dots represent binned averages based on 100 equally sized bins, and the lines are linearly fitted to the binned averages. All plots are partial regression plot adjusting for constituency-fixed effects. The plots are produced using Stata's `binscatter` module.

[9]Each plot is a partial regression plot showing the relationship between the residuals obtained from two fixed effects regressions with the x- and y-axis variables as outcomes.

The graphical evidence is suggestive, but for reasons discussed above one cannot pin down the causal effect of spending limits on campaign spending on the basis of the within-constituency association alone. In Table 4, I turn to the more rigorous statistical analysis. The table columns are organized following the discussion in the section outlining the empirical design. The first column presents the simple, pooled cross-sectional association. In the second and third columns the estimates are adjusted for spatial variation that might be correlated with spending limits, and in the next two columns the estimates are adjusted for temporal variation that might be correlated with spending limits. In the final column, the result is based only on variation induced by formula reforms that differentially affected borough and county constituencies.

Across all specifications, the estimated effect of permitted spending on the cost of campaigns is positive and statistically significant. The result presented in the last columns in the first panel indicates that aggregate spending increases by approximately 70 pence when spending limits are raised by £1. Similarly, the results in the second panel suggest that mean spending increases by approximately 40 pence when spending limits are raised by £1.

Taken together, these findings indicate that on average campaigns become more expensive when spending restrictions are loosened. In the next subsection, I show that the high cost of campaigning deters some candidates from running for office.

Loose Spending Limits Reduce the Number of Candidates

Figure 5 illustrates how within-constituency variation in permitted spending relates to the number of candidates who run for office. All three panels show a clear negative association between the level of permitted spending and the number of electoral entrants, and the patterns in the binned averages suggest that the relationships are relatively well approximated by linear fits. The three outcomes measure different aspects of candidate entry but reveal

Table 2: **The Cost of Campaigns Increases when Spending Limits Are Raised.**

	Total Spending				
Spending Limit	1.18	1.15	0.99	0.71	0.69
	(0.02)	(0.03)	(0.05)	(0.10)	(0.11)
Observations	18,728	18,728	18,728	18,728	18,728
	Mean Spending				
Spending Limit	0.64	0.63	0.51	0.42	0.43
	(0.01)	(0.01)	(0.03)	(0.05)	(0.05)
Observations	18,727	18,727	18,727	18,727	18,727
α_i		✓	✓	✓	✓
$\theta_i \, Electors$			✓	✓	✓
$\gamma_t \, Electors$				✓	✓
δ_t					✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

the same overall pattern. The first panel shows that when spending limits are raised in a constituency, some candidates simply drop out of the race. The second and third panels show that votes and money on average tend to concentrate on fewer candidates when spending limits are raised.

Next, I turn to the statistical analysis in Table 3. The first panel in the table reports the effect on the total number of electoral entrants. Across all specifications, the estimated coefficient on spending limits is negative and statistically significant. In the more persuasive specifications, the estimates suggest that on average a £100,000 increase in spending limits deter approximately 0.3 to 0.4 candidates from running.

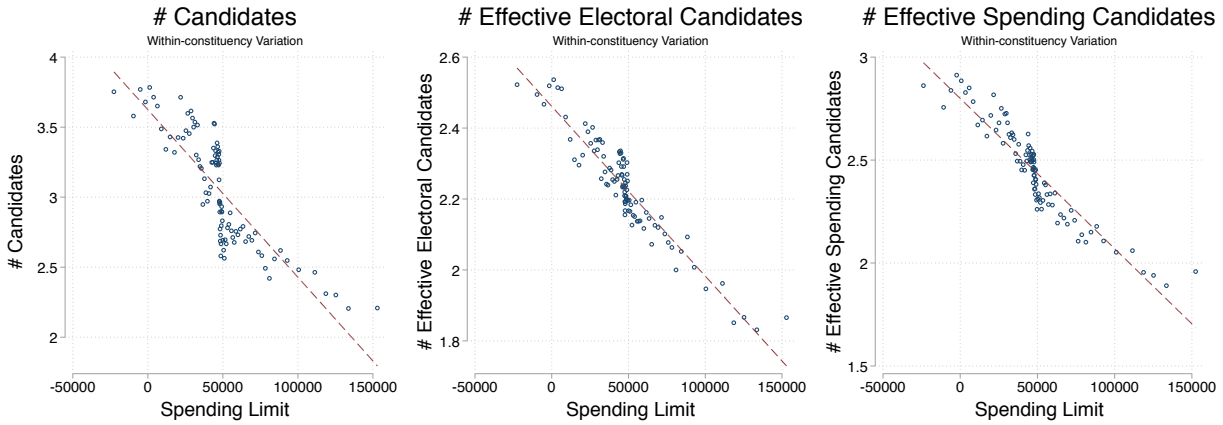
The second panel reports the estimated effect on the effective number of electoral candidates. This outcome measures vote share fragmentation and is less sensitive to electorally unviable entrants compared to the simple count of candidates. If parties in response to

Table 3: **Fewer Candidates Run when Spending Limits Are High.**

	# Candidates				
Spending Limit (£100,000)	-1.56	-1.20	-0.68	-0.44	-0.37
	(0.04)	(0.04)	(0.06)	(0.14)	(0.16)
Observations	19,297	19,297	19,297	19,297	19,297
	# Effective Electoral Candidates				
Spending Limit (£100,000)	-0.51	-0.48	-0.29	-0.23	-0.30
	(0.01)	(0.02)	(0.02)	(0.08)	(0.11)
Observations	19,296	19,296	19,296	19,296	19,296
	# Effective Spending Candidates				
Spending Limit (£100,000)	-0.81	-0.73	-0.52	-0.33	-0.31
	(0.02)	(0.02)	(0.04)	(0.10)	(0.12)
Observations	18,804	18,804	18,804	18,804	18,804
α_i		✓	✓	✓	✓
$\theta_i \, Electors$			✓	✓	✓
$\gamma_t \, Electors$				✓	✓
δ_t					✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses). Note that the number of observations is smaller in the third panel because the spending data is not available for the 1918 election.

Figure 5: **Fewer Candidates Run when Spending Limits Are Raised**



NOTE: In each plot, the dots represent binned averages based on 100 equally sized bins, and the lines are linearly fitted to the binned averages. All plots are partial regression plot adjusting for constituency-fixed effects. The plots are produced using Stata's `binscatter` module.

increased spending limits are still able to attract candidates, but only candidates of a lower quality, this will be reflected through a reduction in the effective number of candidates. Across all the specifications, the estimated effects are negative and statistically significant. On average, a £100,000 increase in spending limits cause a drop in effective electoral candidates in the magnitude of 0.2 to 0.3. To put the magnitude of the effect in perspective, a change in effective candidates of -0.3 is approximately equivalent to moving from a tied two-candidate race to a race where one of the candidates gets 71% of the votes, or moving from a three-way tied three-candidate race to a race where two candidates each get 41% of the votes and the last candidate gets 18%.

Finally, in the third panel, I report how spending limits affect the effective number of campaign spenders. This variable measures fragmentation of campaign finance. Again, across all specifications the estimates are negative and statistically significant. On average, a £100,000 increase in the level of permitted spending approximately causes a 0.3 drop in the effective number of campaign spenders.

All in all, the findings are consistent with the theoretical prediction that high spending limits induce fewer candidates to run for parliament. In the next subsection, I examine the prediction that candidates with low fundraising costs remain in the candidate pool when spending limits are raised.

Loose Spending Limits Benefit Upper-class Candidates

In this section, I test whether high spending limits shift the composition of the pool of candidates and the composition of the pool of elected MPs towards upper-class candidates. In Figure 6, I plot the within-constituency association between the level of permitted spending and the shares of upper-class candidates and upper-class winners, respectively. The positively sloping binned averages in the panel on the left suggests that the percent of candidates with an aristocratic background increases when the level of permitted spending is raised, and the positive slope in the panel on the right indicates an increase in the probability of electing a candidate with an aristocratic background.

The patterns illustrated in the plots are also recovered in the results from the statistical analyses presented in Table 4. The first panel presents the effect of spending limits on the percent of candidates with an upper-class background. Across all specifications, the estimated effect is positive, but the results are not statistically significant in some of the more data-demanding specifications. On average, a £100,000 increase in the level of permitted spending approximately causes a 7-10 percentage-point increase in the share of candidates with an upper-class background.

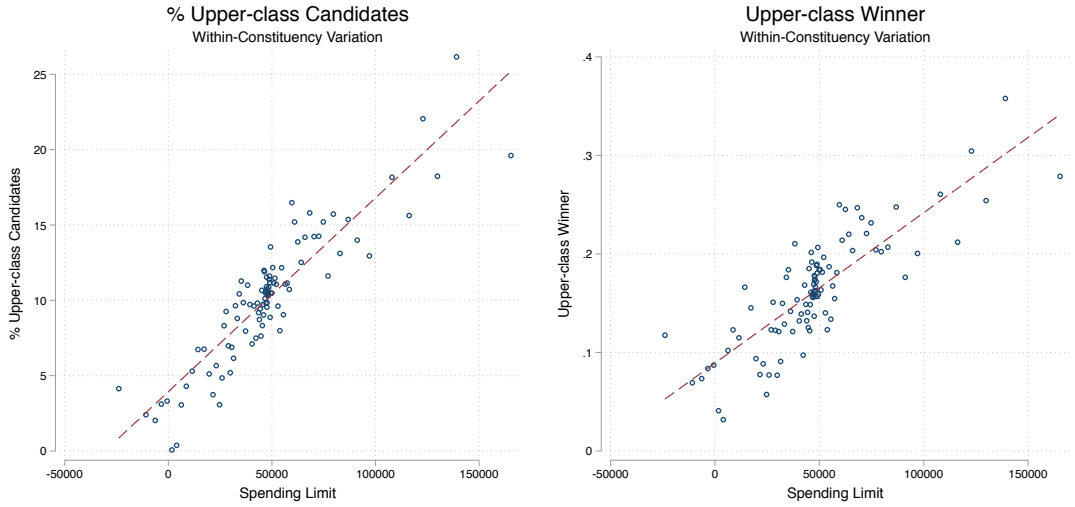
The results in the second panel demonstrate that spending limits not only affect the selection into the pool of candidates, but also the election of MPs. The results indicate that a £100,000 increase in spending limits approximately causes a 15 percentage-point increase in the probability that an upper-class candidate gets elected to parliament. Note again that

Table 4: **More Candidates and Winners Have an Upper-class Background when Spending Limits Are High.**

	% Upper-class Candidates				
Spending Limit (£100,000)	14.26	13.76	7.04	7.79	10.96
	(0.81)	(1.11)	(1.49)	(6.29)	(6.75)
Observations	19,297	19,297	19,297	19,297	19,297
	Upper-class Winner				
Spending Limit (£100,000)	0.15	0.15	0.08	0.18	0.17
	(0.01)	(0.02)	(0.03)	(0.11)	(0.13)
Observations	19,297	19,297	19,297	19,297	19,297
α_i		✓	✓	✓	✓
$\theta_i \, Electors$			✓	✓	✓
$\gamma_t \, Electors$				✓	✓
δ_t					✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

Figure 6: **Upper-class Candidates Run and Win More Often when Spending Limits Are High**



NOTE: In each plot, the dots represent binned averages based on 100 equally sized bins, and the lines are linearly fitted to the binned averages. The plot on the right is a partial regression plot adjusting for constituency-fixed effects. The plots are produced using Stata's `binscatter` module.

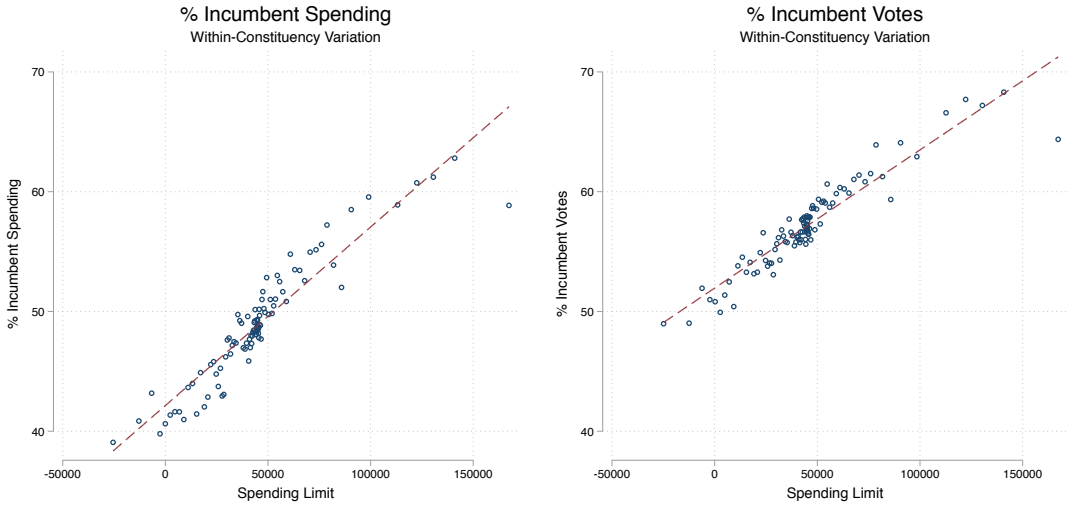
the estimates are relatively stable across specification, but not statistically significant in the more data-demanding specifications.

Taken together these results could suggest that loose spending limits systematically tilt the composition of the pool of candidates, as well as the composition of the pool of elected MPs, in favor of the British upper class. The aristocracy plays a less important role today in British politics, making it reasonable to question the external validity of these findings. However, if one thinks of nobility as a proxy for wealth and connections more generally, the findings may still be relevant.

Loose Spending Limits Amplify Incumbency Advantages

In this section, I examine whether high spending limits magnify the incumbency advantages. In Figure 7, I plot the within-constituency relationships between spending limits and incum-

Figure 7: **The Financial and Electoral Performance of Incumbents Improve when Spending Limits Are Relaxed.**



NOTE: In each plot, the dots represent binned averages based on 100 equally sized bins, and the lines are linearly fitted to the binned averages. The plot on the right is a partial regression plot adjusting for constituency-fixed effects. The plots are produced using Stata's `binscatter` module.

bents' spending and vote shares. Both graphs suggest that the vote and spending shares of incumbents increase when spending limits are raised.

The pattern is also reflected in the statistical analyses presented in Table 5. The results presented in the first panel indicate that incumbents' share of campaign spending increases when spending limits are raised. On average, a £100,000 increase in the level of permitted spending approximately leads to a 13 percentage-point increase in incumbents' percentage of total spending.

In the next panel, I show how spending limits affect incumbents' vote shares. On average, a £100,000 increase in the level of permitted spending approximately leads to a 15 percentage-points increase in incumbents' percent of the votes.

Why do incumbents perform better when spending limits are high? On the one hand, incumbency status may reduce a candidate's fundraising costs, and this could improve the

Table 5: **Incumbents Perform Better when Spending Limits Raised**

	% Incumbent Spending				
Spending Limit (£100,000)	15.13	15.27	13.36	8.02	12.77
	(0.61)	(0.82)	(1.33)	(4.54)	(5.17)
Observations	13,041	13,041	13,041	13,041	13,041
	% Incumbent Vote				
Spending Limit (£100,000)	11.49	11.75	8.87	9.29	14.70
	(0.52)	(0.67)	(0.93)	(3.40)	(3.95)
Observations	13,215	13,215	13,215	13,215	13,215
α_i		✓	✓	✓	✓
$\theta_i \, Electors$			✓	✓	✓
$\gamma_t \, Electors$				✓	✓
δ_t					✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

financial and electoral performance of incumbents. On the other hand, voters may simply be better at selecting high-quality candidates because of better information when candidates can spend more on campaigns. To distinguish between these two interpretations, I explore how the incumbency advantages – as opposed to simply incumbent performance – vary with levels permitted spending.

In the previous analyses, the unit of observation was a constituency in a given election, but in this analysis each row in the dataset is uniquely identified by an individual candidate, j, in a given constituency, i, in a given general election, t.

I estimate the incumbency advantage employing a simple difference-in-differences design. In particular, I compare individual candidates' performance before and after holding office, while differencing out common shocks affecting all candidates in the same general election. I then interact the incumbency dummy with the spending limit to examine whether the

incumbency advantage is correlated with the level of permitted spending. The following baseline model is estimated using OLS:

$$\begin{aligned} Y_{jit} &= \beta_1 Incumbent_{jit} + \beta_2 Spending\ Limit_{it} + \beta_3 Incumbent_{jit} \times Spending\ Limit_{it} \\ &\quad + \alpha_j + \delta_t + \varepsilon_{pit}\,, \end{aligned} \tag{6}$$

where Y_{jit} represents the vote or spending share of candidate j in constituency i at time t; $Incumbent_{jit}$ is a dummy indicating whether the candidate ran as the incumbent in constituency i in election t; α_j represents candidate fixed-effects, and δ_t represents time-fixed effects.

The results from this analysis is presented in Table 6. In columns 1 and 3, I report the average financial and electoral incumbency advantages. On average, when candidates control a parliamentary seat, they enjoy a 1.6 percentage-point increase in their share of campaign finance. Compared to the 25 percentage-point financial advantage enjoyed by incumbents in U.S. elections (Fouirnaies and Hall, 2014), this effect is very modest. The electoral incumbency advantage is approximately 2.5 percentage points.

In columns 2 and 4, I show how the incumbency advantage correlates with the level of permitted spending. The coefficient on the interaction terms suggests that both the financial and electoral incumbency advantages are positively correlated with the level of permitted spending. When spending limits are raised by £100,000, the financial incumbency advantage increases by approximately 3 percentage points and the electoral incumbency advantage increases by 2 percentage points.

This finding is consistent with the idea that incumbency status reduces the cost of fundraising for candidates, and that this translates into improved electoral performance when spending limits are relaxed. In sum, consistent with theoretical predictions, the re-

Table 6: **Financial and Electoral Incumbency Advantages Increase when Spending Limits Are Relaxed.**

	% Spending		% Votes	
Incumbent	1.61	0.27	2.55	1.52
	(0.39)	(0.51)	(0.32)	(0.47)
Incumbent × Spending Limit (£100,000)		3.04		2.04
		(1.09)		(0.94)
Spending Limit (£100,000)		-1.26		-0.66
		(2.15)		(1.67)
Observations	57,270	57,269	58,889	58,828
α_j	✓	✓	✓	✓
δ_t	✓	✓	✓	✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

sults suggest that both the financial and electoral advantages enjoyed by incumbents increase when spending limits are raised.

Conclusion

Despite the fact that more than half of the democratic countries in the world impose caps on candidate campaign spending, the empirical evidence on the electoral consequences of these restrictions is limited. On the basis of the longest-spanning campaign finance dataset ever collected, I shed light on the electoral consequences by studying campaign spending limits in the context of British House of Commons elections from 1885 to 2010. To identify causal effects, I exploited variation induced by reforms of the spending limit formula that affect some, but not all constituencies. Consistent with theoretical predictions, I find evidence suggesting that loose campaign spending limits reduce electoral competition. When spending limits are raised, campaigns become more expensive, fewer candidates run for parliament,

upper-class candidates make up a larger proportion of the pool of candidates and the pool of winners, and the financial and electoral incumbency advantages are amplified.

What are the normative implications of these findings? From the perspective of the candidates, the finding suggests that higher spending limits shift welfare from the poorer candidates to the more affluent, and from challengers to incumbents. From the perspective of the voters, however, the welfare implications are ambiguous without additional assumptions. On the one hand, if the ability of politicians matter for aggregate welfare, and high ability candidates find it easier to fundraise, then higher spending limits might be welfare improving. On the other hand, in a pure citizen-candidate world where elected officials only implement policies that benefit themselves, the findings could suggest that higher spending limits have negative welfare implications for poor voters.

More generally, the findings have implications for our understanding of the role of money in politics. Scholars have questioned why there is so little money in politics (Ansolabehere, de Figueiredo, and Snyder, 2003). One answer to this questions, motivated by the findings in this paper, is that the potential threat of spending may shape the electoral process more than previously believed. Money may influence electoral competition, even when candidates do not spend a penny.

The findings are important for the ongoing public and legal debates on campaign finance regulation. In the public debate, "the primary argument made against spending limits (besides their unconstitutionality) is that they may reduce competition and reinforce the incumbency advantage" (Levitt, 1994, p.793). Along the same lines, the U.S. Supreme Court argues that campaign spending limits would "serve not to equalize the opportunities of all candidates, but to handicap a candidate who lacked substantial name recognition or exposure of his views before the start of the campaign."(Buckley v. Valeo, 424 U.S. 1

(1976))[10]

The primary argument against spending limits, namely that spending restrictions reduce competition and benefit incumbents, is not supported by the empirical evidence. Quite the contrary, the findings suggest that campaign spending restrictions may actually encourage electoral competition and weaken the incumbency advantage.

[10] https://transition.fec.gov/law/litigation/Buckley.pdf

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Appendix

Contents

A.1. Data Quality: How Reliable Is the Campaign Spending Data?

There are three key concerns one needs to keep in mind when interpreting the results in the sections below. Firstly, to what extent were candidates incentivized to disclose true and accurate information? The extensive disclosure requirements and the threat of high fines for reporting erroneous information would suggest that massive discrepancies between actual campaign activities and reported spending are unlikely. However, certain types of expenditures are notoriously difficult to audit. While advertisement costs are fairly easy to verify against receipts, it is more difficult, if not to say impossible, to accurately account for labor. For example, it is a challenge to verify the actual number of hours a campaign staffer worked for a given salary.

Secondly, the data does not reflect pre-dissolution campaign activities. The reported numbers reflect candidates' expenditures during the period from the day the election is called to the day of the general election. If a party engages in campaign activities, such as distributing printed materials in a particular constituency, say, a year prior to the general election, the costs of these activities do not count against the spending limit faced by the representing candidate.[11]

Thirdly, the spending limits only apply to the individual candidates, not their parties. The major national parties are, for obvious reasons, keenly interested in winning seats in key swing constituencies and, as a result, they may intensify their campaign activities in these constituencies. Costs only count against a candidate's spending limit when their name is explicitly mentioned in the campaign material, but due to the nature of the first-past-the-

[11]Expenditures before the election date is announced are permitted if they are designed to promote the local party rather than the individual candidate. For further details, see Pinto-Duschinsky (1981, chapter 9)

post electoral system used in British elections,[12] campaigning for the party in a particular constituency is de facto equivalent to campaigning for the individual candidate, and this blurs the line between costs incurred by individual candidates and their parties.

As a consequence of the three caveats discussed above, the reported spending may not fully account for the true costs of campaigning, and one has to keep this in mind when interpreting the results presented below. However, any reporting issues are presumably somewhat constant from one year to the next within each constituency. Whereas reporting issues like these may bias estimates in simple cross-sectional studies, they are less likely to do so in a design leveraging within-constituency variation. Moreover, if spending limits are only rules de jure that do not restrict any campaign behavior de facto, this would bias towards finding no effects of spending limits on electoral competition.

A.2. Missing Observations

[12]During the period between 1885 and 1949, a few constituencies elected two representatives (Butler, 1963). The formula for calculating the spending limit was applied slightly differently for the few double-member constituencies; for the purposes of this paper, I focus exclusively on single-member constituencies. For a detailed discussion of multi-member districts in Britain, see Eggers and Fouirnaies (2014).

Table A.1: **Number of Missing Spending Returns**

Period	# Missing Candidate Reports	Total # Candidates	Pct. Reporting
1885-1917	2	7830	99.97
1919-1944	4	8139	99.95
1945-1969	7	11060	99.94
1970-1989	75	13334	99.44
1990-2010	88	17120	99.49
Total	176	57307	99.69

NOTE: Due to the loss of related filings, the election of 1918 is excluded from the calculations.

A.3. Spending Limits Formula

Table A.2: **Coefficients in Spending Limit Formula over Time**

Period	a_t $(constant_t)$	b_t $(electors_{it})$	c_t $(county_{it})$	d_t $(electors_{it} \times county_{it})$
1885 - 1917	350	0.03	300	0.03
1918 - 1928	0	0.0208	0	0.0083
1929 - 1948	0	0.0208	0	0.0042
1949 - 1968	450	0.0063	0	0.0021
1969 - 1973	750	0.0063	0	0.0021
1974 - 1977	1075	0.0075	0	0.0025
1978 - 1981	1750	0.015	0	0.005
1982 - 1986	2700	0.023	0	0.008
1987 - 1991	3370	0.029	0	0.009
1992 - 1996	4330	0.037	0	0.012
1997 - 2000	4965	0.042	0	0.014
2001 - 2004	5483	0.046	0	0.016
2005 - 2010	7150	0.05	0	0.02

NOTE: a_t, b_t, c_t and d_t are the coefficients on the inputs outlined in Equation 2. The formulae do not apply to (Northern) Ireland.

A.4. Relaxing Identifying Assumptions: Alternative Time-Fixed Effects and Linear and Quadratic Trends

In this section, I show that the results presented in the paper are robust when one relaxes the identifying assumption in two different ways. First, I relax the assumption by including region-by-time fixed effects and county-by-time fixed effects instead of time-fixed effects. Second, I show the results are not sensitive to including county- and borough-specific linear and quadratic trends.

Table A.3: **Robustness to Alternative Time-Fixed Effects and Trends: Cost of Campaigns.**

	Aggregate Spending			
Spending Limit	0.69	0.55	0.72	0.86
	(0.11)	(0.11)	(0.11)	(0.12)
Observations				
	Mean Spending			
Spending Limit	0.43	0.35	0.45	0.52
	(0.05)	(0.05)	(0.05)	(0.06)
Observations				
α_i	✓	✓	✓	✓
$\theta_i \, Electors$	✓	✓	✓	✓
Time-Fixed Effects	✓		✓	✓
Time-specific Coefficients on Electors	✓		✓	✓
Region-by-time Fixed Effects		✓		
Region-by-time Coefficients on Electors		✓		
County- and Borough-specific Linear Trends			✓	✓
County- and Borough-specific Quadratic Trends				✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

Table A.4: **Robustness to Alternative Time-Fixed Effects and Trends: Number of Candidates.**

	# Candidates			
Spending Limit (£100,000)	-0.37	-0.30	-0.46	-0.21
	(0.16)	(0.17)	(0.17)	(0.16)
Observations				
	# Effective Candidates			
Spending Limit (£100,000)	-0.30	-0.27	-0.23	-0.18
	(0.11)	(0.11)	(0.11)	(0.10)
Observations				
	# Effective Spenders			
Spending Limit (£100,000)	-0.31	-0.30	-0.32	-0.17
	(0.12)	(0.13)	(0.13)	(0.12)
Observations				
α_i	✓	✓	✓	✓
$\theta_i \, Electors$	✓	✓	✓	✓
Time-Fixed Effects	✓		✓	✓
Time-specific Coefficients on Electors	✓		✓	✓
Region-by-time Fixed Effects		✓		
Region-by-time Coefficients on Electors		✓		
County- and Borough-specific Linear Trends			✓	✓
County- and Borough-specific Quadratic Trends				✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

Table A.5: **Robustness to Alternative Time-Fixed Effects and Trends: Upper-class Candidates.**

	% Upper-class Candidates			
Spending Limit (£100,000)	10.96	7.54	9.77	3.24
	(6.75)	(7.41)	(6.89)	(7.49)
Observations				
	Upper-class Winner			
Spending Limit (£100,000)	0.17	0.20	0.17	0.11
	(0.13)	(0.13)	(0.13)	(0.14)
Observations				
α_i	✓	✓	✓	✓
$\theta_i \, Electors$	✓	✓	✓	✓
Time-Fixed Effects	✓		✓	✓
Time-specific Coefficients on Electors	✓		✓	✓
Region-by-time Fixed Effects		✓		
Region-by-time Coefficients on Electors		✓		
County- and Borough-specific Linear Trends			✓	✓
County- and Borough-specific Quadratic Trends				✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

A.5. Explained Variation in Spending Limits

In Table A.6, I show how the R-Squared changes when one includes the different covariates in the regression.

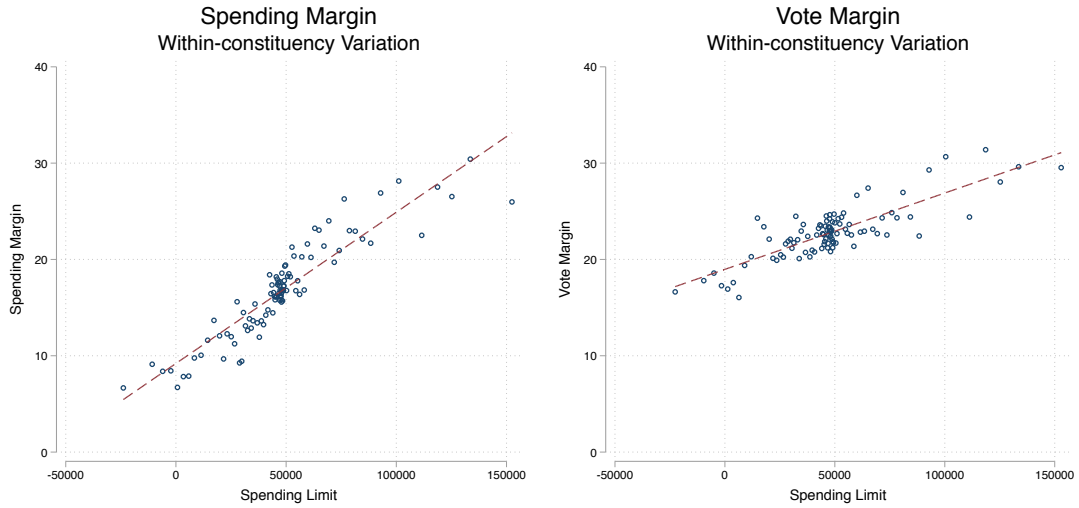
Table A.6: **R-Squared from Regressing Spending Limits on Covariates.**

	Spending Limit				
Observations	58,830	58,830	58,830	58,830	58,830
Constituencies	1,837	1,837	1,837	1,837	1,837
R-Squared	0.000	0.612	0.861	0.992	0.993
α_i		✓	✓	✓	✓
$\theta_i \, Electors$			✓	✓	✓
$\gamma_t \, Electors$				✓	✓
δ_t					✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).

A.6. Alternative Measures of Electoral Competition

Figure A.1: **Margins of Victory Widen when Spending Limits Increase**



NOTE: In each plot, the dots represent binned averages based on 100 equally sized bins, and the lines are linearly fitted to the binned averages. The plot on the right is a partial regression plot adjusting for constituency-fixed effects. The plots are produced using Stata's `binscatter` module.

Table A.7: **Effect of Spending Limits on Margins of Victory.**

	Vote Margin of Victory				
Spending Limit (£100,000)	6.74	7.92	6.79	13.89	22.92
	(0.80)	(1.02)	(1.21)	(4.55)	(5.43)
Observations	19,293	19,293	19,293	19,293	19,293
Constituencies	1,837	1,837	1,837	1,837	1,837
	Spending Margin				
Spending Limit (£100,000)	14.43	15.70	17.90	14.84	19.83
	(0.73)	(0.99)	(1.67)	(4.08)	(5.03)
Observations	18,799	18,799	18,799	18,799	18,799
Constituencies	1,837	1,837	1,837	1,837	1,837
α_i		✓	✓	✓	✓
$\theta_i \, Electors$			✓	✓	✓
$\gamma_t \, Electors$				✓	✓
δ_t					✓

NOTE: All models are estimated using OLS. Robust standard errors are clustered on constituencies and are reported in (parentheses).