

Online Appendix to the Paper

The Heterogeneous Price of a Vote:

Evidence from Multiparty Systems, 1993-2017

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A Campaign finance regulation in France: three decades of reforms

Since 1988, France has enacted important legislation granting public funding for campaigns and parties and introducing spending caps.¹ Even though candidates were reimbursed as early as 1962 for certain campaign costs, this reform came much later than in other countries. The laws of 1988 paved the way for a complete overhaul of the legislation on political financing.² Before that, parties were treated as simple associations (subject to the law of 1 July 1901). They were not allowed to accept donations (from either legal or natural persons) and did not receive public subsidies. Political parties relied – at least officially – solely on membership dues, capped at 100 Francs (i.e. around €25³), and the party group of caucus assessment.

1988-1990 The laws of 1988 regulated political financing. First, they introduced transparency regarding political funds (Articles 1 to 7). Since then, members of the government as well as some elective officials have been required to declare their wealth and assets. Political campaigns themselves were rethought with the prohibition of advertising on television and radio and the limitation of advertising in newspapers and telephone calls (phone-banking), prohibited in the three months preceding the elections.

These laws also introduced direct public funding of parties as well as additional indirect public funding in the form of public reimbursement of candidates for election campaign costs. Regarding direct party funding, the funding was granted in proportion to the number of deputies in the national assembly (“*Assemblée Nationale*”) and in the Senate (“*Sénat*”). The introduction of public party funding led to the requirement that the parties must present a financial statement.

Under the 1988 laws, candidates were also allowed to receive donations. These donations were limited, however: a natural person (i.e. an individual) could donate a maximum of 30,000 Francs per year (€7,300) and a legal person (i.e. a corporation) a maximum of 50,000 Francs (€12,000) to a candidate. Donations of more than 1,000 Francs had to be paid by check. In addition, donations could only cover up to 20% of the total campaign expenditures. Contributions to candidates carried tax privileges. Donations made to a candidate could be deducted from taxes up to 1.25 percent of the income of a natural person and to 2 per mille of the turnover of a company.

Finally, since 1988, political parties have been considered regular corporate bodies, even if they are not registered as associations. Parties may receive private donations, the amounts of which are also limited. Donations may not exceed 50,000 Francs per year from a natural person and 500,000 Francs (€121,000) from a legal person. Any donation of more than 1,000 Francs must be paid by check.

¹This section partly draws on Gunlicks (1993) for the 1988-1993 period and on Cagé (2018) for recent years.

²Laws no. 88-286 and no. 88-227 of 11 March 1988.

³In the paper, for the sake of comparability, we convert all the monetary numbers in constant 2014 euros.

1990-1995 The 1990 law⁴ introduced further financing of political parties and candidates. First, Article 10 modified the allocation of public party funding and established the division of the amount budgeted into two equal parts. The first part was allocated for the funding of parties and political associations and was dependent upon the results of the 1992 National Assembly election. This part was set aside for the parties and political groups that fielded candidates in at least 75 constituencies (this number was reduced to 50 in 1993). The distribution was carried out in relation to the number of votes on the first ballot. The second part of the public subsidies was allocated to those parties and associations represented in parliament. These subsidies were granted in proportion to the number of deputies in parliament.

Second, the 1990 law focused on the limits of election expenditures, and clarified the funding of political activities. Donations to political parties were tax deductible to the amount of 1.25 percent of the income of a natural person, and 2 per mille of the sales of a legal entity.

Third, since the 1993 elections, legislative election candidates have been entitled to a flat rate campaign cost refund. In 1993, the candidates who obtained more than 5% of the votes in their constituency receive public support amounting to 50,000 Francs (around €12,000). The remaining candidates received nothing. Campaign expenditures were limited, however. In order to qualify for public funds, the candidates were required to keep within the following prescribed limits of expenditures for the campaign: in the last three months prior to the election, each candidate for a seat in the National Assembly could not spend more than 500,000 Francs (€121,000) in her electoral district (400,000 Francs in the constituencies with fewer than 80,000 inhabitants). Finally, the legislation also required candidates to account for the campaign costs incurred. Regarding municipal elections, the public refund could not exceed 50% of the spending limit for the 1995 elections.

The 1990 law also created the “*Comission Nationale des Comptes de Campagne et des Financements Politiques*” (CNCCFP), which has been checking and approving the accounts of political parties and candidates’ campaigns since then. If an account is declared invalid by the Commission, candidates and political parties may face fees and legal sanctions and even ineligibility. All the legislative election candidates have to provide a detailed account of their spending and revenues to the CNCCFP within the six months following the election, as well as municipal election candidates running in cities larger than 9,000 inhabitants. Candidates have to appoint a financial representative (“*mandataire financier*”) who acts as an intermediary between the CNCCFP and the candidate. The representative is in charge of collecting funding and managing the campaign account.

1995-2003 The law of 1995⁵ marked an important change in party and election financing in France with the prohibition of donations from legal entities (and in particular from corporations). This means that since 1995 only “natural” persons (i.e. physical individuals) can make political donations. The maximum amount of donations from natural persons remained the same. This change reduced the

⁴Law no. 90-55 of 15 January 1990.

⁵Law no. 95-65 of 19 January 1995.

revenues of those candidates who were relying heavily on donations from legal entities (and we will exploit this in the empirical analysis).

The 1995 law also modified the public financing of election campaigns. Candidates who obtained more than 5% of the votes received, as a flat rate reimbursement for campaign cost, a sum equal to 50% of the campaign expenditure limit for the legislative elections (much higher than the previous 10% threshold). The payment of the flat rate for campaign costs was based on the condition that the respective candidate actually incurred these expenses during the campaign.

Finally, the 2003 law⁶ focused on public party funding. It amended the eligibility criteria for the first part of the public funding of political parties. Only parties that field candidates who receive more than 1% of the votes in at least 50 constituencies can receive this financial support.

⁶Law no. 2003-327 of 11 April 2003.

B French legislative elections: Details on party classification

In this section, we present the main political parties that field candidates in each of the legislative elections in our sample. We abstract for the smallest parties that only appear in a given year or simply present a handful of candidates. Only very few candidates in the legislative elections run independently of a political party. All the information is summarized in Table B.1.

1988 The 1988 legislative election is not part of our sample. We nonetheless include it here given that it is important for determining the political party of the incumbent in each district in 1988.

In the 1988 legislative elections, there were nine main political parties running: (i) the “Ligue Communiste Révolutionnaire” (LCR); (ii) the “Parti communiste” (PC) (Communist party); (iii) the Green party “Les Verts” (VEC); (iv) the “Parti socialiste” (PS) (Socialist party); (v) the “Parti radical” (RDG), a center-left party; (vi) the “Union pour la démocratie française” (UDF), a center-right party; (vii) the Centre National des Indépendants et Paysans (CNI), another (but much smaller) center-right party; (viii) the “Rassemblement pour la République” (RPR), the main right-wing party; and (ix) the “Front national” (FN) (National Front, the French extreme-right party).

1993 In the 1993 legislative elections, these nine political parties ran again, as well as three other parties: “Lutte Ouvrière ” (LO) on the extreme left; another Green party, “Génération écologiste” (GEC) (that ran together with “Les Verts”); and a small right-wing party, “Chasse, Pêche, Nature et Traditions” (CPNT). Moreover, in a number of electoral districts (but not all), there was an electoral coalition between the center-right UDF and the right-wing RPR.

1997 In the 1997 legislative elections, the political spectrum was relatively similar to what we observe in 1993, with two main differences: there was no candidate presented by the CNI (however, the CNI only had candidates running in 15 electoral districts in 1988 and in 68 districts in 1993), and there was a new political party to classify between the right and the extreme-right, namely the “Mouvement pour la France” (MPF). Furthermore, the center-left radical party had changed its name from “Parti radical” in the 1993 elections to “Parti radical-socialiste” in 1997 (we consistently call it PRG).

2002 The 2002 legislative elections were characterized by the upsurge of a number of political parties in particular on the extreme left with the “Ligue Communiste Révolutionnaire” (LCR) and “Lutte Ouvrière” (LO) that presented candidates in more districts than before. On the left, the “Pôle Républicain” (PREP), the left-wing nationalist party of Jean-Pierre Chevènement, who ran for the 2002 Presidential elections, presented a number of candidates. On the extreme right, the “Mouvement National Républicain” (MNR), created in 1998 from a division with the FN, presented its own candidates; as did Démocratie Libérale (DL), a right-wing party created in 1997 after a split with the UDF; and the “Mouvement pour la France” (MPF), a right-wing nationalist party. “Chasse,

Pêche, Nature et Traditions” (CPNT), a right-wing party aimed at defending the interests of hunters, also presented its own candidates in a number of districts.

In terms of names, the “Parti radical-socialiste” (former “Parti radical”) was now called the “Parti Radical de Gauche” (PRG); and the main right-wing party, the former RPR, the “Rassemblement pour la France” (RPF) (but the party members stayed the same and its electoral platform was unchanged).

Overall, 14 parties ran for the 2002 legislative elections: (i) the “Ligue Communiste Révolutionnaire” (LCR); (ii) “Lutte Ouvrière” (LO); (iii) the “Parti communiste” (PC); (iv) two Green parties, the main one being “Les Verts” ; (v) the “Pôle Républicain” (PREP); (vi) the “Parti socialiste” (PS); (vii) the “Parti Radical de Gauche” (PRG); (viii) the “Union pour la démocratie française” (UDF); (ix) Démocratie Libérale (DL); (x) the “Rassemblement pour la France” (RPF); (xi) “Chasse, Pêche, Nature et Traditions” (CPNT); (xii) the “Mouvement pour la France” (MPF); (xiii) the “Mouvement National Républicain” (MNR); and (xiv) the “Front national” (FN).

However, while the very high number of political parties might come as a surprise, a number of electoral coalitions also came into play. In particular, the very large majority of the right-wing candidates, from the UDF, DL and the RPF, ran together under the color of the “Union pour la Majorité Présidentielle” (UMP) coalition.

2007 The political landscape was relatively simpler for the 2007 legislative elections. Compared to the previous election, only one important new political party had emerged, the Modem on the center-right, founded by François Bayrou to succeed the UDF and contest the election. The initials “UMP”, now a political party (and no longer simply an electoral coalition, stood for “Union pour un Mouvement Populaire”. Overall, we observe eight main political parties running: (i) the “Parti communiste”; (ii) the “Ecologistes” (ECO); (iii) the “Parti Radical de Gauche” (PRG); (iv) the “Parti socialiste” (PS); (v) the “Union pour la démocratie française” (UDF); (vi) the “Union pour un Mouvement Populaire” (UMP); (vii) “Chasse, Pêche, Nature et Traditions” (CPNT); (viii) the “Mouvement pour la France” (MPF); and (ix) and the “Front national” (FN).

2012 The 2012 legislative elections were marked by the emergence of new electoral coalition on the extreme left, namely the “Front de Gauche” (FG) between the Communist Party (PC) and the “Parti de Gauche”. The LCR had changed its name and was now called the NPA (Nouveau Parti Anticapitaliste – New Anticapitalist Party). The main Green movement was now represented by “Europe Ecologie Les Verts”. On the center right, the “Nouveau Centre” (NCE) was created in 2007 from a split with the UDF. The “Parti radical” (PRV) was the other center-right party that arose from the UDF that presented candidates. This is not to be confused with the “Parti Radical de Gauche” (PRG) – a left-wing party – which continued to present candidates.

Overall, we have a total number of 9 political parties presenting candidates in the 2012 legislative elections: (i) the “Front de Gauche” (FG); (ii) the “Ecologistes” (ECO); (iii) “Europe Ecologie Les

Verts”; (iv) the “Parti Radical de Gauche” (PRG); (v) the “Parti socialiste” (PS); (vi) the “Nouveau Centre” (NCE); (vii) the “Parti radical” (PRV); (viii) the “Union pour un Mouvement Populaire” (UMP); and (ix) the “Front national” (FN).

2017 The 2017 legislative elections immediately followed the 2017 presidential elections, which had seen the victory of Emmanuel Macron and the elimination in the first round of the two main political forces that had governed France for decades (the “Parti socialiste” and the UMP – at the time called “Les Républicains”). As such, they became the scene of a wholesale “recomposition” of the political landscape, including the rise of two newly created political parties: “La France Insoumise” (LFI) and Macron’s “La République en Marche” (LRM). These parties fielded almost as many candidates as the “old” ones.

Overall, we have a total number of 9 political parties presenting candidates in more than 350 constituencies in the 2017 legislative elections: (i) “Lutte Ouvrière” (LO); (ii) the “Front de Gauche” (FG); (iii) “La France Insoumise” (LFI); (iv) “Europe Ecologie Les Verts” (EELV); (v) the “Parti socialiste” (PS); (vi) “La République en Marche” (LRM); (vii) “Les Républicains”; (viii) Debout la France (DLF); and (ix) the “Front national” (FN).

Table B.1: French legislative elections: Number of districts in which political parties run

	1993	1997	2002	2007	2012	2017
	Number	Number	Number	Number	Number	Number
Ligue Communiste Révolutionnaire (LCR/NPA)	71	134	435	484	329	18
Lutte Ouvrière (LO)	245	317	553	553	524	457
Parti Communiste (PC) / PG / FG	555	535	483	507	534	441
La France Insoumise (LFI)	.	.	.	.	.	523
Génération Écologiste (GEC)	261	383	335	80	.	4
Les Verts (VEC/EELV)	324	433	439	519	456	370
Le Parti Ecologiste (PE)	.	.	.	.	.	267
Mouvement Ecologiste Indépendant (MEI)	.	244	258	127	62	24
Pôle Républicain (PREP)	.	.	400	.	.	.
Parti Socialiste (PS)	541	516	487	539	470	426
La République en Marche (LRM)	.	.	.	.	.	440
Union pour la Démocratie Française (UDF) / Modem	64	6	154	500	276	68
UMP (RPR / Les Républicains)	532	543	550	545	503	502
Chasse, Pêche, Nature et Traditions (CPNT)	17	1	404	244	4	.
Mouvement National Républicain (MNR)	.	.	549	381	14	.
Mouvement pour la France (MPF)	.	500	291	410	36	.
Debout la France (DLF)	.	.	.	.	.	394
Front National (FN)	554	555	553	552	538	536

Notes: The Table presents the number of districts in which the different political parties in our sample have run, for each of the French legislative elections included in our empirical analysis.

C French legislative elections: data sources and dataset construction

C.1 Data on election campaign costs and expenditures

The data on election campaign costs and expenditures (*“Publication simplifiée des comptes de campagne”*) contain information on both the revenues and expenditures of all the candidates running for election. Revenue data are available by source: (i) private donations; (ii) party contributions; (iii) contribution in kind; (iv) personal contribution; and (v) others.

The data are paper data that we digitize and merge. Figure C.1 provides an example of these data. For each of these variables, we have up to three values:

- The values declared by the candidate;
- The values taken on by the *“Comission Nationale des Comptes de Campagne et des Financements Politiques”* (CNCCFP) in the eventuality of a reversal (*“réformation”*);
- The values used after a reversal and the deduction of those electoral expenditures not considered as refundable.

In case there is a difference between these three values, we use the last one which corresponds to what the candidates actually spent.

C.2 Merging the information from the different data sources

To build our unique dataset on campaign finance and electoral outcomes in France, we merge information from four different sources: (i) the campaign finance data with information on candidates' spending and revenues; (ii) the electoral results data with detailed information on electoral outcomes; (iii) the individual-level information on the candidates; and (iv) the census data.

From the campaign finance dataset that we build from the archive paper data, we have created a database with the spending and revenues of every candidate. Then we match this information with the electoral results, the candidates' characteristics and the electoral district characteristics. To do so, we proceed as follows:

1. Given that in the campaign finance data we only have the electoral district names but not their official geographic code (used for example in the census data), we match the districts with their geographical codes thanks to a file of geographical codes from an INSEE dataset (we match the districts using their name). We use the command `reclink2` in stata and we choose a minimum merging score of 0.99. Districts not matched were thus modified manually to correct for the errors preventing the match. Since the funding data come from paper that we digitized before using an OCR, those errors mainly stem from errors in the optical recognition process related to the quality of the papers.

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COMMISSION NATIONALE DES COMPTES DE CAMPAGNES
ET DES FINANCEMENTS POLITIQUES (CNCCFP)

**PUBLICATION SIMPLIFIÉE
DES COMPTES DE CAMPAGNE**

Élections municipales de l'année 2014



Élection municipale générale des 23 et 30 mars 2014

Département : Ain

Commune : Ambérieu-en-Bugey

Plafond des dépenses : 20 767 € au premier tour ; 28 597 € au second tour.

Scrutin non contesté

CANDIDATS, têtes de listes	DÉPENSES totales	RECETTES totales	RECETTES (PAR ORIGINE)					Solde compte de campagne	DÉV (1)	RFE (2)	Déc. CNCCFP
			Dons	Apport partis	Concours en nature	Autres	Apport personnel				
Mme EXPOSITO Josiane	11 652	11 652	0	0	153	0	11 499	0			
	11 991	11 991	0	0	553	0	11 438	0		11 038	ARM
M. FABRE Daniel	12 652	13 988	270	0	0	0	13 718	1 336			
	13 052	14 388	270	0	400	0	13 718	1 336	0	11 982	ARM
M. FORTIN Christophe	10 492	10 492	1 250	0	0	0	9 242	0			
	10 692	10 692	1 250	0	200	0	9 242	0		9 042	ARM
Mme PIDOUX Catherine	11 497	11 497	2 670	0	349	0	8 478	0			
	11 303	11 303	2 270	0	349	0	8 684	0		8 684	AR

Figure C.1: French legislative elections: Example showing the campaign finance data in paper format

2. We create a matching key with the geographical code for each of the electoral district and the candidate names to merge the campaign finance data with the electoral results information. As before, we use the probabilistic record linkage methods, specifying that the candidates' names have to be identical and with a minimum merging score of 0.99. For the remaining candidates, we proceed with the matching manually.
3. We merge this dataset (including information on campaign finance and electoral results) with our different files including information on the candidates (e.g. their political mandates at the time of the election). As before, we match the candidates' names and correct errors manually.
4. Finally, we collect census data from the census waves performed by the French government during the years 1990, 1999, 2008 and 2013. For each city we have the number of individuals in every category defined by age group, occupation, education level and sex. We run a linear interpolation to infer the data for all years from 1990 to 2013. We thus match the census data with the main database according to city and year. For the year 2014, we use the data from the 2013 census. For municipal elections, the census data at the city level correspond to the electoral districts. Census data are not available at the legislative constituency level, except for population. Hence to compute the census information at the district level for legislative elections, we proceed as follows. We first compute the proportion of every city included in each district. We then generate our variables of interest, from the census at the city level, according to the contribution of each city to the legislative constituency.

C.3 Identification of candidates

To follow candidates over time (which is of particular importance for us given that in some specifications we control for candidate fixed effects), we have assigned them a unique identifier. Because there may be homonyms, we rely on the following assumption: a candidate who has the same name, is from the same political party and runs in the same electoral district, is the same candidate.

Furthermore, some candidates may be present in both our legislative and municipal elections datasets. To determine whether this is the case, we assume that candidates with the same name and from the same party running in city A for the municipal elections and in constituency B for the legislative elections is the same candidate if constituency B includes city A.

D Additional tables

Table D.1: Summary statistics: Number of candidates running

(a) French legislative elections						
Number of candidates 1st round						
	Mean	Median	sd	Min	Max	N
1993	9.3	9.0	2.2	5	18	555
1997	11.2	11.0	3.5	4	29	555
2002	15.1	15.0	3.3	7	27	555
2007	13.4	13.0	2.0	7	20	555
2012	11.4	11.0	2.6	7	23	539
2017	13.6	13.0	3.0	7	26	539

(b) UK general elections						
Number of candidates						
	Mean	Median	sd	Min	Max	N
1997	5.6	5.0	1.4	3	10	569
2001	4.9	5.0	1.2	2	9	569
2005	5.4	5.0	1.4	3	15	569
2010	6.3	6.0	1.4	3	12	573
2015	6.1	6.0	1.2	3	13	560
2017	5.1	5.0	1.1	3	13	573

Notes: The table presents summary statistics on the number of candidates running in the first ballot of French legislative elections and UK general elections, for which data on campaign expenditures exist. The observations are at the electoral district level. The drop in the number of electoral districts between the 2007 and the 2012 legislative elections in France (from 555 to 539) comes from the 2010 redistricting of electoral boundaries. While the total number of legislative constituencies was unchanged (577), 4 new constituencies were created within oversea French territories, as well as 11 constituencies for French residents overseas. Hence the total number of metropolitan France constituencies was decreased to 539. In the UK, the increase in the number of electoral districts between the 2005 and the 2010 elections (from 569 to 573) comes from the 2007 Parliamentary Boundary Review. The drop to 560 in 2015 comes from constituencies that did not sent their returns in time, hence their data was not published.

Table D.2: Summary statistics: campaign spending by elections – 2017 French legislative elections

	Spending (cst 2017 €)					
	Mean	Median	sd	Min	Max	N
Total spending per candidate						
Communist Party	8,604	4,476	10,997	0	60,346	417
Green Party	3,462	1,045	6,997	0	48,597	370
Socialist Party	24,015	24,440	13,032	0	66,128	424
Right-wing Party	33,589	33,490	12,748	0	65,070	506
Extreme-right Party	14,123	12,063	8,175	0	46,858	535
Other	8,282	1,489	12,853	0	63,835	962
La République en Marche	22,883	21,434	10,303	3,894	61,185	440
Per candidate & per elector						
Communist Party	0.11	0.06	0.15	0	0.94	417
Green Party	0.05	0.01	0.09	0	0.64	370
Socialist Party	0.30	0.30	0.18	0	1.10	424
Right-wing Party	0.42	0.41	0.17	0	1.09	506
Extreme-right Party	0.17	0.15	0.10	0	0.55	535
Other	0.10	0.02	0.16	0	0.88	962
La République en Marche	0.29	0.26	0.14	0	1	440
As share of the spending limit						
Communist Party	13	7	16	0	88	417
Green Party	5	2	10	0	71	370
Socialist Party	36	37	19	0	95	424
Right-wing Party	50	50	19	0	95	506
Extreme-right Party	21	18	12	0	68	535
Other	12	2	19	0	93	962
La République en Marche	34	32	15	6	89	440

Notes: The table presents summary statistics on spending by candidates running in French legislative elections and UK general elections. An observation is a candidate-election.

Table D.3: Summary statistics: campaign revenues per sources of funding – *French legislative elections*

	Mean	Median	sd	Min	Max
Private donations (%)	15.5	0.1	27.0	0	100
Party contributions (%)	25.8	2.3	36.4	0	100
Personal contributions (%)	52.1	60.7	41.2	0	100
In-kind contributions (%)	4.6	0.0	14.3	0	100
Other (%)	1.6	0.0	8.5	0	100
Observations	28,999				

Notes: The table presents summary statistics on candidates' campaign revenues depending on the sources of funding. An observation is a candidate-election.

Table D.4: Summary statistics: sources of campaign spending, depending on the political parties – French legislative elections

	(1)	(2)	(3)	(4)	(5)	(6)
	Communist party	Green party	Socialist party	Right-wing party	Extreme right	Socialist vs. Right
	mean/sd	mean/sd	mean/sd	mean/sd	mean/sd	b/t
<i>In constant 2017 €</i>						
Private contributions	2,033 [6,857]	387 [1,681]	8,290 [15,469]	15,640 [23,236]	225 [1,530]	-7,350*** [-14.50]
Party contributions	1,426 [3,625]	792 [1,881]	4,282 [8,204]	12,575 [12,011]	229 [1,716]	-8,293*** [-31.37]
Personal contributions	11,924 [12,286]	5,105 [8,615]	22,868 [12,466]	17,658 [13,144]	19,761 [11,078]	5,210*** [15.91]
In-kind	164 [786]	162 [688]	905 [1,794]	1,388 [2,545]	329 [1,071]	-483*** [-8.59]
Total revenues	15,926 [20,267]	6,524 [9,384]	37,068 [18,812]	48,172 [25,505]	20,663 [10,742]	-11,104*** [-19.31]
<i>As % of total</i>						
Private contributions	11.91 [22.45]	5.44 [15.87]	17.09 [21.32]	26.27 [25.58]	1.10 [5.15]	-9.18*** [-15.18]
Party contributions	17.08 [31.72]	28.81 [38.29]	11.95 [20.35]	27.11 [20.54]	1.92 [11.77]	-15.16*** [-28.91]
Personal contributions	66.28 [39.09]	57.87 [41.51]	66.69 [30.77]	42.02 [28.74]	92.98 [18.56]	24.66*** [32.32]
In-kind	2.48 [10.21]	3.99 [11.55]	2.67 [5.04]	3.33 [5.78]	3.25 [12.43]	-0.66*** [-4.73]
Obs	3,068	2,681	2,991	3,214	3,288	6,205

Notes: The table presents summary statistics on candidates' campaign revenues by sources of funding, depending on their political party. We focus here on the five main parties: Communist party, Green party, Socialist party, right-wing party, and extreme-right party. An observation is a candidate-election. The five legislative elections are included. Column 1 presents the results for candidates running for the Communist party, column 2 for candidates running for the Green party, column 3 for the Socialist party, column 4 for the right-wing party, and column 5 for the extreme-right party. In column 6, we test the equality of means between the Socialist party and the right-wing party (t-stats are in brackets).

Table D.5: Summary statistics: Candidate-level controls

(a) French legislative elections				
	Mean	Median	sd	N
Incumbent	0.059	0	0.24	40,609
Mayor	0.031	0	0.17	40,609
Departmental councillor	0.014	0	0.12	40,609
Senator	0.001	0	0.03	40,609
Member of the European Parliament	0.002	0	0.05	40,609
Gender (female)	0.357	0	0.48	40,466
(b) UK general elections				
	Mean	Median	sd	N
Incumbent	0.153	0.00	0.36	18,344
Member of the European Parliament	0.004	0.00	0.06	18,344
Cabinet member	0.012	0.00	0.11	18,344
Local councillor	0.328	0.00	0.47	18,344
Gender (female)	0.215	0.00	0.41	18,344

Notes: The table presents summary statistics on the candidate-level controls included in our analysis. An observation is a unique candidate.

Table D.6: Summary statistics: District-level controls

(a) French legislative elections						
	Mean	Median	sd	Min	Max	N
Census data						
% 15-19 years old	4.7	1.0	12.7	0.0	122.7	3,298
% 20-24 years old	6.1	1.1	16.3	0.0	136.3	3,298
% 65 or older	11.0	2.6	33.0	0.0	340.4	3,298
% higher education	13.1	2.1	37.1	0.0	337.6	3,298
% no diploma	19.3	4.7	60.2	0.0	670.3	3,298
% blue collar workers	25.4	25.0	7.8	4.6	48.8	3,178
Unemployment rate	12.3	12.1	3.4	4.8	25.9	3,178
Number of firms	3,079	210	12,162	10	70,114	3,261
Number of employees	46,698	3,332	177,475	137	993,793	3,261
% employees in top 1%	0.42	0.02	1.77	0.00	11.08	3,261
Electoral Data						
Number of candidates running	12	12	3	4	29	3,298
Margin at last election	8.58	6.97	6.97	0.01	43.21	3,278
Total spending per elector in the district	0.18	0.04	0.27	0.00	1.89	3,298
Number of registered voters	74,445	73,594	14,492	26,468	163,122	3,298
(b) UK general elections						
	Mean	Median	sd	Min	Max	N
Census Data						
% 15-19 year old	6.3	6.2	0.9	2.8	12.0	3,413
% 20-24 year old	6.4	5.8	2.7	2.5	28.0	3,413
% 65 or older	16.5	16.3	4.0	3.8	33.0	3,413
% higher education	24.2	22.8	9.9	5.7	64.4	3,413
% no diploma	37.0	25.6	29.0	7.5	100.0	3,413
% blue collar workers	48.2	49.3	9.2	13.5	69.0	3,413
Unemployment rate	4.0	3.7	1.7	0.7	11.9	3,413
Number of employees (00,000s)	0.42	0.36	0.45	0.10	11.68	3,413
Electoral Data						
Number of candidates running	6	5	1	2	15	3,413
Margin at last election	22.3	20.5	14.8	0.0	77.1	3,413
Total spending per elector in the district	0.40	0.40	0.14	0.00	1.52	3,413
Number of registered voters	70,244	70,686	7,799	32,644	111,683	3,413

Notes: The table presents summary statistics on the district-level controls included in our analysis. An observation is a district-election. "Margin at last election" is the margin between the first and second largest vote counts.

Table D.7: The effect of campaign spending on votes: CL estimation, reporting the coefficients for the controls – *French legislative elections*

	All candidates			Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)
Share of district total spending	0.064*** (0.001)	0.062*** (0.001)	0.059*** (0.001)	0.050*** (0.001)	0.019*** (0.001)
Controls					
% 15-19 years old		0.011 (0.010)	0.011 (0.010)	0.004 (0.011)	-0.001 (0.012)
% 20-24 years old		-0.015*** (0.006)	-0.015** (0.006)	-0.019*** (0.007)	-0.007 (0.005)
% 65 or older		-0.000 (0.003)	-0.000 (0.004)	-0.007** (0.003)	0.001 (0.004)
% higher education		0.007*** (0.002)	0.007*** (0.002)	0.011*** (0.002)	0.002 (0.003)
% no diploma		0.001 (0.002)	0.001 (0.002)	0.004* (0.002)	-0.000 (0.002)
% blue collar workers		0.004 (0.003)	0.004 (0.003)	0.002 (0.004)	0.002 (0.002)
Unemployment rate		-0.013*** (0.003)	-0.012*** (0.003)	-0.000 (0.005)	-0.002 (0.004)
Number of firms		-0.000** (0.000)	-0.000** (0.000)	-0.000 (0.000)	0.000 (0.000)
Number of employees		0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)
% employees in top 1%		-0.090 (0.113)	-0.091 (0.115)	-0.004 (0.111)	-0.161 (0.108)
Number of candidates running		-0.039*** (0.002)	-0.039*** (0.002)	-0.022*** (0.002)	-0.024*** (0.003)
Margin at last election		0.001* (0.001)	0.001* (0.001)	0.001 (0.001)	0.002** (0.001)
Total spending per elector in the district		0.084*** (0.008)	0.080*** (0.008)	0.118*** (0.010)	-0.006 (0.012)
Number of registered voters		0.000 (0.000)	0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Incumbent			0.199*** (0.020)	0.259*** (0.020)	0.132*** (0.020)
Mayor			0.249*** (0.027)	0.200*** (0.023)	0.020 (0.024)
Departmental councillor			0.290*** (0.032)	0.208*** (0.031)	0.025 (0.028)
Senator			0.102 (0.133)	0.000 (0.134)	-0.061 (0.241)
Member of the European Parliament			0.314*** (0.062)	0.372*** (0.060)	0.098 (0.097)
Gender (female)			-0.037*** (0.009)	-0.036*** (0.013)	
District FE	✓	✓	✓	✓	
Election-Party FE	✓	✓	✓	✓	✓
Candidate FE					✓
R-sq (within)	0.29	0.30	0.31	0.40	0.14
Observations	34,824	32,612	32,602	12,882	12,884
Cluster (district)	572	547	547	547	547

Notes: * p<0.10, ** p<0.05, *** p<0.01. The models are estimated using OLS estimates. 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 party interacted with election fixed effects. The model in Columns (1) to (4) also includes district fixed effects, while the model in Column (5) also includes candidate fixed effects. Standard errors are clustered at the district level. Variables are described in more detail in the text.

Table D.8: The effect of campaign spending on votes: CL estimation, reporting the coefficients for the controls – *UK general elections*

	All candidates			Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)
Share of district total spending	0.031*** (0.001)	0.031*** (0.001)	0.028*** (0.001)	0.023*** (0.001)	0.012*** (0.001)
Number of candidates running		-0.045*** (0.004)	-0.047*** (0.004)	-0.015*** (0.004)	-0.016*** (0.005)
Margin at last election		-0.117** (0.048)	-0.112** (0.048)	-0.122* (0.063)	-0.023 (0.067)
Sh. Pop. 15-19		0.846 (1.469)	0.769 (1.496)	0.374 (1.511)	0.394 (1.640)
Sh. Pop. 20-24		-2.761*** (0.658)	-2.807*** (0.678)	-2.526*** (0.804)	-2.858*** (0.671)
Sh. Pop. 65plus		-1.569*** (0.334)	-1.647*** (0.339)	-2.224*** (0.435)	0.619 (0.394)
Sh. Higher-Education degree		1.145*** (0.393)	1.231*** (0.397)	1.563*** (0.366)	0.234 (0.306)
Sh. No qualification		-0.087 (0.170)	-0.082 (0.173)	0.777*** (0.221)	-0.796*** (0.210)
Sh. blue collar workers		0.529* (0.293)	0.596* (0.305)	0.521 (0.323)	0.222 (0.296)
Sh. Unemp		-6.936*** (0.855)	-6.954*** (0.875)	-7.466*** (1.142)	-12.188*** (1.085)
Number of employees		0.050 (0.030)	0.054* (0.032)	0.080** (0.039)	-0.001 (0.016)
Incumbent			0.188*** (0.014)	0.229*** (0.015)	0.026* (0.015)
Member of the European Parliament			0.231*** (0.068)	0.289*** (0.073)	0.077 (0.108)
Cabinet member			0.075** (0.033)	0.016 (0.027)	-0.044 (0.028)
District FE	✓	✓	✓	✓	
Election*Party FE	✓	✓	✓	✓	✓
Candidate FE					✓
Constit-level controls		✓	✓	✓	✓
Candidate-level controls			✓	✓	✓
R-sq (within)	0.34	0.35	0.37	0.38	0.23
Observations	18,338	18,338	18,338	9,068	9,068
Cluster (district)	583	583	583	583	583
Mean DepVar	-2.0	-2.0	-2.0	-1.4	-1.4
Sd DepVar	1.7	1.7	1.7	1.5	1.5

Notes: * p<0.10, ** p<0.05, *** p<0.01. The models are estimated using OLS estimates. 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 party interacted with election fixed effects. The model in Columns (1) to (4) also includes district fixed effects, while the model in Column (5) also includes candidate fixed effects. Standard errors are clustered at the district level. Variables are described in more detail in the text.

Table D.9: The effect of campaign spending on votes: CL estimation, using candidates' *absolute* spending (Robustness check)

(a) French legislative elections						
	All candidates				Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)	(6)
Spending (per voter)	2.46*** (0.06)	4.70*** (0.37)	2.35*** (0.05)	4.97*** (0.11)	0.73*** (0.06)	1.81*** (0.16)
Spending (per voter)-squared		-2.08*** (0.38)		-2.51*** (0.11)		-0.82*** (0.12)
District FE	✓	✓	✓	✓		
Election-Party FE	✓	✓	✓	✓	✓	✓
Candidate FE					✓	✓
District-level controls			✓	✓	✓	✓
Candidate-level controls			✓	✓	✓	✓
R-sq (within)	0.24	0.32	0.28	0.36	0.12	0.16
Observations	34,824	34,824	32,602	32,602	12,882	12,882
Cluster (district)	572	572	547	547	547	547
Mean DepVar	-2.9	-2.9	-2.8	-2.8	-2.2	-2.2
Sd DepVar	1.6	1.6	1.5	1.5	1.5	1.5

(b) UK general elections						
	All candidates				Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)	(6)
Spending (per elec.)	7.95*** (0.15)	15.38*** (0.38)	7.24*** (0.15)	14.37*** (0.38)	3.80*** (0.22)	8.30*** (0.45)
Spending (per elec.) - squared		-33.63*** (1.62)		-32.39*** (1.59)		-17.85*** (1.50)
District FE	✓	✓	✓	✓	✓	
Election*Party FE	✓	✓	✓	✓	✓	✓
Candidate FE						✓
Constit-level controls			✓	✓	✓	✓
Candidate-level controls			✓	✓	✓	✓
R-sq (within)	0.37	0.40	0.42	0.45	0.28	0.31
Observations	18,338	18,338	18,338	18,338	9,067	9,067
Cluster (district)	583	583	583	583	583	583
Mean DepVar	-2.0	-2.0	-2.0	-2.0	-1.4	-1.4
Sd DepVar	1.7	1.7	1.7	1.7	1.5	1.5

Notes: * p<0.10, ** p<0.05, *** p<0.01. The models are estimated using OLS estimates. 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 party interacted with election fixed effects. The model in Columns (1) to (4) also includes district fixed effects, while the model in Column (5) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, occupation and degree, the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (5)), indicator variables for the candidates' political mandates, 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. Variables are described in more detail in the text.

Table D.10: The effect of campaign spending on votes: OLS estimation, using candidates' *log share of total votes* (Robustness check)

(a) French legislative elections					
	All candidates			Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)
Share of district total spending	0.064*** (0.001)	0.062*** (0.001)	0.058*** (0.001)	0.049*** (0.001)	0.019*** (0.001)
District FE	✓	✓	✓	✓	
Election-Party FE	✓	✓	✓	✓	✓
Candidate FE					✓
District-level controls		✓	✓	✓	✓
Candidate-level controls			✓	✓	✓
R-sq (within)	0.29	0.30	0.31	0.40	0.13
Observations	34,824	32,612	32,602	12,882	12,882
Cluster (district)	572	547	547	547	547
Mean DepVar	-3.3	-3.3	-3.3	-2.7	-2.7
Sd DepVar	1.5	1.5	1.5	1.5	1.5

(b) UK general elections					
	All candidates			Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)
Share of district total spending	0.031*** (0.001)	0.031*** (0.001)	0.028*** (0.001)	0.023*** (0.001)	0.012*** (0.001)
District FE	✓	✓	✓	✓	
Election*Party FE	✓	✓	✓	✓	✓
Candidate FE					✓
Constit-level controls		✓	✓	✓	✓
Candidate-level controls			✓	✓	✓
R-sq (within)	0.34	0.35	0.37	0.39	0.14
Observations	18,338	18,338	18,338	9,068	9,068
Cluster (district)	583	583	583	583	583
Mean DepVar	-2.6	-2.6	-2.6	-2.0	-2.0
Sd DepVar	1.6	1.6	1.6	1.5	1.5

Notes: * p<0.10, ** p<0.05, *** p<0.01. The models are estimated using OLS estimates. 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 the total number of votes in the district. All the estimations include party interacted with election fixed effects. The model in Columns (1) to (4) also includes district fixed effects, while the model in Column (5) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, occupation and degree, the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (5)), indicator variables for the candidates' political mandates, 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. Variables are described in more detail in the text.

Table D.11: The average effect of campaign spending on votes: French legislative elections, Robustness check, Dropping the candidates who obtain less than 1% of the cast votes

	All candidates			Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)
Share of district total spending	0.051*** (0.001)	0.050*** (0.001)	0.046*** (0.001)	0.042*** (0.001)	0.018*** (0.001)
District FE	✓	✓	✓	✓	
Election-Party FE	✓	✓	✓	✓	✓
Candidate FE					✓
District-level controls		✓	✓	✓	✓
Candidate-level controls			✓	✓	✓
R-sq (within)	0.42	0.42	0.45	0.46	0.19
Observations	27,662	26,228	26,221	11,386	11,386
Cluster (district)	572	547	547	547	547
Mean DepVar	-2.3	-2.3	-2.3	-1.9	-1.9
Sd DepVar	1.2	1.2	1.2	1.3	1.3

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The models are estimated using OLS estimates. 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 party interacted with election fixed effects. The model in Columns (1) to (4) also includes district fixed effects, while the model in Column (5) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, occupation and degree, the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (5)), indicator variables for the candidates' political mandates, 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. Variables are described in more detail in the text.

Table D.12: The effect of campaign spending on votes: CL estimation, without 2017 election – *French legislative elections*

	All candidates			Multiple times candidates	
	(1)	(2)	(3)	(4)	(5)
Share of district total spending	0.066*** (0.001)	0.064*** (0.001)	0.060*** (0.001)	0.050*** (0.001)	0.018*** (0.001)
District FE	✓	✓	✓	✓	
Election-Party FE	✓	✓	✓	✓	✓
Candidate FE					✓
District-level controls		✓	✓	✓	✓
Candidate-level controls			✓	✓	✓
R-sq (within)	0.28	0.30	0.30	0.39	0.14
Observations	29,778	27,808	27,798	11,851	11,851
Cluster (district)	572	530	530	530	530
Mean DepVar	-2.8	-2.8	-2.8	-2.2	-2.2
Sd DepVar	1.6	1.6	1.6	1.5	1.5

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The models are estimated using OLS estimates. 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 party interacted with election fixed effects. The model in Columns (1) to (4) also includes district fixed effects, while the model in Column (5) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, occupation and degree, the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (5)), indicator variables for the candidates' political mandates, 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. Variables are described in more detail in the text.

Table D.13: Summary statistics: donations from legal entities, depending on the political party – 1993 French legislative elections

	(1)	(2)	(3)	(4)	(5)	(6)
	Communist	Green	Socialist	Right	Extreme right	Socialist vs. Right
	mean/sd	mean/sd	mean/sd	mean/sd	mean/sd	b/t
Donations from legal entities	3,446 (11,279)	320 (2,025)	19,827 (26,575)	37,345 (35,204)	243 (1,398)	-17,518*** (-9.2)
Per registered voter	0.06 (0.20)	0.01 (0.04)	0.30 (0.41)	0.56 (0.58)	0.00 (0.02)	-0.266*** (-8.79)
As a % of total revenues	7.5 (18.3)	2.6 (14.4)	28.5 (29.0)	41.0 (25.8)	1.0 (4.6)	-12.5*** (-7.4)
As a % of total private entities	14.9 (30.7)	4.9 (19.7)	52.5 (39.6)	71.0 (27.1)	4.5 (16.7)	-18.5*** (-8.9)
Obs	551	351	545	528	553	1,073

Notes: The table gives summary statistics on donations from legal entities, depending on the political party of the candidates. Year is 1993. Variables are values for the candidates running in the legislative election. The observations are at the candidate level. Column 1 presents the results for candidates running for the Communist party, column 2 for candidates running for the Green party, column 3 for the Socialist party, column 4 for the right-wing party, and column 5 for the extreme-right party. In column 6, we perform a t-test on the equality of means (standard errors are in parentheses) between the Socialist party and right-wing party.

Table D.14: Effect of a change in the share of spending between the 1993 and 1997 French legislative elections on the change in vote shares: OLS estimates

	(1)	(2)	(3)
	Change in vote share	Change in vote share	Change in vote share
Change in spending share	0.010*** (0.001)	0.008*** (0.002)	0.008*** (0.002)
District FE	✓	✓	✓
Candidate-level controls		✓	✓
Party district vote share in 1988			✓
R-sq	0.44	0.73	0.73
Observations	1,517	1,517	1,517
Mean DepVar	0.01	0.01	0.01
Sd DepVar	0.5	0.5	0.5

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This table reproduces the empirical strategy used in Table 5a but does not instrument for the change in the spending share (the goal is to compare the magnitude of the IV estimates and of the OLS estimates). The models are estimated using OLS estimates. An observation is a candidate. All the candidates present both in 1993 and in 1997 are included. All the estimations include district fixed effects. Standard errors are clustered at the district level. The candidate-level controls include her sex, indicator variables for the the candidates' political mandates, an indicator variable equal to one if the candidate is the incumbent and to zero otherwise, and political party fixed effects. In column (3), we control for the vote share obtained by the candidate's party in the district in 1988. Coefficients for the controls are not reported for the sake of space. Variables are described in more detail in the text.

Table D.15: The effect of campaign spending on votes: IV estimates using total spending (Robustness check) – *French legislative elections*

	Change in spending share			Change in vote share		
	(1)	(2)	(3)	(4)	(5)	(6)
Donations from legal entities	-0.489*** (0.028)	-0.313*** (0.032)	-0.314*** (0.032)			
Change in spending (per voter)				0.323*** (0.054)	0.157* (0.081)	0.151* (0.081)
District FE				✓	✓	✓
Party FE					✓	✓
Candidate-level controls					✓	✓
Party district vote share in 1988						✓
Observations	1,517	1,517	1,517	1,517	1,517	1,517
F-stat for Weak identification				295	95	93
Underidentification (p-value)				0.00	0.00	0.00
Mean DepVar				0.01	0.01	0.01
Sd DepVar				0.5	0.5	0.5

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The models are estimated using IV estimates. Columns (1) to (3) report the first stage estimates (the dependent variable is the change in spending) and Columns (4) and (6) the second stage estimates (the dependent variable is the change in the vote share (in log)). An observation is a candidate. All the candidates present both in 1993 and in 1997 are included. All the estimations include district fixed effects. The candidate-level controls include her sex, indicator variables for the candidates' political mandates, an indicator variable equal to one if the candidate is the incumbent and to zero otherwise, and political party fixed effects. In columns (3) and (6) we control for the vote share obtained by the candidate's party in the district in 1988. Coefficients for the controls are not reported for the sake of space. Variables are described in more detail in the text.

Table D.16: Candidates' characteristics, 1997 legislative elections: Candidates running only in 1997 vs. Candidates running both in the 1993 and in the 1997 French legislative elections

	Cand. running only in 1997	Cand. running both in 1993 & 1997	Diff/se
Mayor	0.02	0.12	-0.10*** (0.01)
Departmental councillor	0.02	0.07	-0.04*** (0.01)
Senator	0.001	0.003	-0.003* (0.001)
Member of the European Parliament	0.002	0.005	-0.003 (0.002)
Gender (female)	0.27	0.13	0.14*** (0.01)
Total expenditures (per voter)	0.20	0.43	-0.23*** (0.01)
Personal contributions (per voter)	0.16	0.30	-0.14*** (0.01)
Private donations (per voter)	0.02	0.05	-0.04*** (0.00)
Party contributions (per voter)	0.02	0.08	-0.05*** (0.00)
Observations	4,528		

Notes: The table gives summary statistics. Year is 1997. The observations are at the candidate level. Column (1) presents the results for the candidates who only run in the 1997 election. Column (2) presents the results for the candidates who run both in the 1993 and in the 1997 elections. In Column (3) we perform a t-test on the equality of means (robust standard errors are in parentheses). Variables are described in more details in the text.

Table D.17: Legislative elections: Number of districts in which political parties run – *UK general elections*

	1997	2001	2005	2010	2015	2017
	Number	Number	Number	Number	Number	Number
Labour Party	568	569	568	558	545	570
Liberal Democrats	564	567	561	546	531	569
Conservative Party	568	568	567	565	543	571
UKIP	177	414	458	489	508	361
Other	1,251	664	864	1,255	998	807

Notes: The Table presents the number of districts in which the different political parties in our sample have run, for each of the general elections included in our empirical analysis.

Table D.18: The effect of campaign spending on votes: SUR estimates, fully contested districts, reporting the controls – *French legislative elections*

	Log ratios of vote shares with respect to abstention					
	Communist party	Green party	Socialist party	Right-wing party	Extreme-right party	Other party
Communist party spending	0.58*** (0.06)	-0.04 (0.07)	-0.41*** (0.05)	0.01 (0.08)	0.11*** (0.03)	0.08 (0.08)
Green party spending	0.12 (0.08)	1.87*** (0.10)	-0.60*** (0.08)	-0.34*** (0.12)	0.02 (0.05)	-0.09 (0.12)
Socialist party spending	0.03 (0.04)	-0.16*** (0.04)	0.44*** (0.03)	0.02 (0.05)	0.01 (0.02)	-0.03 (0.05)
Right-wing party spending	-0.04 (0.03)	-0.09** (0.04)	-0.01 (0.03)	0.69*** (0.05)	0.01 (0.02)	-0.28*** (0.05)
Extreme-right spending	-0.05 (0.06)	0.06 (0.07)	-0.08 (0.05)	0.00 (0.09)	0.35*** (0.03)	-0.25*** (0.09)
Other spending	-0.01 (0.02)	-0.02 (0.02)	-0.11*** (0.02)	-0.53*** (0.03)	-0.04*** (0.01)	0.85*** (0.03)
Controls						
Communist Incumbent	0.09 (0.06)	0.08 (0.08)	0.17*** (0.06)	0.66*** (0.09)	0.11*** (0.03)	-0.41*** (0.09)
Green Incumbent	-0.30 (0.30)	1.20*** (0.35)	-2.66*** (0.27)	0.75* (0.43)	-0.01 (0.16)	-0.17 (0.42)
Socialist Incumbent	0.02 (0.03)	0.01 (0.04)	0.23*** (0.03)	0.33*** (0.05)	0.07*** (0.02)	-0.27*** (0.05)
Right Incumbent	0.05 (0.03)	0.01 (0.03)	0.07*** (0.03)	0.41*** (0.04)	0.01 (0.02)	-0.31*** (0.04)
Extreme right Incumbent	-0.49* (0.29)	0.29 (0.35)	0.67** (0.27)	0.44 (0.43)	0.48*** (0.16)	-0.87** (0.42)
% 15-19 years old	-0.06*** (0.02)	0.02 (0.02)	-0.01 (0.01)	0.04* (0.02)	0.08*** (0.01)	0.01 (0.02)
% 20-24 years old	-0.02* (0.01)	-0.03** (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.01** (0.01)	-0.01 (0.01)
% 65 or older	-0.00 (0.01)	-0.01 (0.01)	0.01 (0.01)	0.02 (0.01)	-0.00 (0.00)	-0.01 (0.01)
% higher education	0.02*** (0.00)	0.01*** (0.00)	0.01** (0.00)	0.00 (0.01)	-0.02*** (0.00)	0.00 (0.01)
% no diploma	0.01*** (0.00)	0.00 (0.00)	0.00 (0.00)	-0.01* (0.00)	-0.01*** (0.00)	0.00 (0.00)
% blue collar workers	0.01** (0.00)	0.01 (0.01)	0.00 (0.00)	0.00 (0.01)	0.01*** (0.00)	-0.00 (0.01)
Unemployment rate	0.02*** (0.01)	-0.02** (0.01)	-0.00 (0.01)	0.02** (0.01)	-0.01** (0.00)	-0.03*** (0.01)
Number of firms	-0.00** (0.00)	-0.00*** (0.00)	-0.00 (0.00)	-0.00*** (0.00)	0.00*** (0.00)	0.00 (0.00)
Number of employees	0.00 (0.00)	0.00*** (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00*** (0.00)	-0.00 (0.00)
% employees in top 1%	-0.51*** (0.18)	0.60*** (0.21)	0.20 (0.16)	-0.31 (0.27)	-0.23** (0.10)	0.39 (0.26)
Number of candidates running	-0.01*** (0.00)	-0.05*** (0.00)	-0.01*** (0.00)	-0.00 (0.01)	-0.00 (0.00)	0.06*** (0.01)
Margin at last election	0.00 (0.00)	-0.00 (0.00)	0.00 (0.00)	0.00* (0.00)	-0.00 (0.00)	0.00 (0.00)
Election and District FE	Yes					
District-level controls	Yes					
Observations	1,724					

Notes: * p<0.10, ** p<0.05, *** p<0.01. The model is estimated using SUR estimates. An observation is a district-election. The estimation includes electoral district and election fixed effects. Variables are described in more details in the text.

Table D.19: The effect of campaign spending on votes: SUR estimates, fully contested districts, reporting the controls – *UK general elections*

	Log ratios of vote shares with respect to abstention				
	Labour b/se	Liberal b/se	Conservative b/se	UKIP b/se	Other b/se
Labour spending	0.85*** (0.11)	-0.71*** (0.16)	0.35*** (0.09)	-0.35** (0.17)	-0.32 (0.35)
Liberal spending	-0.48*** (0.12)	3.32*** (0.18)	-0.43*** (0.10)	-0.23 (0.19)	-0.77** (0.39)
Conservative spending	-0.24** (0.11)	-0.96*** (0.17)	0.96*** (0.10)	-0.34* (0.18)	-0.06 (0.36)
UKIP spending	-0.33*** (0.12)	-0.26 (0.18)	-0.05 (0.10)	2.25*** (0.19)	-0.65* (0.38)
Other spending	-0.18* (0.10)	-0.14 (0.15)	-0.23*** (0.08)	-0.79*** (0.15)	4.63*** (0.31)
Controls					
Labour Incumbent	0.16*** (0.04)	0.12* (0.06)	-0.01 (0.04)	-0.00 (0.07)	0.06 (0.14)
Liberal Incumbent	-0.09* (0.05)	0.14** (0.07)	-0.09** (0.04)	0.05 (0.07)	-0.04 (0.15)
Conservative Incumbent	0.05 (0.04)	0.00 (0.06)	0.01 (0.04)	0.02 (0.06)	-0.09 (0.13)
Number of candidates running	-0.01 (0.00)	-0.00 (0.01)	0.00 (0.00)	-0.03*** (0.01)	0.09*** (0.01)
Margin at last election	-0.10** (0.05)	0.02 (0.07)	-0.04 (0.04)	-0.23*** (0.08)	0.30* (0.16)
% 15-19 years old	-3.83*** (1.22)	4.79*** (1.85)	-2.18** (1.06)	4.90** (1.94)	0.87 (3.93)
% 20-24 years old	-2.35*** (0.63)	-7.38*** (0.96)	-1.68*** (0.55)	2.17** (1.00)	-0.10 (2.03)
% 65 or older	-4.35*** (0.36)	-2.62*** (0.55)	0.32 (0.31)	-0.74 (0.57)	-0.27 (1.16)
% higher education	-0.17 (0.30)	3.44*** (0.45)	-0.81*** (0.26)	-2.91*** (0.47)	7.75*** (0.96)
% no diploma	-0.53** (0.24)	0.83** (0.36)	-1.34*** (0.21)	-0.84** (0.38)	3.58*** (0.77)
% blue collar workers	1.29*** (0.27)	1.56*** (0.41)	-1.02*** (0.24)	-2.40*** (0.43)	3.10*** (0.88)
Unemployment rate	-4.34*** (0.87)	-13.18*** (1.31)	-2.21*** (0.75)	8.04*** (1.37)	-12.57*** (2.79)
Number of employees	0.08** (0.03)	0.24*** (0.05)	-0.04 (0.03)	-0.03 (0.05)	0.04 (0.11)
Election and District FE	Yes				
Observations	1,888				

Notes: * p<0.10, ** p<0.05, *** p<0.01. The model is estimated using SUR estimates. An observation is a district-election. The estimation includes electoral district and election fixed effects. Variables are described in more details in the text.

Table D.20: The effect of campaign spending on votes: SUR estimates, including partially contested districts (Full Information Approach) – *French legislative elections*

	Log ratios of vote shares with respect to abstention					
	Communist party	Green party	Socialist party	Right-wing party	Extreme-right party	Other party
Communist party spending	0.94*** (0.07)	0.19** (0.08)	-0.20** (0.09)	-0.05 (0.08)	0.15*** (0.03)	0.05 (0.07)
Green party spending	0.23*** (0.08)	3.01*** (0.10)	-2.08*** (0.11)	0.03 (0.10)	0.11*** (0.04)	0.28*** (0.09)
Socialist party spending	0.09* (0.04)	-0.16*** (0.05)	0.75*** (0.06)	-0.07 (0.05)	-0.02 (0.02)	-0.10** (0.05)
Right-wing party spending	-0.05 (0.04)	-0.01 (0.05)	-0.14*** (0.06)	0.79*** (0.05)	0.01 (0.02)	-0.29*** (0.04)
Extreme-right spending	-0.10 (0.08)	0.22** (0.09)	-0.14 (0.11)	0.02 (0.09)	0.37*** (0.04)	-0.10 (0.08)
Other spending	-0.03 (0.02)	-0.04 (0.03)	-0.24*** (0.03)	-0.49*** (0.03)	-0.02* (0.01)	0.83*** (0.02)
Election and District FE	Yes					
District-level controls	Yes					
Observations	2,610					

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. The vote shares are constructed using the effective rather than the actual votes; voting data for parties not contested in an electoral district are imputed on R using the *Amelia* imputation software. The SUR analysis is then performed on Stata using *Clarify* and the weights generated by *Amelia*. The estimation includes electoral district and election fixed effects. Variables and methodology are described in more detail in the text.

Table D.21: The effect of campaign spending on votes: SUR estimates, including partially contested districts (Full Information Approach) – *UK general elections*

	Log ratios of vote shares with respect to abstention				
	UKIP b/se	Conservative b/se	Liberal b/se	Labour b/se	Other b/se
Labour spending	-0.35 (0.42)	0.24 (0.21)	-1.06*** (0.27)	1.41*** (0.20)	-0.24 (0.30)
Liberal spending	-0.60 (0.46)	-0.82*** (0.23)	4.26*** (0.30)	-0.33 (0.22)	-0.61* (0.33)
Conservative spending	0.22 (0.41)	2.68*** (0.20)	-0.63** (0.26)	-0.21 (0.20)	-0.55* (0.30)
UKIP spending	2.76*** (0.46)	0.05 (0.23)	-0.49* (0.29)	-0.02 (0.22)	1.96*** (0.33)
Other spending	-0.52 (0.36)	0.10 (0.18)	-0.17 (0.23)	-0.09 (0.17)	4.73*** (0.26)
Election and District FE	Yes				
District-level controls	Yes				
Observations	3,275				

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. The vote shares are constructed using the effective rather than the actual votes: voting data for parties not contested in an electoral district are imputed on R using the *Amelia* imputation software. The SUR analysis is then performed on Stata using *Clarify* and the weights generated by *Amelia*. The estimation includes electoral district and election fixed effects. Variables and methodology are described in more detail in the text.

Table D.22: The effect of campaign spending on votes, Robustness check: SUR estimation, fully contested districts (1993-2017) – *French legislative elections*

	Log ratios of vote shares with respect to abstention					
	Communist party	Green party	Socialist party	Right-wing party	Extreme-right party	Other party
Communist party spending	0.65*** (0.06)	-0.01 (0.06)	-0.42*** (0.06)	0.02 (0.08)	0.11*** (0.03)	0.09 (0.08)
Green party spending	0.18** (0.09)	1.94*** (0.09)	-0.55*** (0.09)	-0.33*** (0.12)	0.08* (0.05)	0.00 (0.11)
Socialist party spending	0.01 (0.04)	-0.16*** (0.04)	0.50*** (0.04)	-0.04 (0.05)	0.06*** (0.02)	0.03 (0.05)
Right-wing party spending	-0.07* (0.03)	-0.06* (0.04)	-0.03 (0.03)	0.70*** (0.05)	0.01 (0.02)	-0.25*** (0.05)
Extreme-right spending	-0.07 (0.06)	0.01 (0.07)	-0.11* (0.06)	-0.08 (0.08)	0.40*** (0.04)	-0.16* (0.08)
Other spending	-0.01 (0.02)	-0.02 (0.02)	-0.10*** (0.02)	-0.52*** (0.03)	-0.05*** (0.01)	0.82*** (0.03)
Election and District FE	Yes					
District-level controls	Yes					
Observations	1,939					

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. Time period is 1993-2017. The estimation includes electoral district and election fixed effects. The coefficients for the district-level controls are not reported here for the sake of space. Variables are described in more details in the text.

Table D.23: The effect of campaign spending on votes: SUR estimates, fully contested districts, districts with **low** stigma associated with the vote for extreme right – *French legislative elections* (1993-2012)

	Log ratios of vote shares with respect to abstention					
	Communist party	Green party	Socialist party	Right-wing party	Extreme-right party	Other party
Communist party spending	0.58*** (0.08)	-0.16 (0.11)	-0.36*** (0.07)	0.23** (0.12)	0.16*** (0.04)	-0.06 (0.09)
Green party spending	0.07 (0.11)	1.78*** (0.15)	-0.70*** (0.10)	-0.90*** (0.17)	0.06 (0.06)	0.24* (0.13)
Socialist party spending	0.01 (0.05)	-0.24*** (0.07)	0.41*** (0.05)	0.12 (0.08)	0.02 (0.03)	0.05 (0.06)
Right-wing party spending	0.05 (0.05)	-0.10 (0.07)	0.04 (0.05)	0.92*** (0.08)	0.04 (0.03)	-0.39*** (0.06)
Extreme-right spending	-0.10 (0.09)	0.26** (0.12)	-0.13* (0.08)	-0.01 (0.13)	0.36*** (0.05)	-0.15 (0.10)
Other spending	-0.02 (0.03)	-0.03 (0.04)	-0.09*** (0.03)	-0.52*** (0.04)	-0.01 (0.02)	0.75*** (0.03)
Election and District FE	Yes					
District-level controls	Yes					
Observations	779					

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. Time period is 1993-2012. Only the districts where the extreme-right candidates obtained a vote share above the median (9.1%) in the 1988 legislative elections are included. The estimation includes electoral district and election fixed effects. The coefficients for the district-level controls are not reported for the sake of space. Variables are described in more details in the text.

Table D.24: The effect of campaign spending on votes: SUR estimates, fully contested districts, districts with **high** stigma associated with the vote for extreme right – *French legislative elections* (1993-2012)

	Log ratios of vote shares with respect to abstention					
	Communist party	Green party	Socialist party	Right-wing party	Extreme-right party	Other party
Communist party spending	0.59*** (0.09)	0.19** (0.09)	-0.43*** (0.08)	-0.20 (0.12)	-0.04 (0.04)	0.17 (0.14)
Green party spending	0.10 (0.13)	2.02*** (0.13)	-0.53*** (0.12)	0.35* (0.18)	-0.01 (0.06)	-0.50** (0.21)
Socialist party spending	0.04 (0.05)	-0.13*** (0.05)	0.46*** (0.05)	-0.01 (0.07)	-0.03 (0.02)	-0.19** (0.08)
Right-wing party spending	-0.13*** (0.04)	-0.12*** (0.04)	-0.05 (0.04)	0.53*** (0.06)	-0.03* (0.02)	-0.18*** (0.07)
Extreme-right spending	-0.06 (0.08)	-0.14 (0.08)	-0.03 (0.08)	-0.14 (0.12)	0.31*** (0.04)	-0.19 (0.13)
Other spending	-0.03 (0.03)	-0.01 (0.03)	-0.15*** (0.03)	-0.56*** (0.04)	-0.08*** (0.01)	0.98*** (0.05)
Election and District FE	Yes					
District-level controls	Yes					
Observations	927					

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. Time period is 1993-2012. Only the districts where the extreme-right candidates obtained a vote share below the median (9.1%) in the 1988 legislative elections are included. The estimation includes electoral district and election fixed effects. The coefficients for the district-level controls are not reported for the sake of space. Variables are described in more details in the text.

Table D.25: The effect of campaign spending on votes: SUR estimates, fully contested districts, districts with **low** stigma associated with the vote for extreme right – *UK general elections*

	Log ratios of vote shares with respect to abstention				
	Labour b/se	Liberal b/se	Conservative b/se	UKIP b/se	Other b/se
Labour spending	1.07*** (0.15)	-0.67*** (0.22)	0.48*** (0.10)	-0.72*** (0.24)	-0.77 (0.50)
Liberal spending	-0.73*** (0.16)	3.33*** (0.23)	-0.23** (0.11)	-0.68*** (0.26)	-0.83 (0.53)
Conservative spending	-0.45*** (0.16)	-0.99*** (0.24)	0.76*** (0.11)	-0.11 (0.26)	-0.18 (0.54)
UKIP spending	-0.09 (0.15)	-0.15 (0.22)	-0.12 (0.10)	2.45*** (0.24)	-1.10** (0.49)
Other spending	-0.14 (0.14)	0.06 (0.20)	-0.31*** (0.09)	-1.23*** (0.23)	5.22*** (0.46)
Election and District FE	Yes				
District-level controls	Yes				
Observations	1,009				

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. Only the districts where the extreme-right candidates obtained a vote share below the median (7.2%) in the 1999 European elections are included. The estimation includes electoral district and election fixed effects. The coefficients for the district-level controls are not reported for the sake of space. Variables are described in more details in the text.

Table D.26: The effect of campaign spending on votes: SUR estimates, fully contested districts, districts with **high** stigma associated with the vote for extreme right – *UK general elections*

	Log ratios of vote shares with respect to abstention				
	Labour b/se	Liberal b/se	Conservative b/se	UKIP b/se	Other b/se
Labour spending	0.64*** (0.14)	-0.59** (0.24)	0.18 (0.16)	0.05 (0.24)	0.18 (0.48)
Liberal spending	0.11 (0.16)	3.34*** (0.28)	-0.62*** (0.19)	0.30 (0.28)	-1.14** (0.57)
Conservative spending	0.11 (0.14)	-0.78*** (0.23)	0.96*** (0.16)	-0.59** (0.23)	-0.03 (0.47)
UKIP spending	-0.46** (0.18)	-0.40 (0.31)	0.21 (0.21)	1.77*** (0.31)	-0.14 (0.63)
Other spending	-0.01 (0.12)	-0.33* (0.20)	-0.07 (0.14)	-0.41** (0.20)	3.86*** (0.40)
Election and District FE	Yes				
District-level controls	Yes				
Observations	879				

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The model is estimated using SUR estimates. An observation is a district-election. Only the districts where the extreme-right candidates obtained a vote share above the median (7.2%) in the 1999 European elections are included. The estimation includes electoral district and election fixed effects. The coefficients for the district-level controls are not reported for the sake of space. Variables are described in more details in the text.

Table D.27: The effect of campaign spending on votes: CL estimation, heterogeneity of the effects depending on the share of the district's population with higher education

(a) French legislative elections				
	Low education	High education	Low education	High education
	(1)	(2)	(3)	(4)
Share of total spending	0.056*** (0.001)	0.064*** (0.001)	0.014*** (0.002)	0.020*** (0.002)
P-value t-test low=high	0.007		0.009	
District FE	✓	✓	✓	✓
Election-Party FE	✓	✓	✓	✓
Candidate FE				
District-level controls	✓	✓	✓	✓
Candidate-level controls	✓	✓	✓	✓
R-sq (within)	0.33	0.29	0.14	0.14
Observations	12,609	15,187	4,781	5,636
Clusters (district)	259	271	259	271
Mean DepVar	-2.6	-3.0	-1.9	-2.2
Sd DepVar	1.5	1.6	1.4	1.5

(b) UK general elections				
	Low education	High education	Low education	High education
	(1)	(2)	(3)	(4)
Share of total spending	0.024*** (0.001)	0.030*** (0.001)	0.007*** (0.001)	0.011*** (0.001)
P-value t-test low=high	0.001		0.000	
Constit FE	✓	✓		
Election-Party FE	✓	✓	✓	✓
Candidate FE			✓	✓
Constit-level controls	✓	✓	✓	✓
Candidate-level controls	✓	✓	✓	✓
R-sq (within)	0.34	0.38	0.14	0.21
Observations	8,897	9,092	3,897	3,867
Cluster (district)	291	292	291	292
Mean DepVar	-2.0	-2.0	-1.4	-1.3
Sd DepVar	1.6	1.7	1.5	1.6

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The models are estimated using OLS estimates. An observation is a candidate-election. "Low education" and "High education" districts are defined with respect to the median value of the share of the population with higher education. The dependent variable is the logarithm of the ratio of the number of votes obtained by a candidate over abstention. All the estimations include party interacted with election fixed effects. The model in Columns (1) and (2) also includes district fixed effects, while the model in Column (3) and (4) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, occupation and the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (3) and (4)), indicator variables for the candidates' political mandates, 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. Variables are described in more detail in the text.

Table D.28: The effect of campaign spending on votes: CL estimation, heterogeneity of the effects depending on the share of white-collar workers in the district

(a) French legislative elections				
	Low white collar	High white collar	Low white collar	High white collar
	(1)	(2)	(3)	(4)
Share of total spending	0.057*** (0.001)	0.063*** (0.002)	0.014*** (0.002)	0.020*** (0.002)
P-value t-test low=high	0.007		0.009	
District FE	✓	✓	✓	✓
Election-Party FE	✓	✓	✓	✓
Candidate FE				
District-level controls	✓	✓	✓	✓
Candidate-level controls	✓	✓	✓	✓
R-sq (within)	0.35	0.27	0.14	0.13
Observations	13,264	14,532	5,092	5,286
Clusters (district)	269	261	269	261
Mean DepVar	-2.7	-2.9	-2.0	-2.2
Sd DepVar	1.5	1.6	1.5	1.5

(b) UK general elections				
	Low white-collar	High white-collar	Low white-collar	High white-collar
	(1)	(2)	(3)	(4)
Share of total spending	0.026*** (0.001)	0.028*** (0.001)	0.007*** (0.001)	0.011*** (0.001)
P-value t-test low=high	0.728		0.008	
Constit FE	✓	✓		
Election-Party FE	✓	✓	✓	✓
Candidate FE			✓	✓
Constit-level controls	✓	✓	✓	✓
Candidate-level controls	✓	✓	✓	✓
R-sq (within)	0.36	0.35	0.17	0.20
Observations	8,936	9,051	3,855	3,983
Cluster (district)	291	292	291	292
Mean DepVar	-2.0	-1.9	-1.4	-1.3
Sd DepVar	1.6	1.7	1.5	1.6

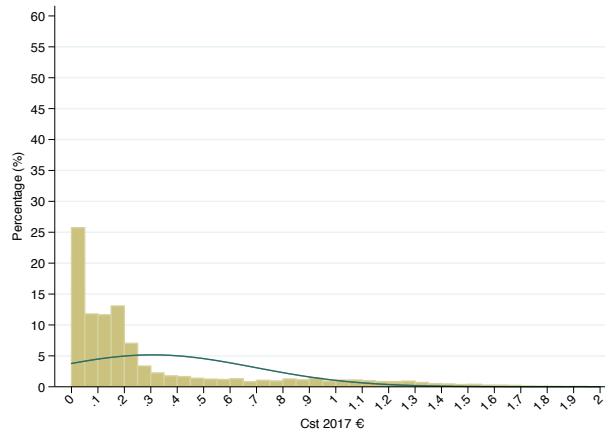
Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The models are estimated using OLS estimates. An observation is a candidate-election. “Low white collar” and “High white collar” districts are defined with respect to the median value of the share of white-collar workers. The dependent variable is the logarithm of the ratio of the number of votes obtained by a candidate over abstention. All the estimations include party interacted with election fixed effects. The model in Columns (1) and (2) also includes district fixed effects, while the model in Column (3) and (4) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, degree and the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (3) and (4)), indicator variables for the candidates’ political mandates, 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. Variables are described in more detail in the text.

Table D.29: The effect of campaign spending on votes: CL estimation, heterogeneity of the effects depending on newspaper penetration – *French legislative elections*

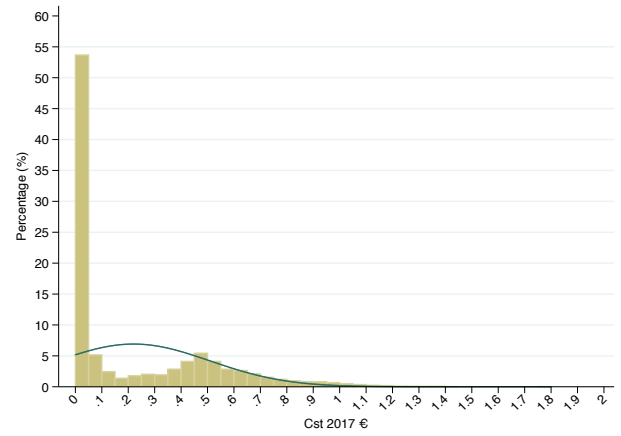
	Low News	High News	Low News	High News
	(1)	(2)	(3)	(4)
Share of total spending	0.061*** (0.002)	0.058*** (0.001)	0.019*** (0.002)	0.015*** (0.002)
P-value t-test low=high	0.122		0.104	
District FE	✓	✓	✓	✓
Election-Party FE	✓	✓	✓	✓
Candidate FE				
District-level controls	✓	✓	✓	✓
Candidate-level controls	✓	✓	✓	✓
R-sq (within)	0.30	0.33	0.12	0.15
Observations	13,535	9,605	5,214	3,899
Clusters (district)	257	195	257	195
Mean DepVar	-2.8	-2.7	-2.1	-2.1
Sd DepVar	1.6	1.5	1.5	1.5

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. The models are estimated using OLS estimates. An observation is a candidate-election. ‘Low News’ and ‘High News’ districts are defined with respect to the median value of the number of local newspaper in the *Département*. The dependent variable is the logarithm of the ratio of the number of votes obtained by a candidate over abstention. All the estimations include party interacted with election fixed effects. The model in Columns (1) and (2) also includes district fixed effects, while the model in Column (3) and (4) also includes candidate fixed effects. Standard errors are clustered at the district level. The time-varying district-level controls include the share of the population by age group, degree and occupation, the unemployment rate, the share of the employees who are part of the top 1% of the income distribution, the total spending at the district level, the number of candidates running, the margin at last election between the first and second largest vote counts, and the number of registered voters. The candidate-level controls include her sex (except in Column (3) and (4)), indicator variables for the candidates’ political mandates, 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. Variables are described in more detail in the text.

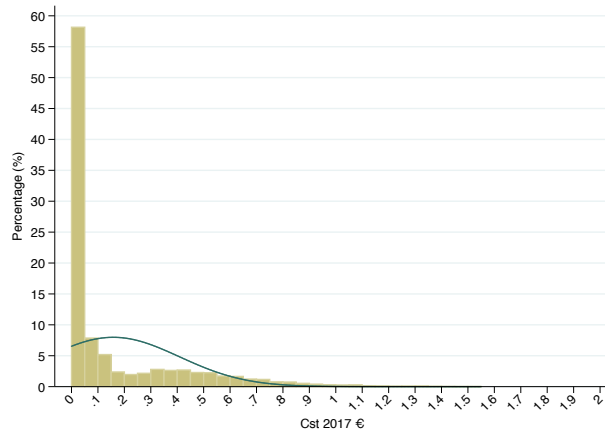
E Additional figures



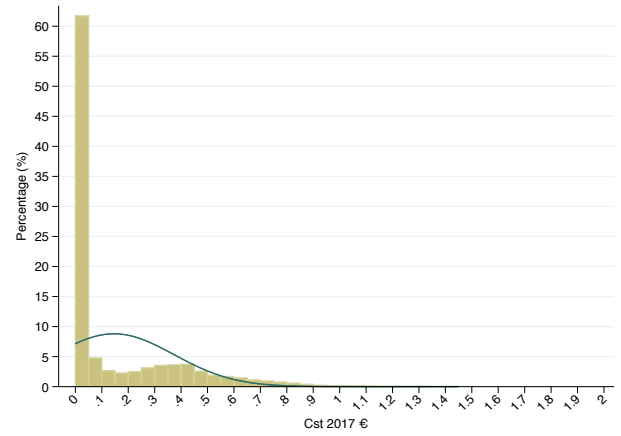
(a) 1993



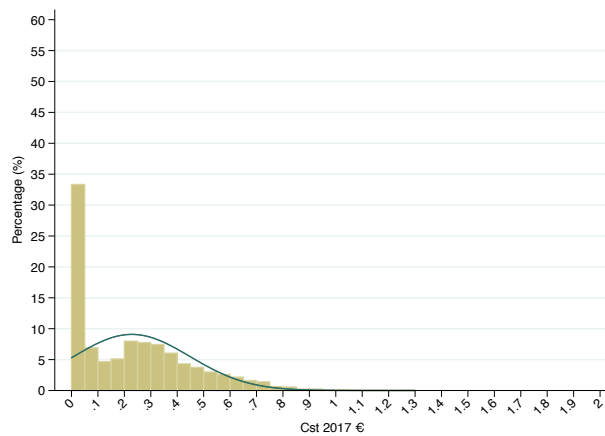
(b) 1997



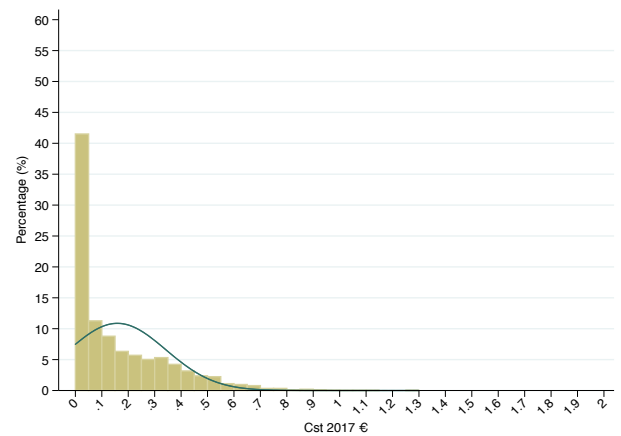
(c) 2002



(d) 2007



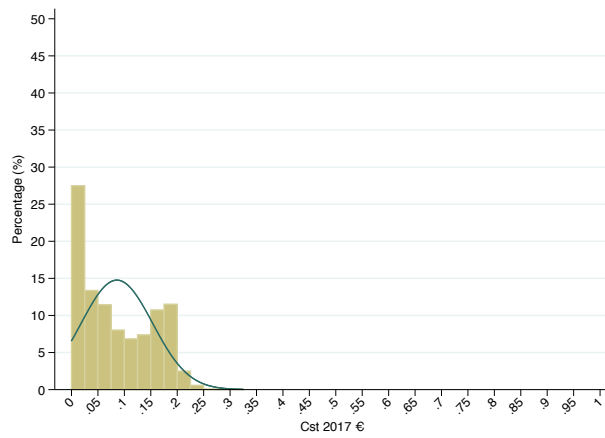
(e) 2012



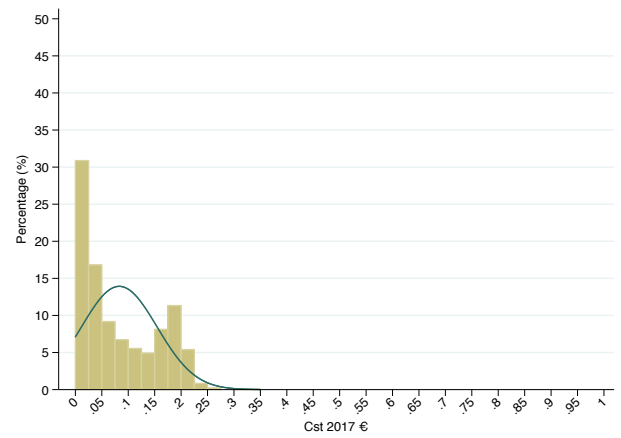
(f) 2017

Notes: The figure plots the distribution of the candidates' spending per voter (with bins equal to €0.05) for French legislative elections. The drop in the share of the candidates spending less than €0.1 in 2012 comes from the fact that, for legislative elections since 2012, candidates who obtain less than 1% of the cast votes no longer have to report their spending. For the sake of comparability, panel (a) excludes two extreme values (at 2.4 and 3.5).

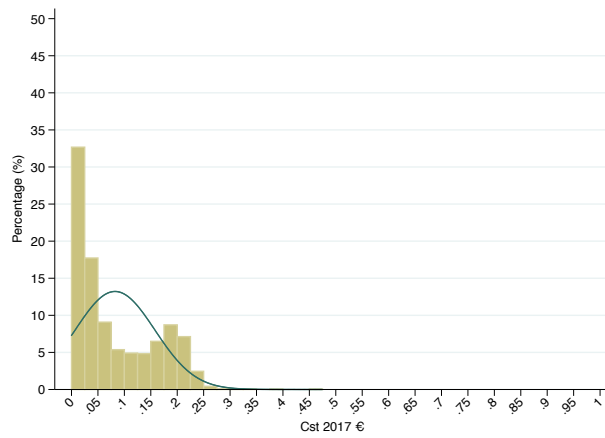
Figure E.1: Distribution of candidates' spending per registered voter – *French legislative elections*



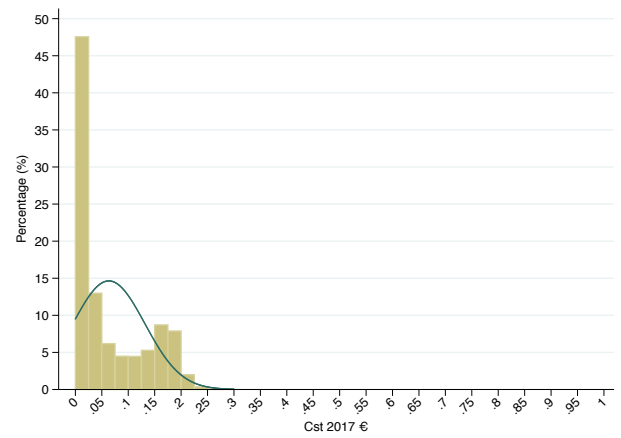
(a) 1997



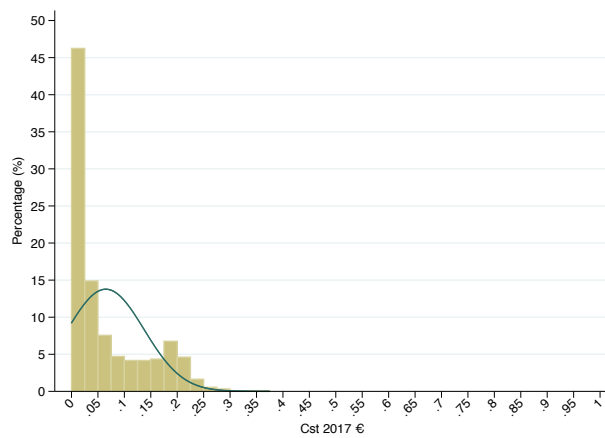
(b) 2001



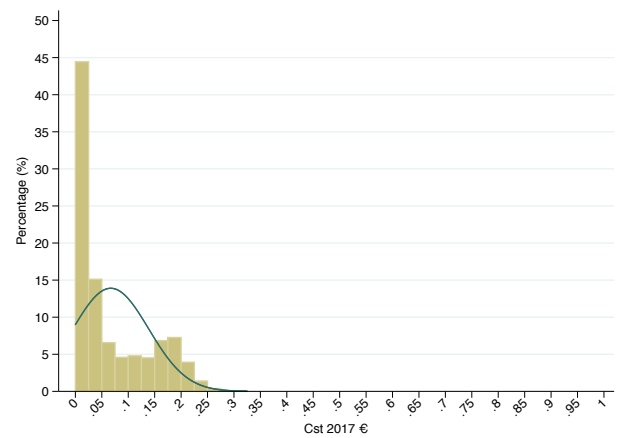
(c) 2005



(d) 2010



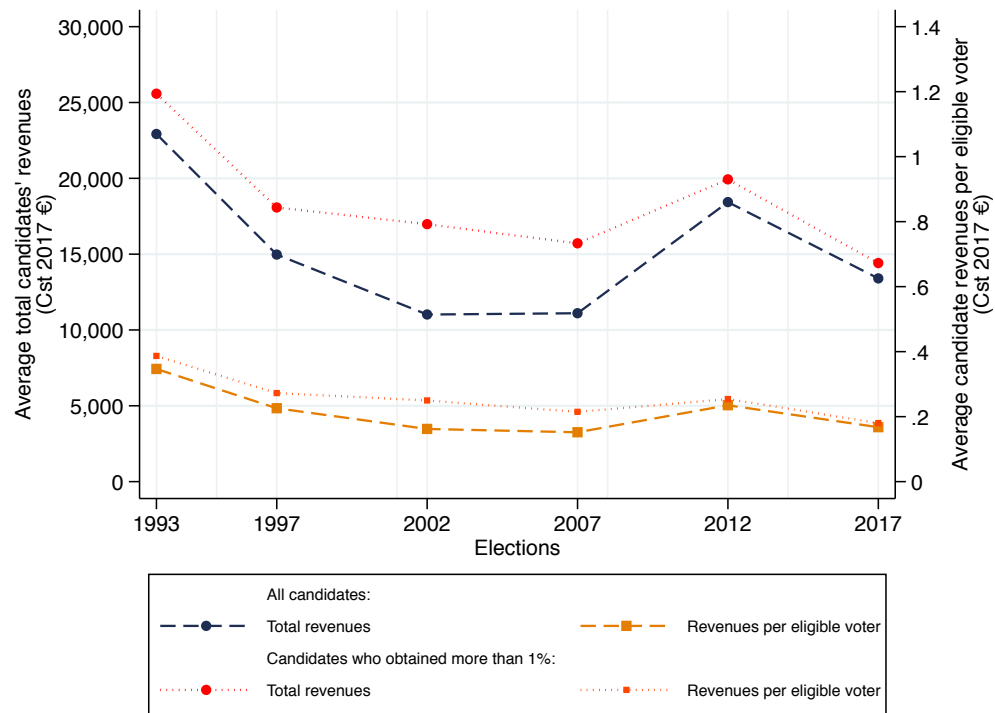
(e) 2015



(f) 2017

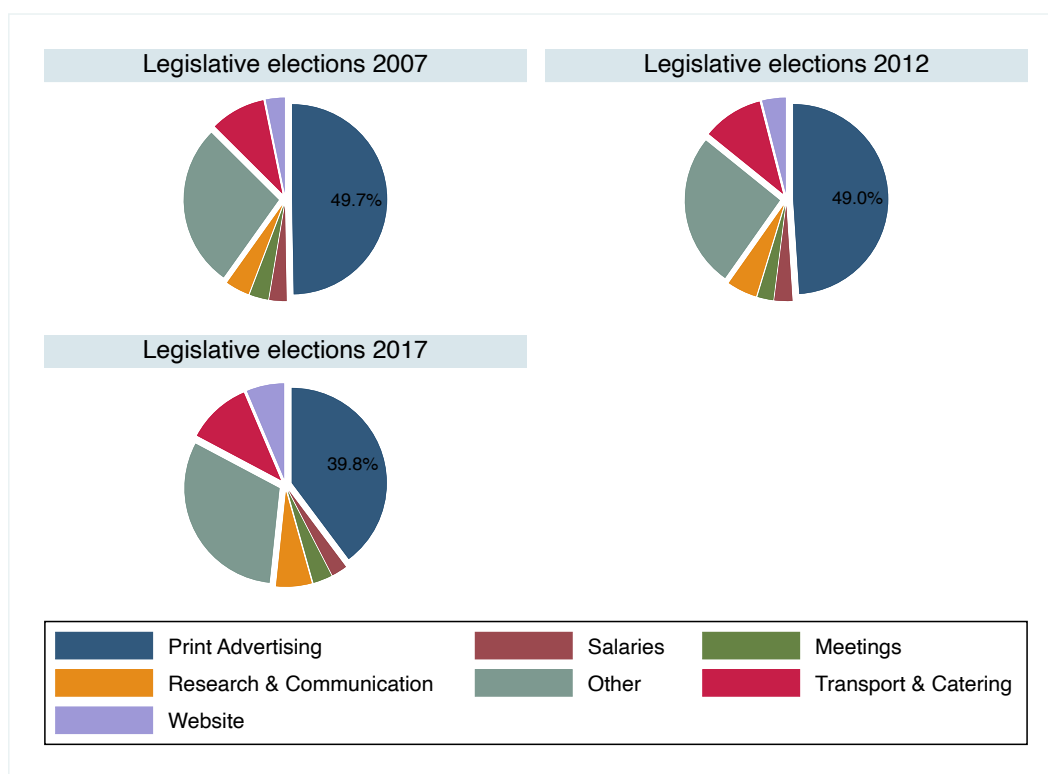
Notes: The figure plots the distribution of the candidates' spending per voter (with bins equal to €0.025) for UK general elections.

Figure E.2: Distribution of candidates' spending per registered voter – *UK general elections*



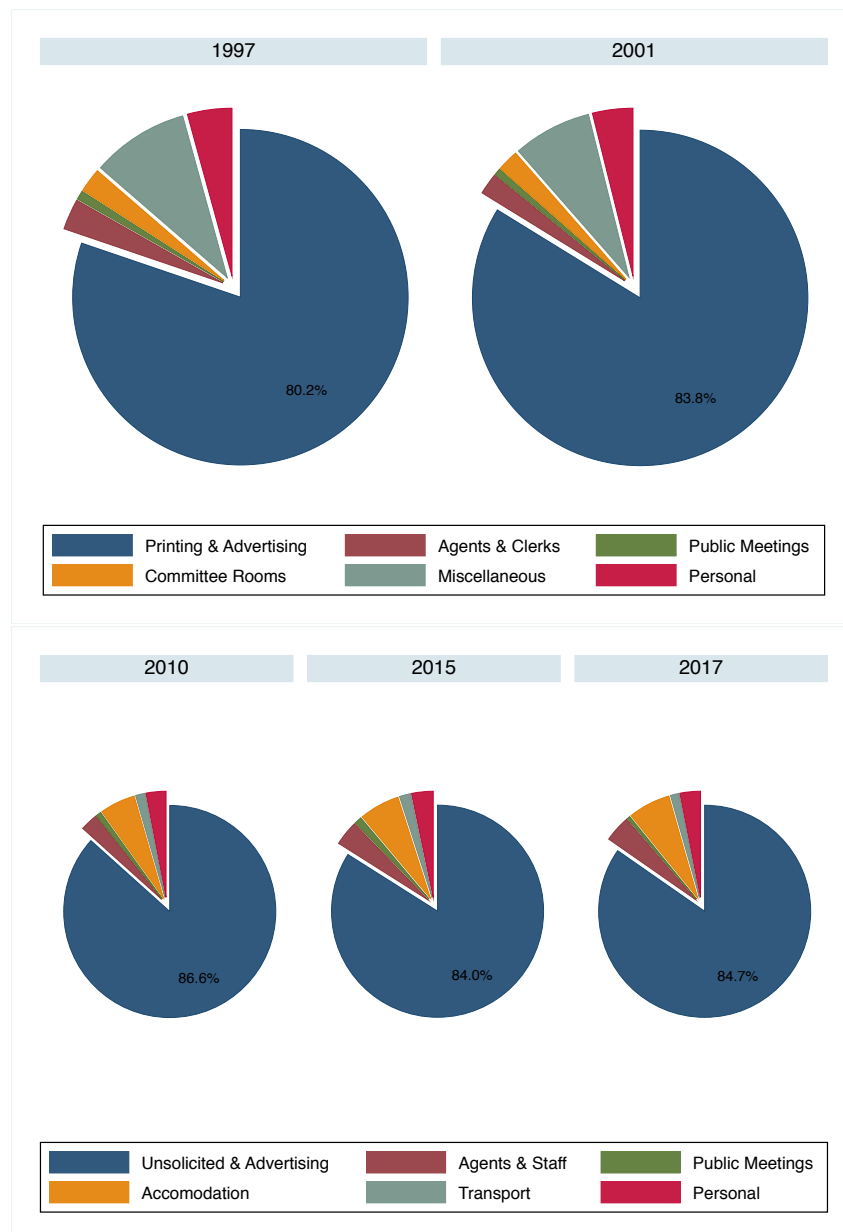
Notes: The figure plots the evolution of the candidates' total revenues and of their revenues normalized by the number of eligible voters per election for legislative elections. The blue and red lines with dots represent the average candidates' total revenues (left y-axis). The blue line with dots represents the average for all the candidates; the red line with dots represents the average for the candidates who obtained more than 1% of the votes in the first round of the elections. The orange and red lines with squares represent their revenues normalized by the number of eligible voters (right y-axis).

Figure E.3: Total revenues in legislative elections: controlling for changes in the reporting sample – *French legislative elections*



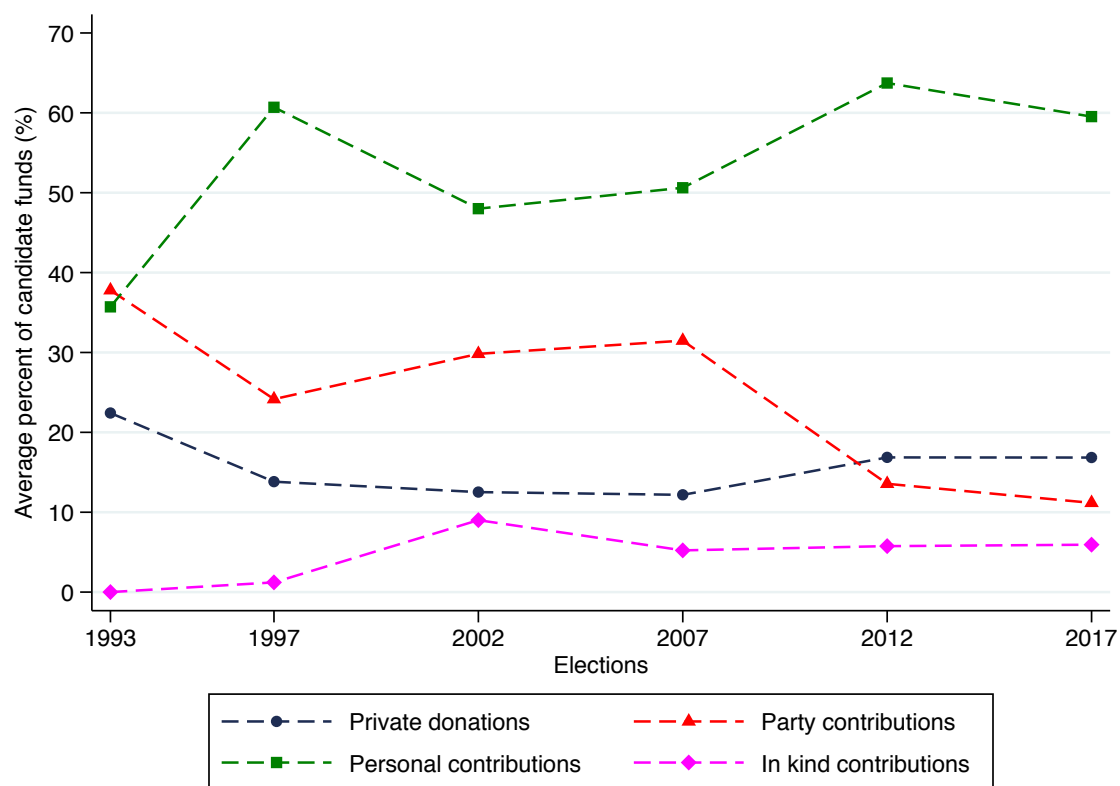
Notes: The figure plots the share represented by the different disbursement categories in the candidates' total disbursements. The data come from the annual reports published by the CNCCFP.

Figure E.4: The different categories of candidates' spending – *French legislative elections*



Notes: The figure plots the share represented by the different disbursement categories in the candidates' total disbursements. Data for the 2005 election is unavailable, and the official categories changed between the 2001 and 2010 elections. Committee Rooms are spaces occupied by the local campaigns HQs. Personal expenses are all expenses incurred for the candidate living costs (lunches, travels, etc.), and do not enter the spending limit.

Figure E.5: The different categories of candidates' spending – *UK General Elections*



Notes: The figure plots the evolution of the importance of the different sources of funding for all the candidate at French legislative elections.

Figure E.6: Sources of funding: evolution – *French Legislative Elections*

F Random coefficient approach

In this section, we implement a random coefficient logit model à la BLP (Berry et al., 1995). The setting is similar to that of a demand model in a differentiated product market, where heterogeneous consumers (the voters) choose amid several goods (the parties) within a market (the constituency-year), based on preferences defined over a characteristic-space (the party’s attributes) (see e.g. Train, 2009; Rekkas, 2007; Nevo, 2000).

F.1 Empirical strategy

Elections can be described by a discrete-choice model of voters in the context of a multiparty system. Individual voters have preferences over political representatives within each constituency and express their support for the party that maximizes their utility. Their choice is a function of the parties’ characteristics, such as incumbency status and campaign expenditures. To assess the performance of incumbent parties, registered voters look at variations in the state of the economy. At the same time, heterogeneity in voters’ preferences can elicit differences in voting outcomes. Some parties propose political platforms that appeal more to some specific demographic groups than to others, while individual unobservables induce shifts in the demand for political representation.

Formally, within each electoral cycle e and constituency c , voters $i = 1, \dots, N_m$ choose their preferred candidate from $j = 1, \dots, J_m$ political parties, where the subscript m indicates the “market”, i.e. here the electoral district⁷. Registered voters can otherwise abstain from voting, deriving in this case no utility from political involvement. Let \mathbf{x}_{jm} be a $K \times 1$ vector of observed party characteristics, p_{jm} the spending share of party j for each voter in market m , and \mathbf{z}_m a $T \times 1$ vector of market-specific measures of the economy. Further, assume $\xi_{jm} = \xi_j + \xi_m + \Delta\xi_{jm}$ are party-characteristics unobserved by the econometrician⁸ but observed by the electorate, capturing popularity-shocks in each market. Then, the indirect utility of voter i from voting party j in market m , $U(\mathbf{x}, p_{jm}, \mathbf{z}_m, \xi_{jm}; \boldsymbol{\theta})$, can be specified as:

$$u_{ijm} = \mathbf{x}'_{jm}\boldsymbol{\beta}_i + \alpha_i p_{jm} + \mathbf{z}'_m \boldsymbol{\gamma}_i + \xi_{jm} + \epsilon_{ijm} = \phi_{ijm} + \epsilon_{ijm} \quad (1)$$

where $\boldsymbol{\theta}' = [\alpha_i \quad \boldsymbol{\beta}'_i \quad \boldsymbol{\gamma}'_i]$ is the vector of unknown parameters that we want to estimate, ϵ_{ijm} are type-I extreme-value distributed error terms, and $\phi_{ijm} = \mathbf{x}'_{jm}\boldsymbol{\beta}_i + \alpha_i p_{jm} + \mathbf{z}'_m \boldsymbol{\gamma}_i + \xi_{jm}$ is the deterministic part of the utility that we want to explain.

To model how voters’ individual characteristics affect voting outcomes, coefficients on parties’ attributes and variables measuring the information available to the electorate are allowed to vary across individuals. Voters’ heterogeneity is represented by the vector \mathbf{v}_i , which captures all individual attributes

⁷A market is defined as a constituency-election, for a total of $M = E \times C$ independent electoral units.

⁸ ξ_j and ξ_m can be thought of as party and market fixed effects and modeled as indicator variables.

affecting political leaning. Following the existing literature, we assume $F(\mathbf{v}) = \mathcal{N}(0, \mathbf{I}_{K+T+1})$ and $\Psi \mathbf{v}_i \sim \mathcal{N}(0, \Sigma)$, where $\Sigma = \Psi^2$ is the variance-covariance matrix of $\boldsymbol{\theta}'$. We can thus write:

$$\begin{bmatrix} \alpha_i \\ \beta_i \\ \gamma_i \end{bmatrix} = \begin{bmatrix} \alpha \\ \beta \\ \gamma \end{bmatrix} + \Psi \mathbf{v}_i, \quad \mathbf{v}_i \sim F(\mathbf{v}), \quad \mathbf{v}_i \perp \boldsymbol{\epsilon} \quad (2)$$

where Ψ is a $((K+T)+1) \times ((K+T)+1)$ matrix of parameters associated to the $((K+T)+1) \times 1$ vector \mathbf{v}_i , while $\boldsymbol{\theta}'_1 = [\alpha \quad \beta' \quad \gamma']$ is the vector of coefficients measuring the common effect of p_{jm} , \mathbf{x}'_{jm} and \mathbf{z}'_m to all voters. Note also that $\boldsymbol{\epsilon} = (\epsilon_{ijm})_j$ is a sequence of $J_m + 1$ party-specific shocks, independent from the random vector \mathbf{v}_i .

We can then combine equations (1) and (2) and decompose the utility into two parts. The first is a set of characteristics and their relative impact on preferences that is common across voters, δ_{jm} , the second a set of characteristics and their relative impact on preferences that is voter-specific, μ_{ijm} . Dropping the subscript j and m from the terms in equation (1), we re-write the indirect utility of voter i for party j in market m as:

$$u_i = \mathbf{x}'\beta_i + \alpha_i p + \mathbf{z}'\gamma_i + \xi + \epsilon_i \quad (3)$$

$$= \delta_{jm}(\mathbf{x}, p, \mathbf{z}, \xi; \boldsymbol{\theta}_1) + \mu_{ijm}(\mathbf{x}, p, \mathbf{z}, \mathbf{v}_i; \boldsymbol{\theta}_2) + \epsilon_i \quad (4)$$

$$= \underbrace{\mathbf{x}'\beta - \alpha p + \mathbf{z}'\gamma + \xi}_{\delta_{jm}} + \underbrace{\begin{bmatrix} -p & \mathbf{x}' & \mathbf{z}' \end{bmatrix} \Psi \mathbf{v}_i}_{\mu_{ijm}} + \epsilon_i \quad (5)$$

where $\boldsymbol{\theta}_2 = \Psi$ is the vector of coefficients on the interaction terms between p_{jm} , \mathbf{x}'_{jm} and \mathbf{z}'_m and \mathbf{v}_i , so that $\boldsymbol{\theta}' = [\boldsymbol{\theta}'_1 \quad \boldsymbol{\theta}_2]$.

The specification suggests that voter i may be identified by the tuple of personal attributes $(\mathbf{v}_i, (\epsilon_{ijm})_j)$. Assuming that voter i votes for party j if this choice yields the highest utility, we can then represent the set of all individuals with preferences over the same party as the electoral group G_{jm} :

$$\begin{aligned} G_{jm} &= \left\{ (\mathbf{v}_i, (\epsilon_{ijm})_j) \mid u_{ijm} > \max_{k \in \{0, \dots, J_m\}} (u_{ikm})_{k \neq j} \right\} \\ &= \left\{ (\mathbf{v}_i, (\epsilon_{ijm})_j) \mid \epsilon_{ikm} < \epsilon_{ijm} + \phi_{ijm} - \phi_{ikm}, \forall k \neq j \right\} \end{aligned}$$

⁸Note that voters' heterogeneity may be decomposed into an observed component, \mathbf{D}_i , and an unobserved component $\boldsymbol{\nu}_i$. \mathbf{D}_i includes features such as gender, age and educational attainment, which partition the electorate into sub-populations of demographics.

where $(u_{ikm})_{k \neq j}$ is the sequence of utilities derived from voting parties $k = 0, \dots, J_m$, with $k \neq j$, and party $k = 0$ represents abstention, with associated utility $u_{i0m} = 0$.

Given the characterization of voter i as the tuple $(\mathbf{v}_i, (\epsilon_{ijm})_j)$, if ties occur with probability zero, the voting share of party j in market m can be thus computed as the integral over its electoral group G_{jm} with respect to the distribution $F(\mathbf{v}, \epsilon)$:

$$s_{jm} = \int_{G_{jm}} dF(\mathbf{v}, \epsilon) \quad (6)$$

$$= \int_{G_{jm}} dF(\epsilon|\mathbf{v})dF(\mathbf{v}) \quad (7)$$

$$= \int_{G_{jm}} dF(\epsilon)dF(\mathbf{v}) \quad (8)$$

$$= \int_{\mathbf{v}} \left(\int \prod_{k \neq j} F(\epsilon_{ijm} + \phi_{ijm} - \phi_{ikm}) f(\epsilon_{ijm}) d\epsilon_{ijm} \right) dF(\mathbf{v}) \quad (9)$$

where the term in parenthesis in equation (9) is the probability that voter i votes for party j in market m :

$$s_{ijm} = \int \prod_{k \neq j} F(\epsilon_{ijm} + \phi_{ijm} - \phi_{ikm}) f(\epsilon_{ijm}) d\epsilon_{ijm} \quad (10)$$

Equation (7) is obtained from (6) applying Bayes's rule while the i.i.d. assumption on ϵ_{ijm} and the independence of \mathbf{v}_i and ϵ imply (8) and (9).

To correct for the correlation of unobservables across parties and relax the IIA assumption, we include \mathbf{v}_i in the computation of the Jacobian of first order derivatives, \mathbf{J}_m , whose elements $(\mathbf{J}_m)_{j,k} = \frac{\partial s_{jm}}{\partial p_{km}} = \tau_{(j,k)m}$ measure the impact of an increase in campaign spending by party k on party j 's likelihood to receive an additional vote.

Each entry of the matrix of elasticities \mathbf{H}_m , i.e. $(\mathbf{H}_m)_{j,k} = \eta_{(j,k)m}$, then writes:

$$\eta_{(j,k)m} = \frac{\partial s_{jm}}{\partial p_{km}} \cdot \frac{p_{km}}{s_{jm}} = \begin{cases} \frac{p_{jm}}{s_{jm}} \int_{\mathbf{v}} \alpha_i s_{ijm} (1 - s_{ijm}) dF(\mathbf{v}) \geq 0, & \text{if } j = k \\ \frac{p_{km}}{s_{jm}} \int_{\mathbf{v}} \alpha_i s_{ijm} s_{ikm} dF(\mathbf{v}) \leq 0, & \text{if } j \neq k \end{cases} \quad (11)$$

Empirically, the first challenge consists in obtaining an estimate of the voting share of party j in market m as outlined in equation (9). The expression in equation (9) cannot be evaluated analytically, but, given the distributional assumptions on \mathbf{v}_i , it can be approximated using Monte Carlo integration.

The predicted shares can be written as:

$$\hat{s}_{jm}(\mathbf{X}_m, \mathbf{p}_m, \mathbf{z}_m, \boldsymbol{\delta}_m(\mathbf{X}_m, \mathbf{p}_m, \mathbf{z}_m, \boldsymbol{\xi}_m; \boldsymbol{\theta}_1); \boldsymbol{\theta}_2) \quad (12)$$

where $\mathbf{X}_m = (\mathbf{x}_{jm})_j$ is the vector of the party's own characteristics and those of the other parties; $\mathbf{p}_m = (p_{jm})_j$ is the party's spending relative to the other parties' spending; \mathbf{z}_m is the vector of economic indicators of incumbency performance, constant across parties within the same market; and $\boldsymbol{\xi}_m = (\xi_{jm})_j$ is the vector of party-specific shocks, observed by voters and candidates but not by the econometrician.

The Monte Carlo integration can be expressed as:

$$\hat{s}_{jm}(\boldsymbol{\delta}_m; \boldsymbol{\theta}_2) = \frac{1}{N_m^{(d)}} \sum_{i=1}^{N_m^{(d)}} \hat{s}_{ijm} = \frac{1}{N_m^{(d)}} \sum_{i=1}^{N_m^{(d)}} \frac{\exp(\delta_{jm} + \mu_{ijm})}{1 + \sum_{k=1}^{J_m} \exp(\delta_{jm} + \mu_{ikm})} \quad (13)$$

where $\delta_{jm}(\cdot)$ and $\mu_{ijm}(\cdot)$ from equations (3) to (5) represent, respectively, the estimated mean utility associated with voting for party j that is common across voters in market m , and observed deviations from it. Developing the term $\mu_{ijm} = \begin{bmatrix} -p & \mathbf{x}' & \mathbf{z}' \end{bmatrix} \hat{\boldsymbol{\Psi}} \mathbf{v}_i$ in equation (5) and writing $L = K + T$ we obtain:

$$\begin{bmatrix} -p & x_1 \dots x_K & z_1 \dots z_K \end{bmatrix} \times \begin{bmatrix} \sigma_{1,1} & \dots & \sigma_{1,L+1} \\ \vdots & \ddots & \vdots \\ \sigma_{L+1,1} & \dots & \sigma_{L+1,L+1} \end{bmatrix} \times \begin{bmatrix} v_{1,i} \\ \vdots \\ v_{L+1,i} \end{bmatrix}$$

which we can use, together with δ_{jm} , to break down the utility of voter i into three parts: the first explained by campaign spending, ρ_{ijm} ; the second by preferences over party characteristics, χ_{ijm} ; and the third by market-specific measures of the economy, ζ_{im} :

$$u_{ijm} = \rho_{ijm} + \chi_{ijm} + \zeta_{im} + \xi_{jm} + \epsilon_{ijm} \quad (14)$$

where, dropping the subscripts for parties and markets, ρ_{ijm} , χ_{ijm} and ζ_{im} write respectively:

$$\begin{aligned} \rho_i &= -\alpha p - \sum_{h=1}^{L+1} \sigma_{1,h} (v_{h,i} * p) \\ \chi_i &= \sum_{r=1}^K \beta_r x_r + \sum_{r=1}^K \sum_{h=1}^{L+1} \sigma_{r+1,h} (v_{h,i} * x_r) \\ \zeta_i &= \sum_{r=1}^T \beta_r z_r + \sum_{r=1}^T \sum_{h=1}^{L+1} \sigma_{r+K+1,h} (v_{h,i} * z_r) \end{aligned}$$

As in most applications, we assume $\boldsymbol{\Psi} = \text{diag}(\sigma_1 \dots \sigma_{W+1})$, so as to restrict the off-diagonal

elements of the variance-covariance matrix Σ to zero⁹. This constraint ensures that the taste parameters are uncorrelated, with σ_k representing the standard deviation of the corresponding random coefficient.

Following the literature on the estimation of mixed logit models with endogenous regressors (Knittel and Metaxoglou, 2014; Nevo, 2000; Vincent, 2015), we address unobserved heterogeneity with a nonlinear GMM.

First, the parameters on the utility are identified assuming mean independence of \mathbf{X}_m and $\mathbf{W}_m = (\mathbf{w}_{jm})_j$ with respect to ξ_m , so that $[\xi_m | \mathbf{X}_m, \mathbf{W}_m] = 0$, where \mathbf{w}_{jm} is a vector of instruments affecting voting outcomes only through shifts in spending decisions by parties. These instruments are built following Rekkas (2007) and enriched with a new set of instruments borrowed from the empirical industrial organization literature: (i) a lagged measure of the closeness of the race; (ii) the interaction of the lagged measure of the closeness of the race with an indicator variable for the incumbent party; (iii) a lagged measure of the district-level average spending per voter; (iv) the interaction of the lagged measure of the district-level average spending with an indicator variable for the incumbent party; (v) the average spending per registered voter by other parties in the same market; and (vi) the average spending per registered voter by the same party across all other markets.

The previously described conditional moment restrictions imply:

$$[\xi_{jm} \mathbf{f}_{jm}(\mathbf{X}_m, \mathbf{W}_m)] = 0, \quad \forall j = 1, \dots, J_m \quad (15)$$

where $\mathbf{f}_{jm}(\mathbf{X}_m, \mathbf{W}_m)$ is a vector-valued function of the party characteristics and the instruments, that can be written compactly for all parties as $\mathbf{F}_m = (\mathbf{f}_{jm})_j$ ¹⁰.

Equation (15) allows us to estimate the $J_m \times 1$ vector of mean utilities $\hat{\delta}_m$ for each market, such that:

$$\hat{\mathbf{s}}_m(\delta_m; \theta_2) = \mathbf{s}_m^{(obs)} \quad (16)$$

where $\mathbf{s}_m^{(obs)} = (s_{jm}^{(obs)})_j$ are the observed shares for party $j = 1, \dots, J_m$, while $\hat{\mathbf{s}}_m(\delta_m; \theta_2)$ is the vector of J_m shares predicted using Monte Carlo integration.

The system of J_m equations is then solved using the contraction mapping suggested by Berry (1994) and implemented by Vincent (2015):

$$\hat{\delta}_m^{[n+1]} = \hat{\delta}_m^{[n]} + \log \mathbf{s}_m^{(obs)} - \log \hat{\mathbf{s}}_m(\hat{\delta}_m^{[n]}; \theta_2) \quad (17)$$

where n denotes the n -th iteration of the process. Updating continues until $\|\hat{\delta}_m^{[n+1]} - \hat{\delta}_m^{[n]}\| < \iota$, where ι is a specified tolerance level. Given an initial vector-value for θ_2 , the starting vector-value for the fixed-point iteration is $\hat{\delta}_m^{[0]} = \log \mathbf{s}_m^{(obs)} - \log \mathbf{s}_{0m}^{(obs)}$, where $\mathbf{s}_{0m}^{(obs)}$ is a $J_m \times 1$ vector of identical entries

⁹Notice that under this assumption, $\rho_i = -\alpha p - \sigma_1(v_{1,i} * p)$, $\chi_i = \sum_{r=1}^K \beta_r x_r + \sum_{r=1}^K \sigma_{r+1}(v_{r+1,i} * x_r)$ and $\zeta_i = \sum_{r=1}^T \beta_r z_r + \sum_{r=1}^T \sigma_{r+K+1}(v_{r+K+1,i} * z_r)$.

¹⁰In a perfectly competitive environment where parties minimize spending to obtain enough votes to win the election, $\mathbf{f}_{jm}(\mathbf{X}_m, \mathbf{W}_m)$ may simply be a linear function with its associated disturbance.

capturing the share of abstention in market m .

Once $\hat{\delta}_m$ is obtained, the vector of structural shocks $\hat{\xi}_m = \hat{\delta}_m - (x'_{jm}\hat{\beta})_j - (\hat{\alpha}p_{jm})_j$ can be retrieved, where $(x'_{jm}\hat{\beta})_j$ and $(\hat{\alpha}p_{jm})_j$ are sequences of linear combinations of party characteristics (including campaign spending) and their respective marginal effects on utility from $\hat{\theta}_1$.

The parameters in $\hat{\theta}_1$ are estimated using linear instrumental variables (Knittel and Metaxoglou, 2014). Then, having defined $\hat{\theta}$ and backed out the structural errors $\hat{\xi}_m$, we implement a nonlinear GMM to estimate the θ that minimizes the objective function $Q_M(\theta)$:

$$\theta \left\{ \frac{1}{M} \sum_{m=1}^M \hat{\xi}'_m(\theta) F_m \right\} A_M \left\{ \frac{1}{M} \sum_{m=1}^M F'_m \hat{\xi}_m(\theta) \right\} \quad (18)$$

where A_M is an appropriately defined weighting matrix and the terms within the sum are the sample counterparts of equation (15).

F.2 Results

We run two main specifications of the model presented above: (a) a basic one, that estimates the average effect of expenditures by parties on the mean utility of voters, conditional on party characteristics; and (b), a more complete specification that controls for perceived performance of incumbents by voters, as measured by economic indicators at the district level. The dependent variable is the vote share obtained by party j in market m , relative to the entire electorate, so that voters may also choose to abstain.

We use incumbency as party characteristic and the change in the district-level unemployment rate between two election years as economic indicator ($\Delta unemp$). Regarding the instruments, we use a lagged measure of the closeness of the race¹¹, a lagged measure of the district-level average spending per elector, and their interaction with the indicator variable D_{incumb} in specification (a). In specification (b), we also use the average spending per elector by opposing parties in the same market and the average spending per elector by the same party across all other markets.

Table F.1 summarizes the results. In both specifications, the average coefficient on campaign spending across voters is positive and statistically significant.

We construct three indicators measuring the effect of spending on votes: (i) an index capturing the impact of a party's campaign spending on its own electoral outcome; (ii) an index capturing the sensitivity of a party's voting outcomes as a result of an increase in spending by other political parties; and (iii) an indicator of the influence that a party can exert on the competition by increasing campaign

¹¹We follow Rekkas (2007) and construct it as:

$$c_{jm} = \begin{cases} (\max\{s_{1m-1}, \dots, s_{J_{m-1}m-1}\} - s_{jm-1})/S_{m-1}, & \text{if } s_{jm-1} \neq \max\{s_{1m-1}, \dots, s_{J_{m-1}m-1}\} \\ (s_{jm-1} - \max\{s_{1m-1}, \dots, s_{j-1m-1}, s_{j+1m-1}, \dots, s_{J_{m-1}m-1}\})/S_{m-1}, & \text{if } s_{jm-1} = \max\{s_{1m-1}, \dots, s_{J_{m-1}m-1}\} \end{cases}$$

where S_m is total share of votes cast and $m-1$ is a short notation for $(d, e-1)$ since every market m is identified by a couple (d, e) of district d and election year e .

Table F.1: Random coefficient logit model: Estimated parameters

	(a) Party char.		(b) Party char. + econ. indicators	
	Mean $\hat{\theta}$	SD $\hat{\theta}$	Mean $\hat{\theta}$	SD $\hat{\theta}$
p	3.481*** (0.262)	4.043*** (0.584)	4.125*** (0.130)	3.113*** (0.301)
D_{incumb}	0.422*** (0.069)	0.000 —	-0.150 (0.284)	0.000 —
$\Delta unemp$			3.670*** (0.178)	0.000 —
$\Delta unemp \times D_{incumb}$			-5.266** (2.306)	32.733** (16.009)
N. Obs.	9,234		9,233	
N. Markets	2,187		2,186	
N. Draws	200		200	

Notes: Estimates were obtained using the `blp` Stata command by Vincent (2015). The set of instruments used in `Party char.` are a measure of distance from the winning party in the previous year and the district-level average campaign expenditure per voter in the previous election, as well as their interaction with D_{incumb} (Rekkas, 2007; Kretschman and Mastronardi, 2010). Those used in `Party char. + econ. indicators`, on top of the previous ones, are the classical instruments used in the empirical industrial organization literature (average of other parties' expenditures, in the same market (Hausman-type IVs), and average of the same party expenditures in other markets). Standard errors are robust to heteroskedasticity.

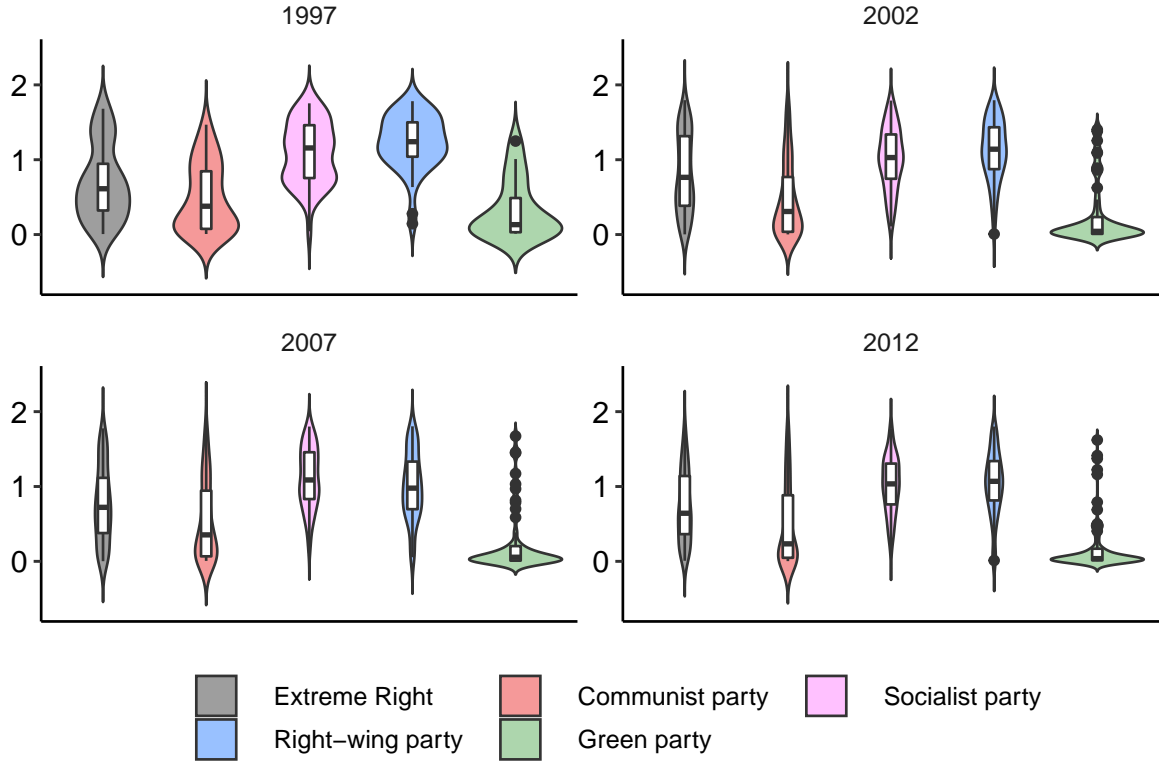
spending. We base our results on the matrices obtained from specification (a).

Own price elasticities The first index uses the estimated own price elasticities at the party-market level and aggregates them up to compare voting outcomes between parties as well as across districts. The own price elasticity of party j in market m is retrieved as $(diag(\hat{H}_m))_{j,j} = \eta_{(j,j)m}$, i.e. the j -th diagonal entry of the matrix of elasticities \hat{H}_m (see equation (11) for details). $\eta_{(j,j)m}$ measures the percentage change in voting shares for party j due to a 1% increase in campaign spending by the same party. Figure F.1 contrasts the distribution of own-price elasticities for each party across districts, for each year.¹²

As it appears clearly on the figure, the right-wing and the left-wing parties benefit the most from increasing campaign spending, at least in terms of their own vote shares. The variability across districts is important, but roughly constant over time. Only the Green party exhibits relatively little statistical dispersion, suggesting that the impact of an increase in campaign expenditures for this party is more homogeneous across markets.

Own marginal effects We now consider the distribution of the political parties' own marginal effects for each party j across markets. The own marginal effect of party j in market m is retrieved as $(diag(\hat{J}_m))_{j,j} = (diag(\hat{H}_m))_{j,j} \cdot \frac{s_{jm}}{p_{jm}} = \frac{\partial s_{jm}}{\partial p_{jm}} = \tau_{(j,j)m}$, i.e. the j -th diagonal element of the Jacobian of first-order derivatives (see equation (11) for details). $\tau_{(j,j)m}$ measures the percentage-point

¹²Observations in the top and bottom 15% are trimmed for better exposition.



Notes: Own price elasticities for each party j in market m are represented by $\eta_{(j,j)m}$, i.e. the diagonal elements of the matrix of elasticities \hat{H}_m (see equation (11) for details). The own-price elasticities are estimated for each market using the b1p Stata command by Vincent (2015). The violin plots show the dispersion by district, for each year, of the percentage change in voting shares for a party due to a 1% increase in campaign spending by the same party. Observations in the top and bottom 15% are trimmed for better exposition.

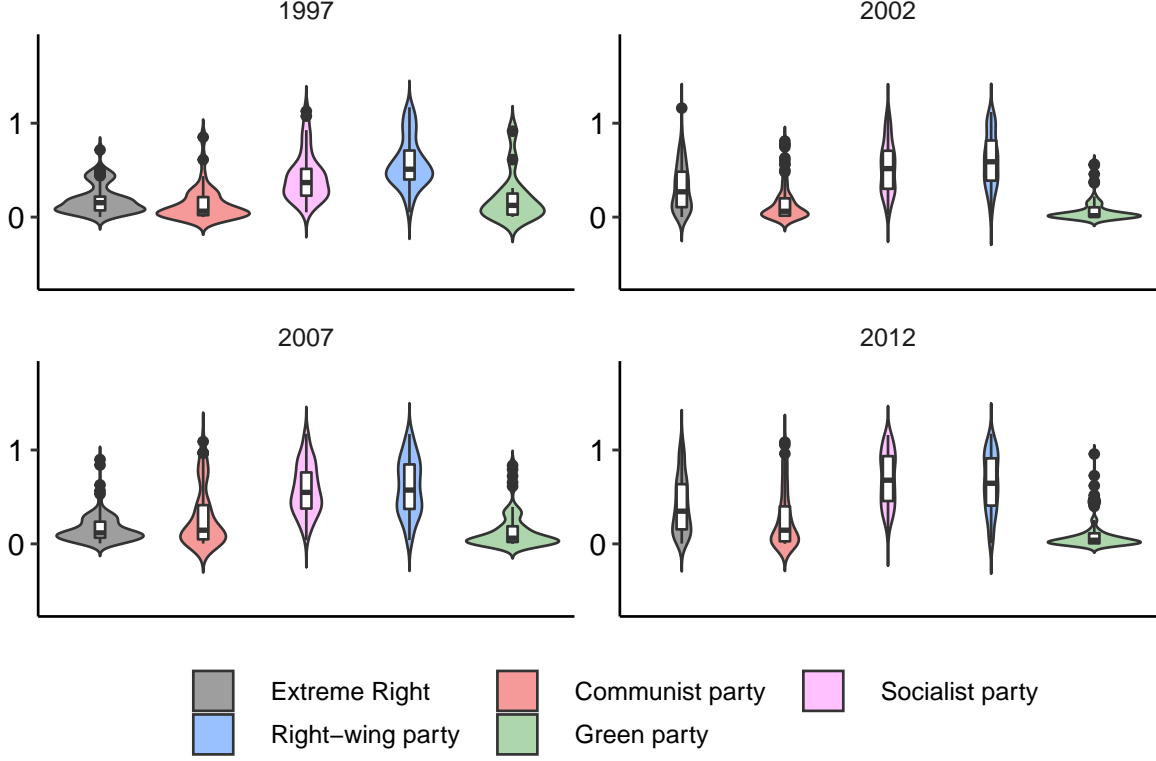
Figure F.1: Distribution of the political parties' own price elasticities across districts

change in voting shares for a party due to a 1-euro increase in campaign spending per registered voter by the same party.

Figure F.2 reports the own marginal effects.¹³ Like the own elasticities, the distribution of the own marginal effects shows heterogeneity across districts. However, contrarily to the former, the patterns are less constant across electoral years. Moreover, the Communist party, the Green party, and the far-right party have marginal effects closer to the median, especially in 1997 and 2007, hinting at important differences in the level of spending and vote shares relative to the left-wing and the right-wing parties.

Sensitivity to campaign spending by other parties Next, we consider an index of the sensitivity of each party to an increase in the campaign expenditures by other parties. This index can be calculated as $\pi_{jm}^\eta = \sum_{k \neq j} w_{km}^p \eta_{(j,k)m}$. $\eta_{(j,k)m}$ is the k -th element of $row(\hat{H}_m)_j$. The shares of the $J_m - 1$ parties in $row(\hat{H}_m)_j$, w_{km} , are normalized to sum up to one in each market (i.e. $\sum_{k=1}^{J_m} w_{km}^p = 1$, $\forall m$).

¹³Observations in the top and bottom 15% are trimmed for better exposition.



Notes: Own marginal effects for each party j in market m are represented by $\tau_{(j,j)m}$, i.e. the diagonal elements of the Jacobian of first order derivatives (see equation (11) for details). These are estimated as $(diag(\hat{\mathbf{H}}_m))_{j,j} \cdot \frac{s_{jm}}{p_{jm}}$. The violin plots show the dispersion by district, for each year, of the percentage point change in voting shares for a party due to a 1 euro increase in campaign spending per elector by the same party. Observations in the top and bottom 15% are trimmed for better exposition.

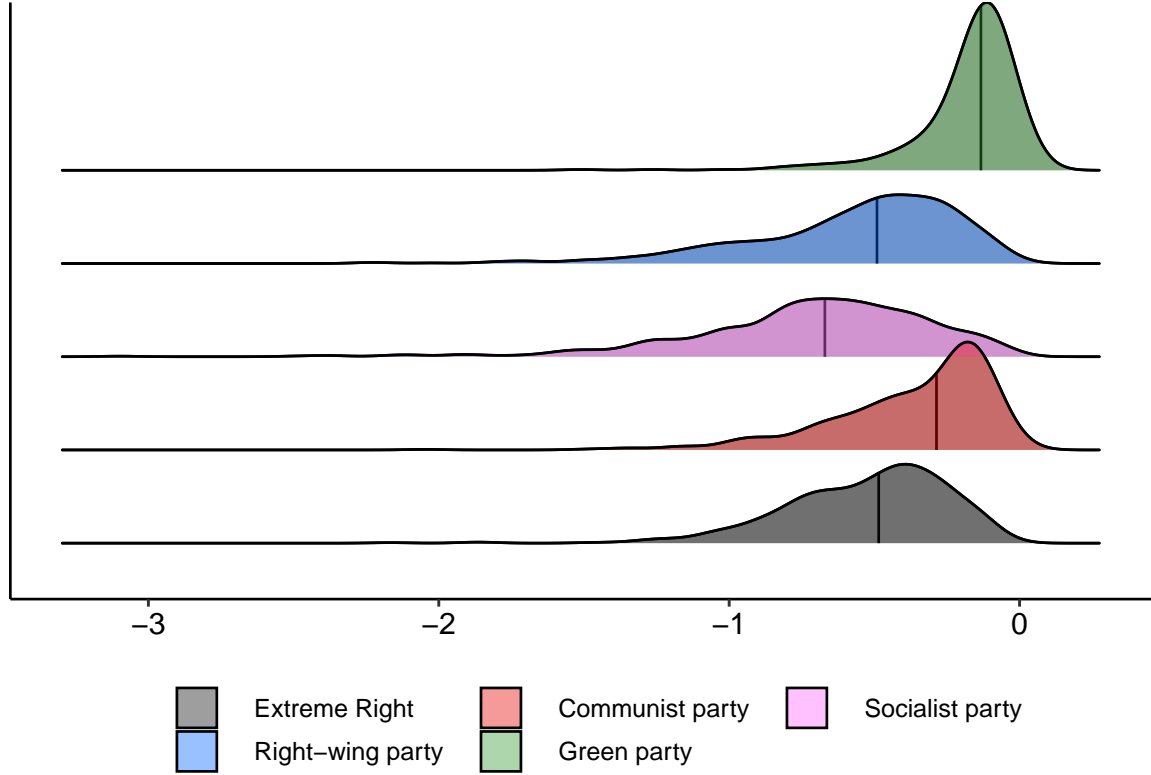
Figure F.2: Distribution of the political parties' own marginal effects across districts

In Figure F.3, π_{jm}^η represents the (party-weighted) average percentage change in voting shares for a party due to a 1% increase in campaign spending by other parties. The Communist party, the Green party, and the extreme-right party tend to be less affected by campaign expenditures by other political parties than the Socialist party and the right-wing party.

Influence of party's campaign spending on other parties' electoral results Finally, we present the indicator measuring the (simple) average influence of party j 's increase in spending on other parties' likelihood of being chosen. The index of the influence can be calculated as $\kappa_{jm}^\eta = \frac{1}{(J_m-1)} \sum_{k \neq j} \eta_{(k,j)m}$. $\eta_{(k,j)m}$ is the k -th element of $col(\hat{\mathbf{H}}_m)_j$.

In Figure F.4, κ_{jm}^η represents the (simple) average percentage change in voting shares for other party due to a 1% increase in campaign spending by party j . The Communist party, the Green party, and the extreme-right party seem to have almost no influence on other parties. The Socialist and the right-wing parties instead display the stronger pull.

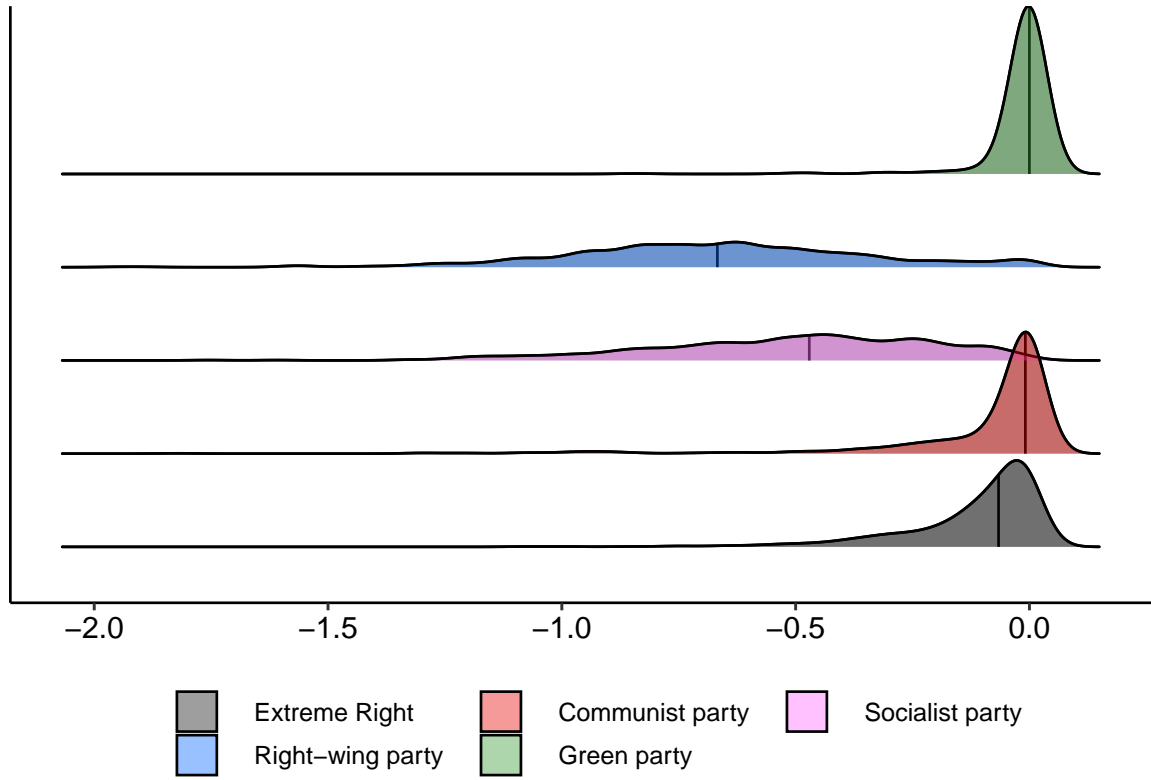
Finally, in Table F.2, we report the own- and cross-elasticities of the different political parties.



Notes: The elasticity-based voting share sensitivity of party j to spending by other parties in each market m is measured as the share-weighted average of elements in $row(\mathbf{H}_m)_j$, $\forall k \neq j$. The shares of the $J_m - 1$ parties in $row(\mathbf{H}_m)_j$ are normalized to sum up to one. The density plots show the market-dispersion of the (party-weighted) average percentage change in voting shares for a party due to a 1% increase in campaign spending by other parties.

Figure F.3: Distribution of the sensitivity to campaign spending by other parties: elasticity across districts-elections

Consistently with the figures reported above, it appears clearly than (i) the own elasticities are always positive but vary in magnitude depending on the political parties; (ii) the impact of other parties' campaign spending vary depending on the political parties. E.g. Communist party's candidates are more affected by spending by Socialist party's candidates than by the Green party.



Notes: The elasticity-based voting share influence of party j on rival parties in each market m is measured as the simple average of elements in $col(\hat{H}_m))_j$, $\forall k \neq j$. The density plots show the market-dispersion of the (simple) average percentage change in the voting shares of other parties due to a 1% increase in campaign spending by party j .

Figure F.4: Distribution of influence on the voting share of other parties: elasticity across markets

Table F.2: Market average own- and cross-elasticities

	Extreme Right	Communist	Socialist	Right-wing	Green
Extreme Right	0.867 (0.689)	-0.089 (0.206)	-0.479 (0.325)	-0.697 (0.484)	-0.012 (0.056)
Communist party	-0.092 (0.163)	0.620 (0.846)	-0.397 (0.422)	-0.464 (0.406)	-0.009 (0.071)
Socialist party	-0.144 (0.161)	-0.134 (0.333)	1.331 (0.681)	-1.097 (0.599)	-0.017 (0.092)
Right-wing party	-0.170 (0.207)	-0.132 (0.337)	-0.879 (0.575)	1.451 (0.724)	-0.023 (0.093)
Green party	-0.016 (0.070)	-0.014 (0.060)	-0.197 (0.280)	-0.239 (0.249)	0.135 (0.425)

Notes: Simple average own- and cross-elasticity across markets. The table shows the (simple average) percentage change in vote shares for the parties on the rows due to a 1% increase in spending by the parties on the columns. Standard deviations in parenthesis.

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