

# *It Takes Money to Make MPs: Evidence from 160 Years of British Campaign Spending*

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We study electoral campaigns over the long run, through the lens of their spending. We build a novel, exhaustive dataset on U.K. general elections from 1857 to 2017. We provide quantitative insights on the history of campaigns, including the shift away from paid staff toward advertising. We then show that the correlation between candidate spending and votes has strongly increased since the 1880s, peaking in the last quarter of the twentieth century. We link this pattern to the introduction of new information technologies—in particular, local radio and the Internet—and to the transformations of campaign strategies.

**P**olitical campaigns have existed since the first elections were held, but their natures have changed dramatically. From newspaper poems to social media attacks, election candidates have adapted their campaign strategies to changing environments, and in particular to the introduction

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of new information technologies—such as, most recently, the Internet (Hersh 2015). Have the patterns and influences of campaign spending evolved accordingly? While there is an important literature on campaign finance, it mostly focuses on recent decades and small sets of elections (see, for instance, Da Silveira and De Mello 2011; Ben-Bassat, Dahan, and Klor 2015; Avis et al. 2022). There is thus very little empirical evidence on the long-run evolution of the role played by money in elections. This article attempts to fill that gap.

We build a novel, exhaustive dataset on candidates' expenses, profiles, and electoral results at every U.K. general election from 1857 to 2017—a period that covers most innovations in electoral regulations, technologies, and environments. We show that, while the amounts spent on candidates' campaigns have decreased dramatically since 1880, the correlation between this spending and their votes has, in fact risen, leading to ambiguous conclusions regarding the importance of money in elections. We explain these evolutions by the introduction of new media technologies and shifts in candidates' campaign strategies, stressing the importance of taking these into consideration in the study—and design—of electoral policies.

The United Kingdom was the first country worldwide to require candidates to lodge the details of their campaign expenses (in 1854) and to introduce limits on campaign expenditure (in 1883). We collect data from returns published in the U.K. *Parliamentary Papers* on campaign spending by category (advertising, meetings, and so on) for a total of 40 elections, 20,085 election constituencies, and 34,398 unique candidates. We complement these data with detailed candidate and constituency characteristics using a variety of archival sources. The database we built is, to the best of our knowledge, the most exhaustive dataset on elections and campaign expenditures available over the long run. Producing these data is our first contribution.

We start by using this dataset to shed light on the history of political campaigns, bringing a general, quantitative perspective to a substantial body of qualitative accounts (see, in particular, Lawrence 2009). Several stylized facts emerge. First, we document that the average amount spent by candidates has decreased dramatically over the centuries: a candidate in the 1860s–1870s spent, on average, for her campaign, the equivalent of 27.21 annual household earnings; in the most recent elections, this number has decreased to 0.18. Changes in spending limits are not enough to rationalize this dramatic drop. Second, the composition of candidates' spending also changed radically. For instance, we observe a progressive shift away from paid staff (such as agents or messengers) toward

advertisement services and material (leaflets, posters, and so on). We link these patterns to the emergence of new modes of communication and electoral environments, which are likely to have impacted the role campaigns played in the electoral fates of candidates.

We therefore proceed to investigate the long-run patterns in the relationship between the spending on these campaigns and candidates' votes. Our identification exploits the historical depth of our data. We use party-election, constituency, and, most importantly, candidate fixed effects: that is, we exploit variations in the spending of the same candidate over time and constituencies, thereby effectively capturing time-invariant unobserved individual dimensions (such as quality or charisma). We complement these with a rich set of time-varying controls, for both constituencies (demographics, age structure, and socioeconomic measures) and candidates (age, occupation, and political mandates). In all specifications, we document a positive and statistically significant correlation between the share of the constituency total spending represented by a candidate and the share of the votes she obtains.<sup>1</sup> The magnitude of this effect is economically significant: in our most conservative specification, a 1-percentage-point increase in the spending share of a candidate is associated with a 1.1 percent increase in her vote count (keeping abstention constant).

While the large set of fixed effects (especially for candidates) and time-varying dimensions for which we control allows us to partly mitigate the potential bias arising from the endogeneity of campaign spending, it does not entirely absorb it. There could still be unobserved, time-varying elements at the candidate or district-level that correlate with both expenses and votes. As such, the goal of this article is not to provide an exact point-estimate of the causal impact of money on votes; rather, we aim to study how this relationship has evolved over time and campaign strategies. This is relevant for at least two reasons. First, if one accepts that at least *part* of the spending-votes relationship is causal, the question as to when, where, and why it is statistically significant turns out to be of interest. Second, it has been shown that actors in electoral campaigns often take the correlation at face value—notwithstanding of the degree to which it is causal—with substantial consequences that make it, in itself, an interesting object of analysis. For instance, the extent to which campaign funds predict

<sup>1</sup> Investigating the relationship between votes and spending *shares*—rather than the impact of a marginal euro—presents many advantages in our context. Even controlling for inflation, an extra euro in the 1850s is hardly comparable to the same euro nowadays. Besides, campaigning is the equilibrium outcome of a strategic game: the key dimension is thus not the absolute level of spending but what one spends *compared to the other candidates*—that is, one's spending share (Acharya et al. 2024).

electoral success constitutes a way for candidates to showcase their popularity, and thus engage in costly fundraising behaviors that divert them from other activities, such as policy making (Daley and Snowberg 2011). The argument is also put forward by political consultants and marketing agencies to attract candidates' investments, with different—sometimes contradictory—incentives (Martin and Peskowitz 2018). Ultimately, the fundraising arms races these situations create—and their potential to deter the entry of new candidates—are, in fact, one of the reasons why governments decide to regulate campaign finance (Dawood 2015).

We show that the magnitude of the correlation between campaign spending and votes has consistently increased between the 1880s and the 2000s, despite the passing of stricter campaign finance rules. In particular, it peaked during the last three decades of the twentieth century; a result that contrasts with the general consensus in the political science literature on the importance of local campaigning at the time (see, in particular, Kavanagh 1995; Butler 1989). The correlation then suddenly dropped in the early 2000s, but remained at levels close to those of the notably corrupt Victorian elections (Rix 2008). On top of these temporal variations, we also document strong heterogeneity across campaign techniques used by the candidates: we show that the temporal patterns are mainly driven by the “printing and advertising” spending category. To the best of our knowledge, we are the very first to document these long-run changes in the importance of campaigning. We then try to rationalize them.

First, using natural experiments, we document the causal impact of two media technologies, of which the introduction coincides with changes in the above patterns: local radio and broadband Internet. For the former, we exploit a freeze in independent radio licensing that occurred between 1976 and 1980, amidst local radio expansion. Comparing constituencies that gained access to local radio just before the freeze with those that gained it right after, we find that electoral results are more sensitive to differences in campaign spending in places covered by the media. We reach a similar conclusion when using Gavazza, Nardotto, and Valletti (2019)'s strategy to instrument for broadband Internet penetration in the 2000s: between the 2005 and 2010 general elections, we observe a higher correlation between spending and votes in places that had relatively more Internet access. We explain these findings by the amplification potential of these local and decentralized media, which cover and comment on local fundraising and campaign efforts.

Second, we show the role of important changes in strategies guiding the conduct of campaigns. The second half of the twentieth century was

a time of “professionalization” of campaigns (Lawrence 2009; Johnston and Pattie 2014), with the introduction of new techniques from marketing science, and of electoral strategies that targeted efforts to marginal constituencies. We show that, since the 1960s, the correlation between campaign spending and votes has increased disproportionately more in these marginal constituencies. However, since the turn of the twenty-first century, several factors have triggered what Fisher (2015, p. 151) calls the “death of the national campaign” that is, the fact that parties progressively gave up the costly national efforts in favor of centrally coordinated local campaigns. Our results indicate that this involvement overshadowed local efforts—those that are paid for by candidates’ own spending—progressively decreasing the efficiency of the latter.

Our article brings a long-run perspective to two strands of literature. The first investigates the relationship between campaign expenditures and votes. While its focus has traditionally been on the United States (Jacobson 1978; Abramowitz 1988; Green and Krasno 1988; Levitt 1994; Gerber 1998; Stratmann 2005; Schuster 2020), a growing set of papers discuss the patterns of spending in other Western democracies (Benoit and Marsh 2008; Da Silveira and De Mello 2011; Ben-Bassat, Dahan, and Klor 2015; Avis et al. 2022). Johnston and Pattie (2014) and Bekkouche, Cagé, and Dewitte (2022) focus like us on the United Kingdom, but they only consider a subset of recent elections. On the contrary, our empirical setting covers more than 160 years of data, which allows us to identify the historical trends in the relationship between money and votes, as well as their causes.

The only other paper studying U.K. campaign finance over a long time period is Fourinaies (2021). Relying on the same data source (the *Parliamentary Papers*), he investigates the extent to which reforms in the level of spending limits have impacted political competition. Our results suggest that this type of policy evaluation needs to be understood within broader, secular changes in the role of money in politics—some of which we unveil here. Furthermore, we contribute to the existing literature by providing a larger, more comprehensive dataset that includes a rich set of constituency- and candidate-level variables, and spending data dating back to 1857, when candidates’ expenditures were reported for the very first time.

The second literature investigates the role of political campaigns, and in particular, their interaction with new media technologies. Studies have highlighted the role played by the Internet and Twitter in increasing Democratic vote shares (Fujiwara, Müller, and Schwarz 2024). Brookman and Green (2014) find that Facebook ads might have helped

voters recall candidates' names, but did not favor them in the polls. TV ads can impact electoral results by changing both the composition of the electorate (Spenkuch and Toniatti 2018) and voters' preferences (Gerber et al. 2011). Larreguy, Marshall, and Snyder (2018) show that radio advertising in Mexico benefited candidates from lesser-known parties, as did the rollout of free mail delivery in the United States during the late nineteenth century (Perlman and Sprick Schuster 2016). While these studies are very helpful for understanding the channels through which campaigns influence votes, they usually estimate their effects at a given moment in time and for one specific means of communication. Yet, both the cost and the reach of campaign technologies have evolved over the years. We contribute to this literature by investigating these historical evolutions, thereby helping to reconcile its sometimes-contradicting findings.

The remainder of the paper is organized as follows. The second section introduces the new dataset we built for this study. The third section walks the reader through the history of British electioneering in light of the new insights from our data. The fourth section investigates the long-term relationship between campaign spending and votes, and highlights several dimensions of heterogeneity. In the fifth section, we detail some of the causes of these variations. The sixth section concludes.

#### A NOVEL DATASET ON ELECTORAL EXPENDITURES, CANDIDATES AND CONSTITUENCIES

We create a new, exhaustive dataset on campaign expenditures and electoral results at the candidate level in Great Britain for all the general elections between 1857 and 2017, which we complement with detailed candidate and constituency characteristics. Our dataset covers 41 elections, 22,877 election-constituencies, 35,698 unique candidates, and 71,751 election-constituency-candidate observations. This section summarizes the sources and content of our dataset; Online Appendix A provides more details on U.K. general elections and the construction of the dataset. The data is made publicly available on ICPSR (Cagé and Dewitte 2024).

#### *Campaign Spending Data*

Since the *Corrupt Practices Prevention Act 1854*, candidates have been required to lodge the details of their election expenses with specially appointed Election Auditors (Ewing 1987). Election expenses include all

the spending incurred by a candidate and her staff for the promotion of her candidacy. Before 2001, no time period was clearly defined, and electoral expenses incurred during or after the election could be classified as such. The *Political Parties, Elections and Referendums Act* (PPERA) 2000 set up a “regulated period,” which would start the day of the official dissolution of Parliament—or, if later, the day after the candidate’s nomination—and end on the day of the election. In both cases, these periods usually varied from three to six weeks.

The data from 1857 to 1997 were published in the *UK Parliamentary Papers* as the “*Return of expenses of each candidate at the General Election*,” except for the 1918 one, for which data does not exist. Online Appendix Figure F.1 shows an example of these sources. For these years, we encoded the data. Data from 2001 onward come in electronic format from the *Electoral Commission* website.

#### CATEGORIES OF SPENDING

Electoral expenses data are disaggregated into several spending categories, depending on their object. Online Appendix Section A.2 gives a detailed definition of each spending category and provides examples. Three different time periods need to be distinguished here: 1857–1865, 1885–2001, and 2010–2017.

The same categories run for the 1885–2001 period. These are (i) printing and advertising material; (ii) public meetings; (iii) committee rooms; (iv) agents overseeing the campaign; (v) clerks and messengers; (vi) other expenses (on miscellaneous matters); and (vii) “personal expenses.” For the elections that took place between 1857 and 1865, no homogeneous categorization was pre-established at the national level; hence, the level of reported details varies significantly across constituencies. We manually classified disbursement items into the 1885–2001 categories, with minor adaptations: the salaries and related expenses of all staff (including agents, clerks, and messengers) have been grouped into one category, and an additional “conveying voters to the poll” category has been added. Since 2010, the expense categories have been slightly modified, in particular, to distinguish between spending on advertising (including advertising on the Internet) and spending on unsolicited material (such as letters or leaflets). There is no data on categories for the 1868, 1874, and 2005 elections.

Although these categories are broad and cover a variety of disbursements, it should be noted that several items have been strictly regulated throughout the period. Political advertising on broadcast media, for instance, has

always been forbidden (in contrast, advertising in newspapers is allowed). The provision of any asset (rooms, materials, and so on) for free needs to be accounted for at market value; free labor, however, does not need to be.

#### SPENDING LIMITS

The *Returns of expenses* report, for each constituency, the applicable spending limit. Limits on campaign spending were set by the *Corrupt and Illegal Practices Prevention Act 1883* (CIPA), thereby applying for the first time at the 1885 elections. These limits included all the aforementioned expenditures incurred by candidates or their agents over the course of the campaign, with the exception of personal expenses and those covering Returning Officers charges (i.e., the cost of organizing elections). The *1918 Representation of the People Act* (RPA) also excluded from the limit the salaries of election agents (provided they do not exceed a certain amount), but they were included again by the 1948 RPA. Furthermore, since 1918, there has been a strict control on “third parties expenses,” that is, spending by individuals for the promotion of candidates without coordination with them or their agents.

The formula used to calculate the limit in a constituency has remained the same over the years: a fixed amount plus a variable one depending on the number of registered voters. Those amounts differed whether a constituency was a borough or a county, and were modified regularly to adapt to changes in both the cost of living and the electorate. We report the spending limit formula in the Online Appendix Section A.3, and Online Appendix Figure A.4 plots the evolution of the average effective spending limit.

Importantly, it should be noted that, while candidates could rely on their political parties’ public image and the support of their local branch, national parties could only campaign at the *national* level; otherwise, their campaign expenditures were included in the local (i.e., constituency) candidates’ expenses.

#### DATA RELIABILITY

Because they are self-reported, one could question how reliable the data contained in the *Returns of expenses* are. As a matter of fact, Gwyn (1962) and Pinto-Duschinsky (1981) warn that the figures before 1885 must be taken with caution, because the reporting of expenses was still in its infancy and poorly enforced (election petitions, the main tool for contesting election-related irregularities, were dealt with by Members of Parliament (MPs) themselves). Besides, the prevalence of bribery and other illegal activities

during that period meant that the published expenditures likely underestimate the actual ones (see, for instance, Kam and Newson 2021, p. 39).

However, subsequent changes alleviated these issues. The 1868 *Election Petitions and Corrupt Practices at Elections Act* transferred the trial of election petitions to election judges (drawn from superior courts) sitting in the constituency (Rix 2017). Then, as it imposed caps on total spending and better qualifications for allowed expenses, the *CIPA 1883* facilitated the use of these petitions to notify abnormal spending and increased the threat of punishment (Rix 2008). Offenders indeed risked criminal convictions, heavy fines or, at the very least, having their election declared void. Examples are numerous (see Woodings 1949).<sup>2</sup> Finally, as the size of the electorate grew in the nineteenth and twentieth centuries, illegal spending, particularly in the form of corruption and bribery, radically decreased (see, for instance, Kam and Newson 2021, p. 37).

Hence, overall, most observers agree that, since the late nineteenth century, expense data can be considered reliable. Since 2000, the Electoral Commission has acted as a watchdog, and failures by candidates to properly report spending lead to fines and investigations by the Crown Prosecution Service.

### *Candidate Data*

The *Returns of expenses* provide the full name of the candidates. To create a unique candidate identifier across elections, we apply names automated “fuzzy grouping” techniques to these names, which we improve with manual corrections. We identify a total of 35,698 unique candidates. On average, there are 3.09 candidates running per seat, and the number has dramatically increased over time (see Online Appendix Table E.1).

For each of these candidates, we compute a number of characteristics. First, we compute the incumbency status and the number of election participations (taking into account by-elections). Using names, we infer candidates’ gender, nobility status, civilian honors, grade in the army, and position within a religious institution. Prior to 1969, candidates were not allowed to state the name of their party on the ballot paper (Johnston and Pattie 2014), and it is thus not reported in the *Returns of expenses*; for these years, we use data from Ball and Smith (2016).<sup>3</sup>

<sup>2</sup> The 1910 Hartepool election, for instance, was canceled on account of undeclared clerk services and conveyances of voters. The same thing occurred at Berwick-upon-Tweed in 1923 because the winner’s agent had agreed with the local printer to decrease his official bill by £100. Examples related to direct corruption also exist: the 1911 Hull election was canceled because the winning candidate had secretly distributed 250 bags of coal to the poor.

<sup>3</sup> See Online Appendix Section A.4 for more information on parties.

We complement these variables with detailed information on the candidates' date of birth, high school, university they attended (if applicable), past occupations, and public offices held, including committee and cabinet positions. These data come from *The Times Guide to the House of Commons*, and has been collected as part of our companion paper (Cagé and Dewitte 2020). See Online Appendix Table E.7 for candidate-level summary statistics.

### *Constituency Data*

The *Returns of expenses* allow us to compute electoral characteristics of constituencies: the number of candidates running, the number of registered voters, the total spending per registered voter, the number of consecutive elections won by the incumbent party, and the victory margin in the last election. For these last two variables, we face the challenge that constituencies are regularly redrawn over our time periods (before the 1885, 1918, 1950, 1955, 1974, 1983, 1997, and 2010 general elections), making the mapping of the same constituency over time uneasy. From 1983 onward, we use historical sources (in particular, the *BBC/ITV Guides to the New Parliamentary Constituencies*) to obtain the precise many-to-many mapping of constituencies across redistricting. For the 1885, 1918, 1948, and 1970 boundary reviews, we overlay GIS maps and assign each new constituency to the old one containing its centroid.

In addition, we construct a unique dataset of socio-demographic characteristics at the constituency level using U.K. Decennial Censuses since 1851. The process is far from straightforward for at least two reasons. First, for many censuses, variables are released for smaller (or sometimes larger) administrative levels, which do not map uniquely into constituencies' boundaries. Second, producing *time-varying* information requires at least two data points per constituency, which is made difficult by both the redrawing of constituencies discussed previously, and by the change of definition of variables across censuses. Online Appendix Section A.5 details the work of aggregation and homogeneization we performed and provides descriptive statistics.

## A DIVE INTO THE HISTORY OF BRITISH CAMPAIGNS, THROUGH THE LENS OF THEIR SPENDING

Over the nineteenth, twentieth, and twenty-first centuries, the way candidates campaign has changed radically, in particular, with the appearance of new modes of communication, broadcasting technologies,

and electoral rules. This section uses our novel descriptive evidence to shed new light on these changes.

### *General Patterns*

The most visible feature of candidates' spending over time is a secular decrease. Table 1 reports summary statistics for different time periods. These periods delimit groups of five to eight general elections that face relatively homogeneous electoral rules and technology environments, as discussed later.<sup>4</sup> Total spending drops from an average of €141,120 per candidate-election in 1857–1885 to €4,999 in 2001–2017.<sup>5</sup> This is even more pronounced when normalized by the average annual nominal earnings taken from Clark (2019). The decrease is also larger for total spending *per voter*, given the subsequent extensions of the franchise, and is true even if we consider total spending at the constituency level, despite the increase in the number of candidates. Online Appendix Figure F.5 displays the overall amount spent on general elections (i.e., summed over all the candidates) since 1857, normalized by the average national income. While in the nineteenth century, as much as the equivalent of 20,000 adults' average income was spent on campaigning, this number has gone down to 500 in recent years (i.e., less than one adult per electoral district).

One of the key drivers of this general pattern is the introduction and tightening of campaign spending limits, as documented by Fourinaies (2021). However, it is worth noting that an important share of the candidates spent much less than the legal maximum, particularly in recent years. While the average spending as a share of the legal maximum was equal to an average 73 percent of the limit from 1885–1911, it is only 33 percent from 2001–2017. This is partly driven by an increasing number of candidates from “small” parties, but not solely; Online Appendix Table E.2 shows a similar drop for candidates of the three main parties, and Online Appendix Figure E.3 for each constituency's top-2 candidates.<sup>6</sup>

At least two explanations could rationalize this finding. First, candidates could be financially constrained. Survey data from Fisher and Denver (2009) show that this is the case, at least for recent elections, for which large fractions of candidates' election agents reported that they

<sup>4</sup> For election-level data, see Online Appendix Tables E.4, E.5, and E.6.

<sup>5</sup> All the monetary figures in the article are in 2017 constant euros to make them easily comparable over time, using data from WID.world (Blanchet 2017).

<sup>6</sup> Online Appendix Figure F.11 plots the average total spending of the candidates, depending on the time period and on the political party to which they are affiliated. Conservative Party candidates always spent more on average than their opponents. This is consistent with evidence from other countries (see, for instance, Bekkouche, Cagé, and Dewitte 2022), and also with the fact that right-wing parties tend to receive more donations than their left-wing counterparts (Cagé 2018).

TABLE 1  
SUMMARY STATISTICS: CAMPAIGN SPENDING

|                                                   | Spending (CST 2017 €) |         |         |         |           |        |
|---------------------------------------------------|-----------------------|---------|---------|---------|-----------|--------|
|                                                   | Mean                  | Median  | SD      | Min.    | Max.      | N      |
| <b>Total spending per candidate</b>               |                       |         |         |         |           |        |
| 1857–1884                                         | 141,120               | 81,316  | 158,052 | 0       | 1,603,151 | 3,329  |
| 1885–1910d                                        | 106,499               | 97,709  | 47,605  | 7,377   | 501,731   | 7,912  |
| 1922–1945                                         | 36,778                | 35,797  | 17,371  | 243     | 155,565   | 9,887  |
| 1950–1970                                         | 15,566                | 15,443  | 6,282   | 0       | 33,663    | 11,276 |
| 1974–1997                                         | 7,287                 | 7,245   | 4,584   | 0       | 38,536    | 17,807 |
| 2001–2017                                         | 4,999                 | 2,590   | 5,045   | 0       | 32,598    | 16,970 |
| <b>Normalized by average annual earnings</b>      |                       |         |         |         |           |        |
| 1857–1884                                         | 27.26                 | 15.60   | 30.76   | 0       | 345.22    | 3,328  |
| 1885–1910d                                        | 11.44                 | 10.39   | 5.37    | 0       | 53.16     | 7,912  |
| 1922–1945                                         | 4.22                  | 4.11    | 2.02    | 0       | 15.57     | 9,887  |
| 1950–1970                                         | 1.33                  | 1.19    | 0.69    | 0       | 3.46      | 11,276 |
| 1974–1997                                         | 0.38                  | 0.38    | 0.25    | 0       | 1.98      | 17,807 |
| 2001–2017                                         | 0.18                  | 0.09    | 0.18    | 0       | 1.20      | 16,970 |
| <b>Total spending per constituency</b>            |                       |         |         |         |           |        |
| 1857–1884                                         | 603,775               | 419,183 | 544,832 | 19,652  | 3,198,625 | 349    |
| 1885–1910d                                        | 345,693               | 350,253 | 135,460 | 100,199 | 1,163,060 | 537    |
| 1922–1945                                         | 129,320               | 124,909 | 42,671  | 32,359  | 443,076   | 617    |
| 1950–1970                                         | 60,382                | 60,439  | 12,991  | 26,760  | 101,022   | 653    |
| 1974–1997                                         | 34,263                | 34,394  | 8,835   | 10,636  | 68,598    | 1,065  |
| 2001–2017                                         | 33,080                | 32,832  | 10,397  | 10,109  | 104,861   | 781    |
| <b>Total Spending per candidate and per voter</b> |                       |         |         |         |           |        |
| 1857–1884                                         | 26.48                 | 14.14   | 35.30   | 0       | 372.98    | 3,328  |
| 1885–1910d                                        | 12.03                 | 11.55   | 5.43    | 1       | 52.97     | 7,912  |
| 1922–1945                                         | 0.86                  | 0.83    | 0.45    | 0       | 2.39      | 9,887  |
| 1950–1970                                         | 0.28                  | 0.28    | 0.12    | 0       | 0.95      | 11,276 |
| 1974–1997                                         | 0.11                  | 0.11    | 0.07    | 0       | 0.56      | 17,807 |
| 2001–2017                                         | 0.07                  | 0.04    | 0.07    | 0       | 0.59      | 16,970 |
| <b>Spending as a share of the legal maximum</b>   |                       |         |         |         |           |        |
| 1857–1884                                         | .                     | .       | .       | .       | .         | 0      |
| 1885–1910d                                        | 0.73                  | 0.78    | 0.24    | 0       | 1.49      | 7,912  |
| 1922–1945                                         | 0.57                  | 0.56    | 0.26    | 0       | 1.32      | 9,887  |
| 1950–1970                                         | 0.73                  | 0.79    | 0.24    | 0       | 1.11      | 11,276 |
| 1974–1997                                         | 0.53                  | 0.53    | 0.32    | 0       | 1.49      | 17,807 |
| 2001–2017                                         | 0.33                  | 0.17    | 0.33    | 0       | 1.45      | 16,970 |

*Notes:* The table presents summary statistics on total spending by candidates running for general elections, excluding expenses for the organization of the election (Returning Officers' charges). "CST 2017 €" stands for "2017 constant euros"; for the sake of comparability over time, all the monetary values are indeed reported in 2017 constant euros (the conversion from current pound sterling to constant euros is done using the PPP conversion factor and the national income price index from the World Wealth and Income Database (WID.world)). For the "total spending per candidate" and the total spending "per candidate and per voter" variables, an observation is a candidate/election. For the "total spending per constituency" variable, an observation is a constituency-election. There is no value for the "Spending as a share of the legal maximum" variable for the 1857–1884 period given spending limits were only introduced in 1885.

*Source:* Authors' compilation based on datasets described in the text.

did not have enough money to run their campaign (see Online Appendix Figure F.6). In Online Appendix Figure F.7, we show that candidates whose election agents declare themselves to have insufficient funds indeed tend to spend much less on average. These financial constraints likely arise from the fact that few local parties were receiving money from central parties for their campaigning activities (Johnston and Pattie 2014). In other words, funds spent locally had to be found locally. Over most of the period, there are numerous accounts of candidates relying primarily on their personal wealth to fund their campaigns (Gwyn 1962; Butler and Lovenduski 1995)—in fact, this was one of the drivers of the progressive tightening of spending limits.<sup>7</sup>

The second explanation lies in the fact that the nature and relative efficiency (real or perceived) of the different campaign spending items have changed, so that candidates modified their basket of expenses and how much they consider appropriate to spend. Suggestive of that, Figure 1 reports significant changes in the relative importance of the different spending categories over time. One of the most striking features is the progressive shift away from paid staff (such as agents or messengers) toward advertisement services and material (leaflets, posters, and so on). To better understand these evolutions and the broader significance of the events that caused them, we delve into the historical accounts of their epochs.

### *Eras of Campaigns*

#### THE PRE-MODERN ERA (1857–1880)

Before the 1868 and 1884 extensions of the franchise, the British electorate was small (2–3 percent of the population) and unevenly apportioned. Candidates had the ability to target each elector individually with canvassing, conveying, and monitoring—especially before the anonymity guaranteed by the “Secret Ballot” Act of 1872. Besides, in a context of cheap labor and no limit on expenses, they could hire extensively to do so. This led to accounts of campaigns sometimes managing hundreds of paid campaigners (Denver and Hands 1997; Rix 2008). Our data back this up: paid staff were by far the main item of expenses at the time (Figure 1a). These included election agents and professional canvassers, but also, given the state of transportation and information technologies,

<sup>7</sup> Note that there is no public reimbursement of campaign expenditures in the United Kingdom. Local fundraising originated from individual donors, corporations, and, for Labour Party candidates, Trade Unions.

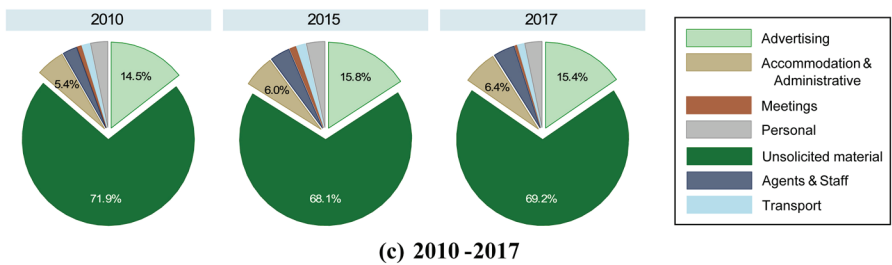
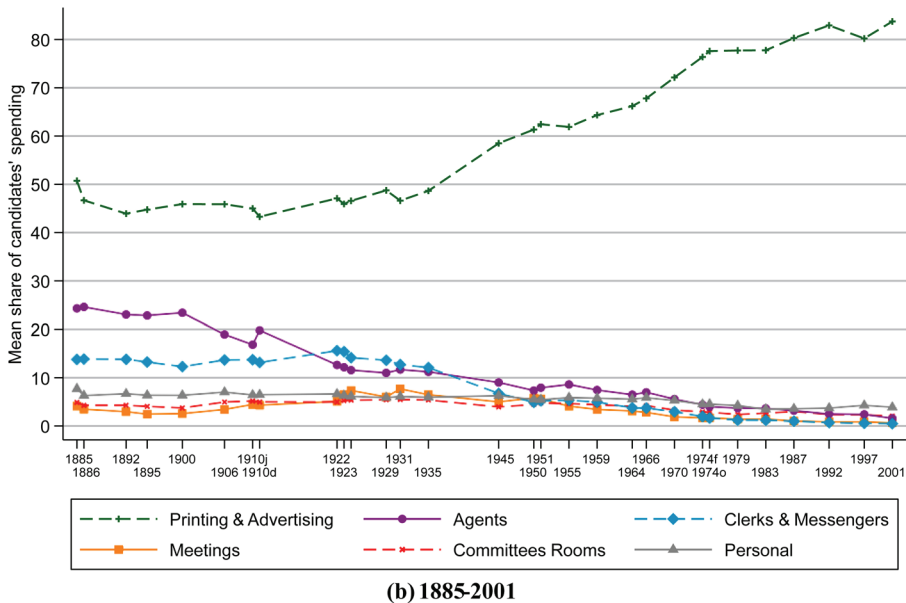
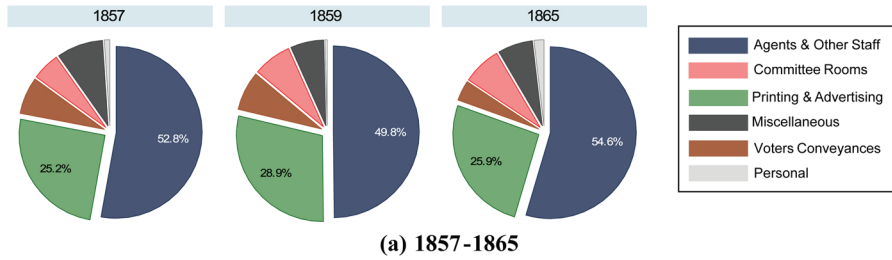


FIGURE 1  
ELECTORAL EXPENSES BY CATEGORY OVER TIME

Notes: The figures plot the average share of candidates' total expenses spent on each expense category at every general election between 1857 and 2017. Sub-Figure 1a reports these data over the 1857–1865 period, sub-Figure 1b for 1885–2001 (see Online Appendix Table F.10 for a zoom on the smallest categories), and sub-Figure 1c for 2010–2017.

Source: Authors' compilation based on datasets described in the text. The expenses categories are described in details in the Online Appendix Section A.2.

clerks, and messengers (and the cost of their horses and carriages), as well as many auxiliary workers such as “men to protect voters,” “night and day watchers,” or “men relieving voters in their employment.”

These items also corroborate the fact that Victorian elections were notoriously corrupt. High spending on staff reflects, for instance, the practice of “colourable employment”—the clientelistic hiring of voters as canvassers or messengers with barely any workload (Rix 2008). Large amounts given to agents (sometimes more than €200 000), through which candidates’ money transited, is an indicator of potential bribery. Conveying voters to the polls, a practice actually authorized in boroughs until 1868 and in counties until 1885 (Gwyn 1962; Rix 2008), but condemned after that, amounted to 7 to 10 percent of candidates’ budgets. Finally, our data reveal the high cost of organizing the elections during that era (the “Returning Officer” or “Sheriff” charges), which was paid, until 1918, by candidates themselves. Instances of detailed itemization, as in Online Appendix Figure F.13, provide a unique glance into what these costs entailed, from erecting the hustings to policing the elections.

#### THE (NEWS)PAPER EPOCH (1885–1910)

The 1867–1885 period of electoral reform saw the birth of political campaigns as we know them (Kavanagh 1995; Lawrence 2009). Candidates had to find new ways to reach the mass of anonymous electors, hence the growth of open-air election meetings, whose costs start to appear systematically in the expenses data. Without amplification, these meetings remained modest (on average, less than 5 percent of candidates’ spending), but were said to represent an essential step to assert candidates’ legitimacy (Lawrence 2009). As a matter of fact, our data indicate that election candidacies were still, at the time, the privilege of a wealthy elite: the average candidate spending (and newly set spending limit) amounted to several times the median annual salaries (Table 1), and the amounts spent on *Returning Officers’ expenses* kept growing (see Online Appendix Figure F.12). These findings feed into the argument that the rise of the Labour Party candidates in the interwar period was directly linked to the reforms that progressively alleviated the financial burden imposed on candidates (including the set-up of an MP salary) (Dawson 1992).

Yet, by imposing spending limits, a single agent per candidate, and forbidding the payment of canvassers, the *CIPA 1883* already sparked a decrease in the number of campaign employees, as evidenced by a lower spending share on paid staff. This is said to have contributed

to the creation of local party organizations, which would coordinate a growing pool of volunteers (Lawrence 2009).<sup>8</sup> Agents themselves were more inclined to offer their services for free, or even disappear, so that their costs slowly decreased over the century, from 25 percent to less than 5 percent of total candidate spending. Besides, the combination of a larger, more literate electorate (Good 2009) and major technological innovations in printing opened a new era of paper-based propaganda, through two key channels: election leaflets and the press. The expanding circulation and widening readership of U.K. newspapers (Williams 2010) indeed became an opportunity for candidates to buy an increasing share of advertising space.<sup>9</sup> As a result, the share of candidates spending on printing and advertising almost doubled compared to the previous period.

#### THE RADIO DAYS (1918–1945)

The inter-war period was a time of more humble and low-profile politics, WWI having tempered exuberance, and the *RPA 1918* improved control of candidates' and third parties' expenses (Denver and Hands 1997; Lawrence 2009). Meetings, more numerous and popular thanks to the rise of motor vehicles, microphonic technologies, and a newly enfranchised urban working-class, remained the central location of British politics (Joyce 2004): in our data, it is when their share of total spending is the highest. The era also witnessed the spread of radio broadcasting (by 1935, almost two-thirds of households were able to hear party leaders' recordings (Swaddle 1988)) and the first political broadcasts in cinemas. However, as they were managed and used mostly by the national parties, these new broadcasting technologies initially had little impact on local campaigns.

If anything, general election candidates had to redefine their relationship with the press, whose centralization had made it much harder to influence (Dawson 1992). In that context, they relied heavily on self-produced material, with posters being the chief weapon of war, and the *RPA 1918* providing candidates with one free postal delivery of a leaflet to all electors. Expenses on printing and advertising reached 60 percent of total spending at the end of WWII. On the other hand, the development of telephones and typewriters made clerks and messengers obsolete, reducing their share of total spending by one third.

<sup>8</sup> The emergence of local party associations has also been linked to the extension of the franchise and thus the growing importance of registration (Ostrogorski 1902; Fisher, Denver, and Hands 2006; Kam and Newson 2021).

<sup>9</sup> It was also not uncommon to see candidates subsidizing—or even buying—local newspapers a few months before a contest, in order to boost their popularity (Dawson 1992; Kavanagh 1995).

## THE TELEVISION TIMES (1950–1970)

Television fundamentally changed the conduct of campaigns post-WWII. By 1964, 90 percent of British homes were equipped with a TV set (Lawrence 2009). As with the first radio channels, constituency candidates initially had little to do with TV news coverage of the *national* campaigns. However, the shift in attention meant that, in most constituencies, local campaigns became totally overshadowed by national politics (Butler 1989; Johnston and Pattie 2014). This was strengthened by the fact that national campaigns had no limits on their expenditures, contrary to their constituency counterparts. Indeed, as seen in Online Appendix Figure F.8, it is during this period that national party spending at elections progressively reached aggregate levels similar to those of local campaigns. In parallel, local meetings' spending share returned to their pre-WWI levels, and, suggestive of the centralization of campaigns, the period witnessed a decline in campaign spending variance across constituencies (Online Appendix Figure F.15).

However, the period also witnessed the birth of most of the innovative local practices that would become widespread during the following decades (flashy advertising, “knocking-ups,” “walkabouts,” and so on) (Denver and Hands 1997). Besides, the growth of electoral science made it increasingly obvious that, in a first-past-the-post system, the national balance of power could depend on a small set of “marginal seats.” The relative efforts and spending devoted to these constituencies thus started to increase (Online Appendix Figure F.14) and did not decrease ever again.

## THE MEDIA DIVERSIFICATION SPELL (1974–1997)

In the 1970s, with the opening of local radio stations and regional TV channels, local campaigns increased the frequency of their activities in an effort to catch the media's attention. Besides, the whole electioneering process became more “professional” with the increasing use of strategy consultants and marketing techniques (Wring and Ward 2010a; Lawrence 2009). Computer-based registers of voters saved hours of address handwriting (Lawrence 2009) and improved the efficiency of knocking-ups (Denver and Hands 1997). Together with focus groups, they also paved the way for targeted campaigning, initially through mailing (Swaddle 1988) and, in the 1990s, faxes (Fisher and Denver 2009; Denver et al. 2003) and telephones (Lawrence 2009). All in all, the share of spending devoted to printing (i.e., canvassing) and advertising kept increasing over the period, while spending on staff and meetings continued to plunge.

## THE INTERNET AGE (2001–2017)

At the turn of the century, the Internet brought numerous changes. In the 1997 general elections, only 2 percent of British homes reported using the Internet; by 2001, 33 percent (Coleman 2001). Similarly, while in 1994 no MP had ever used emails to reach out to their constituents, by 2002, 73 percent had done so, and by 2010, two-thirds of the main parties' candidates had their own websites (Wring and Ward 2010a). The Internet improved the collection and redirection of voters' data: our data show that candidates devoted on average around 85 percent of their total expenditures to "advertising" and "unsolicited material" (Figure 1c), which includes the costs associated with targeting or identifying voters, the database costs, and the cost of analyzing social media content. The Internet also facilitated the entry of candidates, whose number peaked at an average of 6.2 per constituency in 2010 (see Online Appendix Table E.1).

Overall, these spending patterns indicate that candidates strategically adapt their expenditures to their environments and spend large amounts on elements that could impact voters' decisions to vote. Online Appendix Figure F.9 shows for each time period the "raw" relationship between the proportions of total spending and total votes represented by each candidate in a constituency. While the correlation is strongly positive for all, its magnitude varies over time. The next section investigates in more detail this changing relationship.

THE LONG-RUN RELATIONSHIP BETWEEN CAMPAIGN  
SPENDING AND VOTES

*Empirical Strategy*

We aim to estimate the relationship between the spending of each candidate and her electoral results, which involves two empirical constraints: vote shares are always between 0 and 1 and, within a constituency, these shares are interdependent, as they need to sum up to one (Katz and King 1999). To obtain meaningful and statistically consistent estimates, we thus use the strategy of Bekkouche, Cagé, and Dewitte (2022), which is detailed in Online Appendix Section B. In sum, we formalize voter  $i$ 's choice of candidates  $c$  as a discrete choice model in conditional logit form, where the choice probability  $P_{ic}$  depends on a set of candidates' characteristics  $X_{ic}$ , one of which is campaign spending. We then approximate these individual probabilities with the observed aggregate share of votes  $s_c$  for each candidate  $c$ . As in any logit model, one needs to select a reference choice  $s_0$  to single out the expression of the choice

probabilities: we set it as the outside option of “not to vote” (i.e., to abstain), which is the only choice uniformly available in all elections and constituencies (and spending on abstention has the advantage of always been equal to zero). The estimation equation then writes:

$$\ln\left(\frac{s_{cmt}}{s_{0mt}}\right) = \alpha + \beta \text{spending}_{cmt} + X'_{mt}\gamma + Y'_{ct}\delta + Z'_c\theta + \zeta_m + \omega_{jt} + \varepsilon_{cjmt} \quad (1)$$

where  $c$  indexes the candidates,  $j$  the political parties,  $t$  the electoral years, and  $m$  the electoral constituencies. Our left-hand side variable,  $\ln\left(\frac{s_{cmt}}{s_{0mt}}\right)$ ,

is the logarithm of the ratio of the number of votes obtained by candidate  $c$  in district  $m$  in election  $t$  over the abstention in district  $m$  in election  $t$ . Our main explanatory variable,  $\text{spending}_{cmt}$ , is the share of the district  $m$  total spending represented by the candidate  $c$  in electoral year  $t$  (alternatively, we use the absolute candidate spending).  $X'_{mt}$  is a vector of constituency-level covariates: all specifications include the number of candidates running, the number of consecutive general elections won by the incumbent party, the margin at the last election, and the population (see Online Appendix Table E.8); the socio-demographic characteristics included depend on the time period under consideration (see Online Appendix A.5).  $Y'_{ct}$  is a vector that includes the time-varying candidates' characteristics, and  $Z'_c$  their time-invariant characteristics.<sup>10</sup> All the specifications include party-election  $\omega_{jt}$  fixed effects, which control for the change over time in the popularity and the electoral strategies of national parties. The above specification also includes constituency fixed effects,  $\zeta_m$ , and clusters standard errors at the same level.<sup>11</sup>

In our most conservative specification, we focus on candidates who run multiple times and control for candidate fixed effects:

$$\ln\left(\frac{s_{cmt}}{s_{0mt}}\right) = \alpha + \beta \text{spending}_{cmt} + X'_{mt}\gamma + Y'_{ct}\delta + \xi_c + \omega_{jt} + \varepsilon_{cjmt} \quad (2)$$

This allows us to capture the unobserved candidate characteristics that are constant over time, in addition to the electoral “popularity” of their

<sup>10</sup> We drop the candidates in uncontested constituencies (see Online Appendix Section A.1 for the evolution of the number of uncontested constituencies), where no election is held (2.68 percent of candidates), and the candidates submitting joint returns, that is, reports aggregated at the party level in multi-member constituencies (0.54 percent).

<sup>11</sup> Given the extent of the 1885, 1918, 1948, and 1970 redistrictings, we treat each set of constituencies drawn after these dates as new ones. Hence, our number of unique constituencies (hence clusters) is 3,352 when considering the entire time period.

political party in a given year and the time-varying observed characteristics. Doing so, however, limits our sample of analysis to those candidates who run multiple times, that is, a selected set of candidates.

Controlling for candidate fixed effects does not entirely mitigate the estimation biases that may arise from the endogeneity of campaign spending. In particular, our estimates might suffer from a downward bias if the candidates who are behind spend more to compensate for the gap. One way to solve this issue has been to use historical shocks or regulations as instruments (see, for instance, Spenkuch and Toniatti 2018; Da Silveira and De Mello 2011; Bekkouche, Cagé, and Dewitte 2022). However, doing so only allows us to estimate the causal impact of campaign expenditures *at a given moment of time*; our focus here is to study the *changes* in the relationship between electoral results and these expenditures over time. Besides, Bekkouche, Cagé, and Dewitte (2022) show that, in the French context, a specification with candidate fixed effects effectively captures most of the endogeneity between spending and votes, producing estimates comparable to those using instrumental variables.

### *A Positive—and Changing—Correlation*

#### AVERAGE EFFECT

We first present, in Table 2, the results of the estimation of Equations (1) and (2) over the entire 1857–2017 time period. Columns (1) and (2) include all the candidates; in Columns (3) and (4), we only consider the candidates who have run multiple times, and we control for candidate fixed effects in Column (4). Constituency and candidate-level controls are included in Columns (2) to (4), and their coefficients are shown in Online Appendix Tables E.11 to E.14.

Overall, we find a positive relationship between the share of the total district spending represented by a candidate and the share of the votes she obtained. A 1-percentage point increase in the spending share is correlated with a 2.1 to 2.5 percent increase in the votes-on-abstention when we control for constituency and election-party fixed effects (Columns (1) and (2)). Introducing constituency- and candidate-level controls only slightly decreases the estimated coefficient. The effect is robust to controlling for candidate fixed effects, but when we do so, the magnitude of the effect is halved: a 1-percentage-point increase in the spending share is associated with a 1.1 percent increase in the votes-on-abstention (Column (4)). This means that candidates' unobserved heterogeneity plays an important role in mediating the relationship between spending and votes. Our empirical

TABLE 2  
RELATIONSHIP BETWEEN CANDIDATES' SHARE OF TOTAL SPENDING  
AND VOTE SHARE (LOGARITHM OF THE RATIO OF THE NUMBER  
OF VOTES OVER ABSTENTION), 1857–2017

|                                      | 1857–2017           |                     |                     |                     |
|--------------------------------------|---------------------|---------------------|---------------------|---------------------|
|                                      | (1)                 | (2)                 | (3)                 | (4)                 |
| Share of constituency total spending | 0.025***<br>(0.000) | 0.021***<br>(0.000) | 0.018***<br>(0.000) | 0.011***<br>(0.000) |
| Constit FE                           | ✓                   | ✓                   | ✓                   |                     |
| Election-Party FE                    | ✓                   | ✓                   | ✓                   | ✓                   |
| Candidate FE                         |                     |                     |                     | ✓                   |
| Constit-level controls               |                     | ✓                   | ✓                   | ✓                   |
| Candidate-level controls             |                     | ✓                   | ✓                   | ✓                   |
| Candidates                           | All                 | All                 | Mtp times           | Mtp times           |
| R-sq (within)                        | 0.24                | 0.30                | 0.29                | 0.15                |
| Observations                         | 66,777              | 66,683              | 46,323              | 46,323              |
| Cluster (Constit)                    | 3,357               | 3,354               | 3,294               | 3,294               |
| Mean DepVar                          | -0.7                | -0.7                | -0.2                | -0.2                |
| Sd DepVar                            | 1.6                 | 1.6                 | 1.3                 | 1.3                 |

Notes: \* p<0.10, \*\* p<0.05, \*\*\* p<0.01. The models are estimated using OLS. An observation is a candidate-election. The dependent variable is the logarithm of the ratio of the number of votes obtained by a candidate over abstention. All the estimations include election-party fixed effects. Columns (1) to (3) also control for district fixed effects, and Column (4) for candidate fixed effects. Standard errors are clustered at the district level. The district-level controls are listed in the text. The candidate-level controls include gender, and an indicator variable equal to one if the candidate is the incumbent and to zero otherwise. Coefficients for the controls are not reported for the sake of space. Source: Variables are described in more detail in the text.

specification only allows us to capture the part of the candidates' heterogeneity that is constant over the several elections they participate in.

The magnitude of the estimated effect is economically meaningful. On average, the total spending in an electoral district amounts to €90,528. Hence, a 1-percentage-point increase in the spending share of a candidate corresponds on average to an additional €905 in campaign spending. If we consider our most conservative estimate (Column (4)), such an increase is correlated with a 1.1 percent rise in votes-on-abstention. Assuming, for the sake of the interpreting of magnitudes, that the change in votes comes solely from other candidates' voters, this corresponds, on average, to 119 additional votes (the average number of votes received by a candidate is 10,806).<sup>12</sup>

<sup>12</sup> Note that if the direct effect of changes in spending *shares* (our main explanatory variable) on relative and absolute *votes-on-abstention* is conceptually and empirically ambiguous, studies have shown a positive correlation between turnout and overall candidate campaigning (Gerber and Green 2000) and spending (Bekkouche, Cagé, and Dewitte 2022). Online Appendix Table E.16 shows that, in our historical context, total candidate spending at the constituency level is indeed strongly correlated with participation. This is why all our specifications control for total constituency spending (per registered voter).

## CHANGE OVER TIME

To investigate the evolution of the relationship between campaign spending and votes over time, we plot our main estimates interacted with time fixed effects in Figure 2, as estimated in the following equation:

$$\ln\left(\frac{s_{cmt}}{s_{0mt}}\right) = \alpha + \beta \text{spending}_{cmt} + \sum_t \beta_t \text{spending}_{cmt} * \phi_t + X'_{mt} \gamma \quad (3)$$

$$+ Y'_{ct} \delta + \xi_c + \omega_{jt} + \varepsilon_{cjmt}$$

Several interesting patterns emerge. First, for all the elections except for those of 1886 and 1892, the relationship is statistically significant at the 5-percent level. Until the end of the mid-1880s, however, the correlation between spending and votes is relatively noisy, which is probably due to the wide diversity of spending items, the absence of spending limits, and the less stringent monitoring of reporting that we discuss in the third section. The average relationship between spending and votes is somewhat of lower magnitude following the reforms of 1885, and then gradually increases up until WWII. Then, the correlation remains stable until the early 1970s, when it surges to unprecedented levels, two to three times higher than during the rest of the century. The peak in 1997 is almost ten times larger than the lowest point in 1886. Finally, the estimated coefficients dropped in 2001, remaining at a level that is still relatively high in historical comparisons. We rationalize these patterns in the next section.

To control for a richer set of district-level covariates, Online Appendix Table E.9 estimates Equations (1) and (2) separately for the six time periods described in the previous section. The observed changes in the magnitude of the coefficients are consistent with the relationship plotted in Figure 2, though estimates for the 1857–1880 period appear smaller than suggested by the graph. This is true as well when selecting periods that strictly exclude changes in constituency boundaries and major electoral rules, as in Online Appendix Figure E.10. Besides, in Online Appendix Figure F.18, we show that the general pattern is robust to interacting all the constituency- and candidate-level controls of Equation (3) with a time fixed effect. In the Online Appendix, we also show that these time trends are not homogeneous from a geographical point of view (Figure F.16). Finally, note that these patterns cannot be explained by decreasing returns to scale, as we are working with spending shares, which are not directly affected by the total amounts spent—which we control for in the estimations.

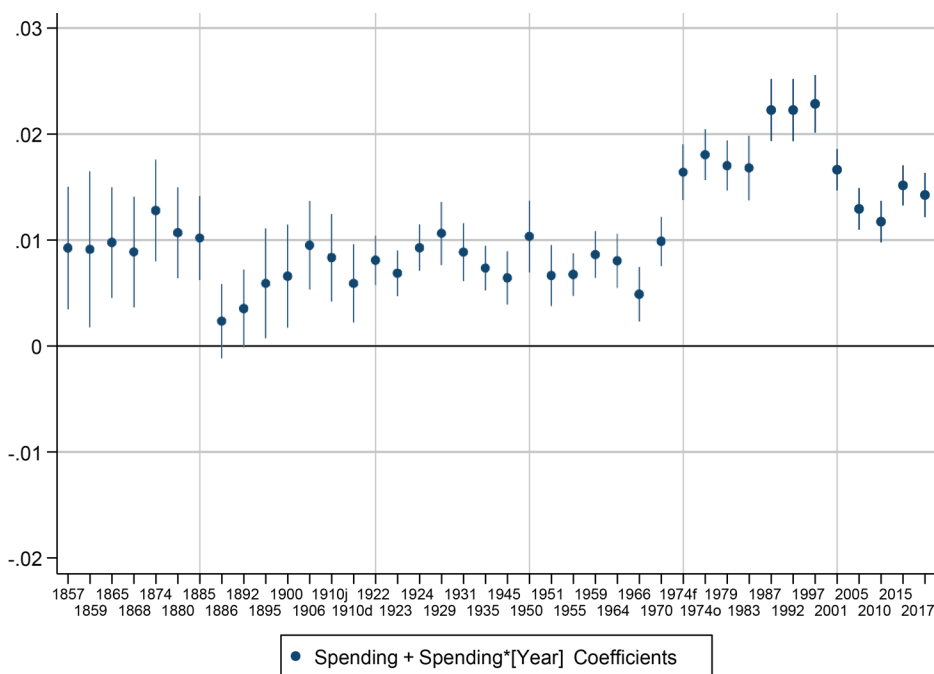


FIGURE 2  
EVOLUTION OF THE RELATIONSHIP BETWEEN THE CANDIDATES' SHARE OF THE CONSTITUENCY TOTAL SPENDING AND THEIR VOTES-ON-ABSTENTION, 1857–2017

*Notes:* The figure plots, for each election year, the point estimates and 95 percent confidence intervals of the linear combination of the share of spending coefficient and its interaction with an election-year indicator variable (the coefficients  $\beta + \beta_i$  in Equation (3)). Vertical lines indicate the time periods described in the third section.

*Source:* Authors' compilation based on datasets described in the text.

#### HETEROGENEITY DEPENDING ON THE CATEGORIES OF EXPENSES

We then proceed to investigate whether the correlation between campaign spending and votes varies depending on the types of spending. We aggregate the expense data into four broad categories: (i) printing and advertising; (ii) paid staff; (iii) meetings; and (iv) other expenditures.<sup>13</sup> We then estimate Equation (3) with  $\beta_e \text{spending}_{ecmt}$  as the main variable of interest, where  $e$  indexes the different expense categories, and  $\text{spending}_{ecmt}$  is the share of the district  $m$ 's total spending in expense category  $e$  represented by the candidate  $c$ .

<sup>13</sup> This aggregation allows us to perform the analysis for the entire 1885–2017 time period, despite the change in the expense categorization that took place in the 2000s. Online Appendix Figure F.17 reports the evolution of the relative importance of these four aggregated categories over time. Including the 1857–1880 period requires us to drop the meeting category. Doing so does not alter our results (Online Appendix Table E.20).

Results are plotted in Figure 3. The time pattern observed in Figure 2 is mostly visible for the “printing and advertising” category; only before WWII are the “meetings” and “agents” spending categories comparable (yet smaller) in terms of magnitude (Online Appendix Table E.15 shows the coefficients for the entire time period). This is consistent with the qualitative accounts we present in the previous section regarding the de-professionalization of agents and the diversification of media supports to the detriment of meetings. Moreover, the importance of printing and advertising material finds support in the literature through its provision of information to voters (see, among others, Le Penec 2024; Cagé, Le Penec-Caldichoury, and Mougin 2024).

Does this mean that using advertising is a more “efficient” way to campaign than organizing meetings? To tackle this question, we investigate whether there is a “compositional” effect of spending, that is, whether the electoral performance of a candidate—for a given spending share—varies depending on the composition of her spending. To do so, we use as independent variables the fraction of each spending category on the candidate’s *own* total spending—and control for that total spending (i.e., our initial explanatory variable). Online Appendix Figure F.19 reports the results. Conditional on the overall expenditure effort of the candidate, spending an additional percentage point on meetings is associated with higher votes, and significantly more than spending on printing, advertising, or paid staff.

One way to rationalize these contradicting results is through the levels of spending devoted to each category: as seen in Figure 1, meetings rarely represent more than 10 percent of candidates’ expenses; thus, adding a percentage point of spending is highly significant. However, another explanation could be that candidates spend their money differently depending on the varying status and prospects of their campaigns, including their levels of spending. Online Appendix Figure F.20 shows that a basket of spending with a large proportion of meeting expenses is linked to *low* levels of share of spending in general, while the opposite is true (at least to a certain extent) for advertising, as shown in Online Appendix Figure F.21. In other words, it appears as though a fixed amount of spending on meetings is required by most campaigns, and any additional euro (i.e., the extensive margin of campaigning) will go toward printing and advertising. As more spending is related to more votes, printing and advertising thus become the main determining elements of our pattern, without being the “best” campaign tool per se.

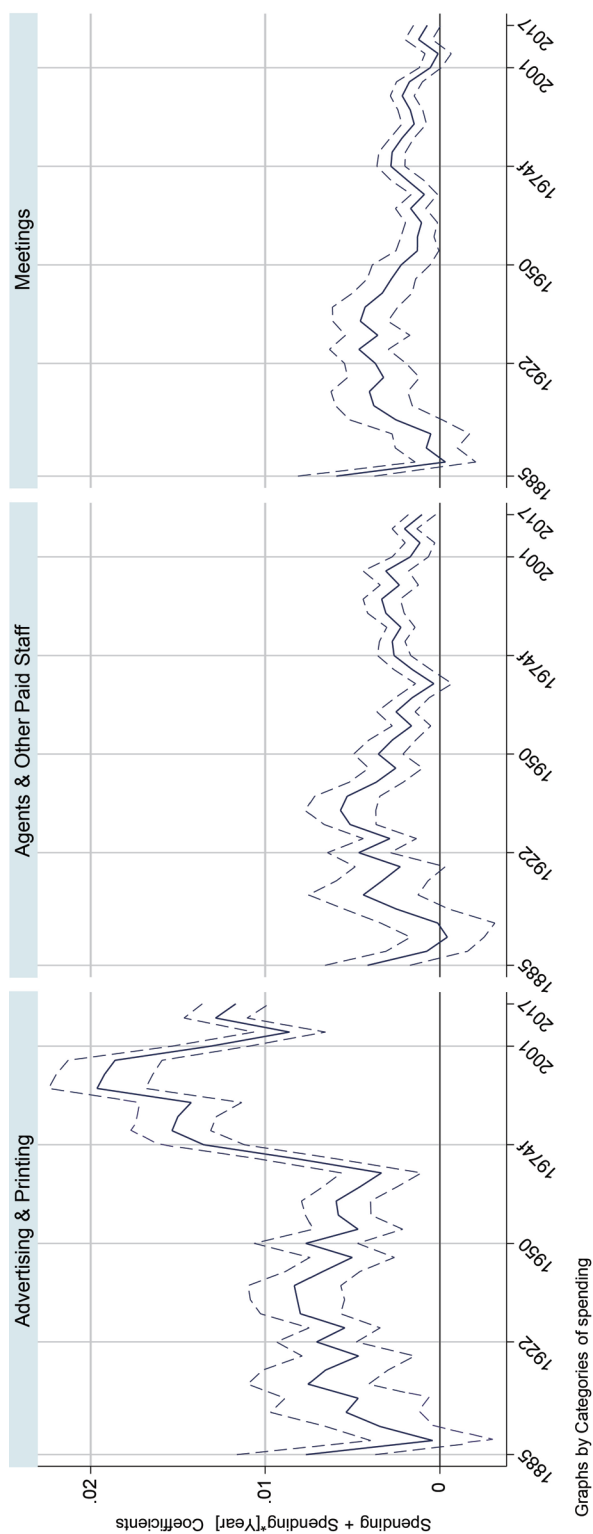


FIGURE 3  
EVOLUTION OF THE RELATIONSHIP BETWEEN CAMPAIGN SPENDING AND VOTES,  
DEPENDENT ON THE EXPENSES CATEGORIES, 1885–2017

*Notes:* The figure plots, for each election, the point estimates and 95 percent confidence intervals of the linear combination of spending-category (as the share of the candidate spending in this category over all candidates spending in this category) coefficient and its interaction with an election indicator variable.

*Source:* Authors' compilation based on datasets described in the text.

## HETEROGENEITY DEPENDING ON THE PARTY AND GENDER OF THE CANDIDATE

Do these patterns apply to all (major) political parties? In Online Appendix Figure F.22, we estimate Equation (3) separately for each of the three major parties. Interestingly, though overall in line with the previous findings, each party shows relatively different patterns in the estimated correlations. While the coefficients for Conservative candidates generally follow the same average trend observed in Figure 2, the correlation of their spending with their electoral results is very often indistinguishable from zero before the mid-60s. Labour Party candidates' coefficients are generally stable throughout the twentieth century and decline since the mid-90s—a time corresponding to the rise of “New Labour.” On the contrary, though volatile, the trend for the Liberal Party is steadily upward and shows no sign of a twenty-first-century inversion.

What about candidates' gender? Since 1918, women over 30 and with some property qualifications can run for Parliament, and since 1928, they can do so on the same terms as men (see Butler 1953). Online Appendix Figure F.23 shows that the trends and levels of the spending-votes correlation do not differ substantially for male and female candidates.

*Robustness*

These results are robust to a number of alternative empirical specifications.

## SAMPLE AND TIME PERIOD

As noted in the previous section, data pre-1885 are less reliable. In Online Appendix Table C.1, we present similar estimations but only for the sub-period 1885–2017; doing so does not meaningfully affect our main estimates. Online Appendix Table C.2 displays the results dropping the 4.74 percent of observations in multi-member constituencies (which existed until 1948); conclusions are unchanged. Online Appendix Table E.19 reproduces our time-period results, focusing on the first four candidates in each constituency, validating that the time pattern we find is not driven by the entry of smaller candidates with different campaign spending strategies.

## ABSOLUTE SPENDING AND VOTE SHARES

Online Appendix Tables C.3 and E.17 show that our results are robust to using absolute spending (per registered voter) as our variable of interest

and test for decreasing returns to scale. In addition, we show in the Online Appendix, Table C.4 and Figure C.1 that using candidates' vote share—that is, the number of votes they received on the total number of votes cast in the constituency—also produces similar results (even if we argue that it would be incorrect from a statistical perspective).

#### SPATIAL AUTOCORRELATION, CLUSTERING, AND FIXED EFFECTS

In Online Appendix Table C.5, we show that our results remain statistically significant with standard errors corrected for spatial autocorrelation. This is also true for temporal correlation between observations from the same constituency. Online Appendix Table C.6 shows that our findings are robust to clustering the standard errors at the candidate rather than at the electoral district level, and to clustering both at the district and election levels. Further, in Online Appendix Table C.7, we introduce district-decade, candidate-decade, and region-election fixed effects separately; doing so does not affect our results.

#### EXPLAINING THE TEMPORAL PATTERNS: THE ROLE OF MEDIA TECHNOLOGIES AND CAMPAIGN STRATEGIES

This section asks whether the changes in information technologies and electoral environments described in the third section affected the sensitivity of electoral results to differences in campaign spending. We focus on events we believe are important, and for which we are able to isolate causal effects or offer suggestive evidence, but we acknowledge our discussion is by no means exhaustive.

##### *Local Media, Amplification and the Diversification of Information Technologies*

Information technologies can be used by campaigns to publicize messages and improve coordination. They also cover and discuss campaigns, acting as “amplifiers” of both their campaigning and fundraising efforts, thereby making broadcasting media—on which campaign advertising is forbidden—relevant to our study. In this section, we focus on the introduction of local radio and broadband Internet. Our choice is driven by several facts: first, the timing of their development (the 1970s and the 2000s) is concomitant to the abrupt changes we observe in Figure 2; second, their local/disaggregated anchor particularly fits in with the dynamics of the *local* campaigns we study; finally, both underwent natural experiments that allow for interpretable causal analyses.

## LOCAL RADIO

Radio has already been shown to provide important political messages (Stromberg 2004; Ferraz and Finan 2008). In the United Kingdom, in particular, radio has been a key channel of political information since its inception, with periods of very large audiences (in the 1950s, about 90 percent of British homes had radio licenses, and between 15 and 20 percent listened to the BBC evening news broadcast daily (Paulu 1956)). Until the late 1960s, however, the United Kingdom only had a few *national* radio channels (with some regional variation in programs), limiting journalists' ability to cover local elections. This radically changed at the end of the 1960s when, under pressure to tackle pirate radio stations, the government allowed radio to diversify by setting up local BBC stations from 1967 onward and, starting in 1973, by licensing operations to "independent" (i.e., commercial) radio stations. Between these two starting dates and 1985, respectively, 19 public and 44 commercial local stations were launched in the British Isles.

To investigate the consequences of this expansion, we hand-coded the coverage of all local radio stations broadcasting in England & Wales on January 1st, 1985, using the Radio Atlas published by the Radio Marketing Bureau, the intelligence organization of commercial radio. An example of the data is given in Online Appendix Figure F.24. For each constituency, we determine the number of radio stations, the date of their launch, and the extent of their coverage, differentiating between full, partial, or no coverage. This allows us to study the interaction of local radio with campaign spending by comparing constituencies with extensive radio coverage to those with little or none, before and after the beginning of that coverage.

One concern might be that the decisions to launch local stations were made based on local population characteristics, which could themselves interact with the effectiveness of campaigns. In order to deal with this endogeneity issue, we exploit a freeze in independent radio licensing.<sup>14</sup> After a rapid expansion (19 licenses granted in three years), the growth of commercial radio stopped suddenly in 1976 because of budgetary restrictions and the new Labour government's skepticism toward these commercial players (Jones 1989). It would take four more years and a new government before their activity resumed, with 31 new stations launched between 1980 and 1985. More specifically, in England and

<sup>14</sup> Note that the number of public radio stations remains constant over the period. A similar freeze indeed occurred for public radio, during which no new stations were launched between 1973 and 1980.

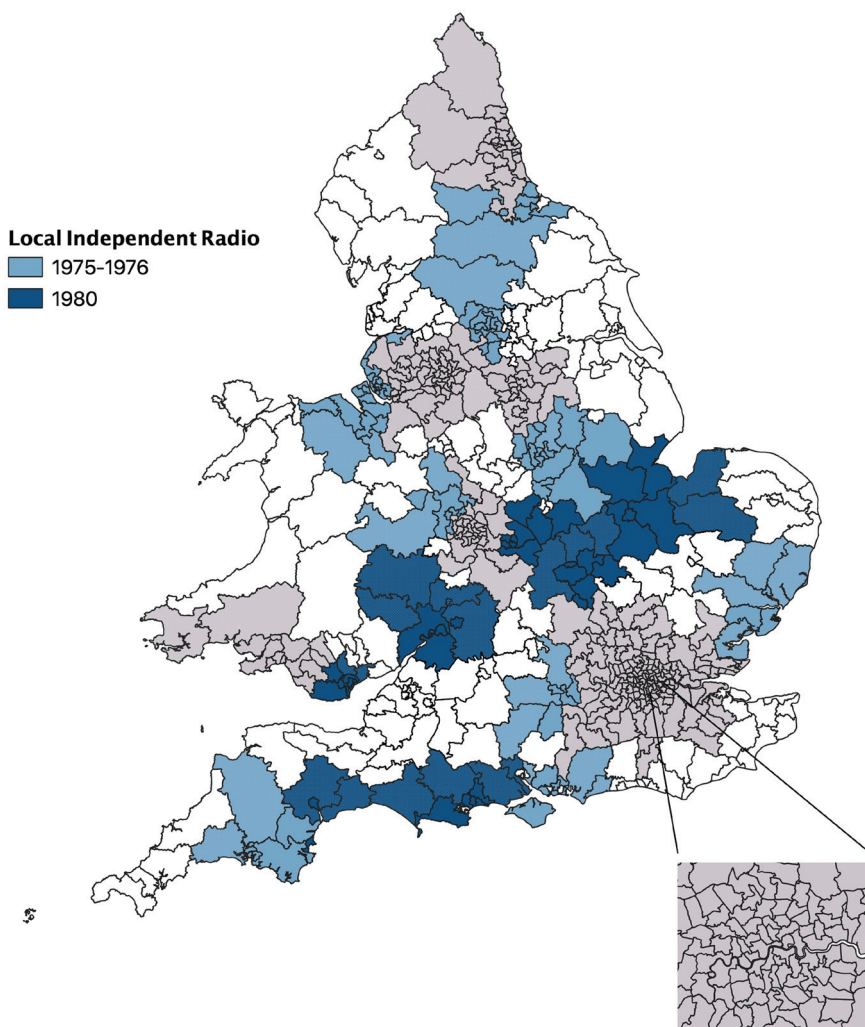


FIGURE 4  
LOCAL INDEPENDENT RADIO COVERAGE, 1974–1980

*Notes:* The figure plots the spread of local commercial radio stations right before and after the freeze on licenses that occurred between 1976 and 1980. Boundaries are those of parliamentary constituencies. Light and dark blue areas correspond to full or partial coverage starting between October 1974 and April 1976 and between April 1980 and December 1980, respectively. Grey areas correspond to constituencies with existing local radio coverage in October 1974.

*Source:* Authors' compilation based on datasets described in the text.

Wales, 9 radio stations were launched between the October 1974 election and the April 1976 radio freeze, and 6 in the year immediately after the restrictions ended (between April and December 1980). Figure 4 plots the geographical spread of local radio stations just before and just after the freeze.

Following Gentzkow (2006) and Angelucci, Cagé, and Sinkinson (2024), we hypothesize that locations in which radio was introduced right before the freeze (89 constituencies) are comparable to those in which it was introduced immediately after (39 constituencies), conditional on a large number of observables. This is supported by Online Appendix Table E.21, where we compare these constituencies on multiple electoral dimensions, none of which are statistically different between the two groups.<sup>15</sup> Parallel trends are also visible on our main outcome variable: Online Appendix Figure F.25 reports the spending coefficient for the “treated” constituencies (where local radio was introduced just before the freeze) and the “control” constituencies (where it was introduced just after) over time; there is no difference in the correlation between spending and votes before the introduction of radio.

We can thus investigate how this correlation was affected between the 1974 (October) and 1979 elections by the emergence of local radio. To do so, we estimate the following model:

$$\ln\left(\frac{s_{cmt}}{s_{0mt}}\right) = \alpha + \beta_1 \text{spending}_{cmt} + \beta_2 \text{radio coverage}_{mt} + \beta_3 \text{spending} \quad (4)$$

$$* \text{radio}_{mt} + X'_{mt} \gamma + Y'_{ct} \delta + Z'_c \theta + \zeta_m + \omega_{jt} + \varepsilon_{cjmt}$$

where  $\text{radio coverage}_{mt}$  is a categorical variable equal to 1 / 0.5 / 0 if the constituency is fully / partially / not covered by a local independent radio. We focus on the October 1974 elections—when no constituency had local radio—and the 1979 elections—when only the treated ones did.  $\beta_3$  is our coefficient of interest, estimating the impact of (partial) radio coverage on the correlation between candidates’ share of spending and votes. All other variables are the same as in Equation (2); standard errors are clustered at the radio-area level, and, because the number of radio stations is small, estimated using the wild-bootstrap method of Cameron, Gelbach, and Miller (2008).

Table 3 presents the results. In Columns (1) and (2), we control for constituency and election-party fixed effects; in Columns (3) and (4), we focus on the candidates who run multiple times and introduce candidate fixed effects. We see that the correlation is amplified by the presence of local radio: the interaction between local radio and spending is positive and statistically significant. A 1-percentage-point increase in the spending share is associated, in the absence of any local radio station, with a 0.3 percent

<sup>15</sup> Only the vote shares obtained by the main parties slightly differ, but reassuringly, Online Appendix Figure F.26 shows that these shares follow similar trends before the introduction of local radio.

TABLE 3  
THE IMPACT OF LOCAL INDEPENDENT RADIO ON THE RELATIONSHIP BETWEEN  
CANDIDATES' SPENDING AND VOTES, 1974–1979

|                                      | 1974(Oct)–1979      |                     |                     |                      |
|--------------------------------------|---------------------|---------------------|---------------------|----------------------|
| Share of total spending              | 0.026***<br>(0.002) | 0.024***<br>(0.002) | 0.009***<br>(0.003) | 0.003<br>(0.004)     |
| Local Radio                          | -0.045<br>(0.050)   | -0.187*<br>(0.088)  | -0.018<br>(0.042)   | -0.372***<br>(0.092) |
| Radio * Share Spending               |                     | 0.005<br>(0.003)    |                     | 0.009***<br>(0.002)  |
| Constit FE                           | ✓                   | ✓                   |                     |                      |
| Election-Party FE                    | ✓                   | ✓                   | ✓                   | ✓                    |
| Candidate FE                         |                     |                     | ✓                   | ✓                    |
| Constit-level controls               | ✓                   | ✓                   | ✓                   | ✓                    |
| Candidate-level controls             | ✓                   | ✓                   | ✓                   | ✓                    |
| Candidates                           | All                 | All                 | Mtp times           | Mtp times            |
| R-sq (within)                        | .46                 | .46                 | .45                 | .51                  |
| Observations                         | 908                 | 908                 | 354                 | 354                  |
| Cluster (Radio)                      | 15                  | 15                  | 15                  | 15                   |
| Nb bootstrap repetitions             | 1,000               | 1,000               | 1,000               | 1,000                |
| Bootstrap block size                 | 1,000               | 1,000               | 1,000               | 1,000                |
| Nb bootstrap constraint restrictions | 46.0                | 47.0                | 36.0                | 37.0                 |
| Mean DepVar                          | -0.6                | -0.6                | -0.0                | -0.0                 |
| Sd DepVar                            | 1.4                 | 1.4                 | 0.9                 | 0.9                  |

*Notes:* \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The models are estimated using OLS. An observation is a candidate-election. The dependent variable is the logarithm of the ratio of the number of votes obtained by a candidate over abstention. The radio coverage is a categorical variable equal to 1/5/0 if the constituency is fully/partially/not covered by a local independent radio. Standard errors are clustered at the radio station level and estimated using 1,000 samples obtained through the wild-bootstrap method of Cameron, Gelbach, and Miller (2008). Coefficients for the controls are not reported for the sake of space.

*Source:* Variables are described in more detail in the text.

increase in votes-on-abstention, but with a 1.2 percent increase when the constituency is fully covered (Column (4)). Interestingly, this increase in magnitude is consistent with that observed in the 1970s (Figure 2).

#### BROADBAND INTERNET

Another media technology with rapid expansion over our period of study is the Internet. Between 2003 and 2011, the share of U.K. households with a broadband Internet connection increased from 6 percent to 74 percent (Gavazza, Nardotto, and Valletti 2019). Its spread not only increased people's access to mass media, but also candidates' access to new campaigning instruments, such as micro-targeting on social media. In the 1990s and early 2000s, the use of computers by campaigns soared

TABLE 4  
THE IMPACT OF BROADBAND INTERNET ON THE RELATIONSHIP  
BETWEEN CANDIDATES' SPENDING AND VOTES

|                                      | 2005–2010           |                     |                     |                     | 1997–2001           |                     |
|--------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|                                      | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 |
| Share of total spending              | 0.025***<br>(0.001) | 0.025***<br>(0.001) | 0.008***<br>(0.000) | 0.009***<br>(0.001) | 0.012***<br>(0.001) | 0.011***<br>(0.001) |
| Broadband Internet (predicted, std)  | 0.159<br>(0.130)    | 0.095<br>(0.131)    | –0.051<br>(0.170)   | –0.112<br>(0.173)   | –0.079<br>(0.140)   | –0.038<br>(0.149)   |
| Internet (predicted, std) * Spending |                     | 0.004***<br>(0.000) |                     | 0.003***<br>(0.001) |                     | –0.001<br>(0.001)   |
| Constit FE                           | ✓                   | ✓                   |                     |                     |                     |                     |
| Election-Party FE                    | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   |
| Region-Election FE                   | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   |
| Candidate FE                         |                     |                     | ✓                   | ✓                   | ✓                   | ✓                   |
| Constit-level controls               | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   |
| Candidate-level controls             | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   | ✓                   |
| Candidates                           | All                 | All                 | Mtp times           | Mtp times           | Mtp times           | Mtp times           |
| R-sq (within)                        | .34                 | .35                 | .22                 | .23                 | .39                 | .39                 |
| Observations                         | 4,418               | 4,418               | 1,210               | 1,210               | 1,028               | 1,028               |
| Spatial autocorr. errors             | 50km                | 50km                | 50km                | 50km                | 50km                | 50km                |
| Mean DepVar                          | –2.0                | –2.0                | –1.4                | –1.4                | –0.9                | –0.9                |
| Sd DepVar                            | 1.7                 | 1.7                 | 1.5                 | 1.5                 | 1.4                 | 1.4                 |

Notes: \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ . The models are estimated using OLS. An observation is a candidate-election. In Columns (1)–(4), years are 2005 and 2010; in Columns (5)–(6), years are 1997 and 2001, but for the internet penetration variable, for which years are 2005 and 2010. The dependent variable is the logarithm of the ratio of the number of votes obtained by a candidate over abstention. The predicted internet penetration is obtained from estimating Online Appendix Equation (6) and is standardized to have a mean of 0 and a standard deviation of 1. Standard errors allow for spatial correlations in the residuals, following the procedure in Conley (1999). Coefficients for the controls are not reported for the sake of space.

Source: Variables are described in more detail in the text.

(Online Appendix Figure F.30), and relatively more so in constituencies where Internet penetration is higher (Online Appendix Figure F.29).

Of course, the expansion of the Internet was not homogeneous across all regions, and both observable and unobservable characteristics correlated with Internet penetration might also be linked to the patterns of campaign spending. To identify exogenous variation in Internet access, we follow the empirical strategy of Gavazza, Nardotto, and Valletti (2019), who use local variation in the average yearly rainfall to instrument for broadband Internet penetration. A complete discussion of this strategy, its assumptions, and its adaptation to our setting is provided in Online Appendix D. Then, as for radio coverage, we interact constituencies' Internet penetration with candidates' share of constituency spending and focus on the 2005 and 2010 general elections.

Results are shown in Table 4: a one standard deviation increase (5.4 percentage points) in the instrumented share of households with

broadband Internet increases the correlation between spending and votes by 3 to 4 percentage points. The identifying assumption is that, within a region, the difference in rainfall allocation between the two elections is orthogonal to any drivers of electoral behaviors (apart from rain *on* the election day, which we control for). To give further credence to this exclusion restriction assumption, Columns (5) and (6) show the result of a placebo exercise using general elections that happened *before* the spread of broadband Internet.

### *Marginality, Electoral Competition and the Professionalization of Campaigns*

The second half of the twentieth century saw the progressive “professionalization” of campaigns, which, following the growth of electoral science, encouraged the use of more modern and sophisticated techniques. This was especially true in constituencies that matter most for the overall election outcome, the marginal seats. Online Appendix Figure F.34 provides suggestive evidence of this, documenting that, in the 1990s and early 2000s, larger campaign efforts in close constituencies than in safe ones.

These increased efforts and innovations could have enhanced the role of campaign spending. As a matter of fact, Online Appendix Table E.22 shows that the *closer* the elections, the *higher* the correlation between campaign spending and votes (consistent with findings by Erikson and Palfrey (2000) and Gerber (2004)). However, the effect is almost entirely driven by the post-WWII period (see also Online Appendix Figure F.31). As neither election closeness nor the share of close elections vary meaningfully during that period (Online Appendix Figures F.32 and F.33), these results suggest that it is not so much the changes in the degree of election closeness that explain the documented patterns in the correlation between spending and votes during that period, but how much this marginality matters for the design of campaign strategies.

That being said, changes in the importance of election closeness could reflect changes in the attitudes of voters, which became more volatile during that period. Indicative of that, Online Appendix Figure F.36 shows that the daily variance of voting intentions for the three main parties has increased in the 1970s. In a similar vein, the average strength of self-reported party identification, asked in the British Election Survey, sharply decreased in the last quarter of the century (see Online Appendix Figure F.35). Though they would likely impact all constituencies (not just the marginal ones), these changes could also have contributed to explaining the patterns of Figure 2.

*Adaptation, Intensity, and Nationalization of Local Campaigns*

The above results can help rationalize the increasing correlation between spending and votes observed over the twentieth century. What about the other changes, and in particular the breaks of the 1880s and the early 2000s? In this section, we briefly discuss potential explanations.

The drop observed in the late nineteenth century can be related to the 1883–1885 electoral reforms, which not only introduced much stricter controls on spending but also a dramatic increase in the size of the electorate (and a shift from a predominantly two-member to a predominantly single-member constituency basis). Existing campaigning methods were probably not adapted to the new voters nor to the novel electoral environment. The fact that candidates may have needed time to adapt their campaigning (and fundraising) strategies to this new environment could explain (at least in part) the drop in the correlation between spending and votes, as well as the progressive convergence that followed. Why did the drop happen in 1886 rather than in 1885, the year most of the reforms took effect? While 1885 was an election of high intensity—almost all seats were disputed between Liberals and Conservatives (see Online Appendix Figure A.2)—the 1886 election was not. Triggered quite unexpectedly by the failure of the Government of Ireland Bill 1886, the 1886 election also saw the defection of many Liberal members (who supported Irish Home Rule), leading to a “loss of the local party machinery” (Dunbabin 1966). As for the turn of the millennium, it witnessed another important change in the strategy of campaigns: national parties increased their involvement in local constituencies’ affairs, leading to what Fisher (2015) calls the “end of the national campaign,” with parties progressively giving up costly national campaigns to the benefit of centrally coordinated local campaigns. This was partly driven by the *PPERA 2000*, which not only increased campaign finance transparency but also limited for the first time what parties could spend nationally.<sup>16</sup> By entering local campaigns, nationally-led efforts could have interacted with candidates’ activities, including their spending. Online Appendix Table E.24 tests this hypothesis using, again, survey data from Denver et al. (2003). The estimates seem to point to a lower spending-votes correlation in places where national parties intervene extensively in local campaigns. In other words, the interference of national parties may have overshadowed local efforts—those funded

<sup>16</sup> In the Online Appendix Figure F.8, one can indeed see that after overcoming their own candidates sum of spending in the 1960s and peaking in 1997, the national parties’ spending was tempered in the 2000s.

by candidates' own spending—progressively decreasing their relative efficiency.<sup>17</sup>

## CONCLUSION

In this paper, we have used a novel dataset to analyze the long-term patterns of campaign spending in the United Kingdom between 1857 and 2017. We have first documented a dramatic drop in this spending over time. While overall campaign spending represented up to 20,000 times the average national income in the 1860s–1870s, and was still equivalent to 3,500 national incomes in the aftermath of WWII, it has only accounted for around 500 national incomes since the turn of the twenty-first century. This drop was accompanied by important changes in campaigning itself and its technologies, which altered the composition of campaign spending: while initially including a large share of paid staff and, to a lesser extent, meeting expenses, it is now comprised almost exclusively of advertising material.

We have provided the first estimation of the relationship between campaign spending and votes over a very long period of time. We have shown that, overall, the magnitude of the correlation has significantly increased since the 1880s, peaking in the last quarter of the twentieth century. This pattern can be rationalized—at least partially—by the introduction of local media and the professionalization of campaigns. The introduction of broadband Internet had a similar positive effect; however, it was concomitant with an increase in the local involvement of national parties and a decrease in the intensity of candidates' campaigning at the local level, which might explain a sudden drop in the correlation between spending and votes observed in the early 2000s—albeit to levels that are still high by historical standards.

Our findings, based on the study of the entire time span of modern British elections, may have implications for campaign finance legislation. They indicate that the understanding of whether and how campaigns matter does not solely rely on the amounts spent, but also on the marginal impact of these amounts, and the contextual elements that influence it, such as campaign technologies. This finding provides directions for future research, which will need to better understand these contextual factors, and stresses the importance of re-assessing the role played by spending limits—the most common regulatory tool—in a broader context that would include the regulation of media platforms.

<sup>17</sup> Importantly, this argument does not imply that national campaigning was no longer important. In fact, the opposite is likely true, as exemplified by the impact of the first televised leaders' debates—a major innovation for a British general election—that took place before the 2010 general election (see, for instance, Wring and Ward 2010b).

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