The Price of a Vote: Evidence from France, 1993-2014*

Yasmine Bekkouche[1] and Julia Cagé†[2]

[1]Paris School of Economics
[2]Sciences Po Paris and CEPR

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Abstract

What is the price of a vote? This paper investigates this consequential controversy by analyzing a new comprehensive dataset of all French municipal and legislative elections since the 1990's. We first document the evolution of campaign finance in France, and show that both the amount and sources of campaign contributions vary widely from one candidate to another, in particular depending on their political party. We then develop a number of empirical strategies to overcome the endogenous nature of campaign spending. In particular, we propose a new instrument for spending based on a change in legislation. We find that a one-standard deviation increase in the log of spending per voter increases a candidate's first round vote share by 8 percent of a standard deviation for municipal election, and 7 percent for legislative elections. This effect is mainly driven by private donations, and is robust to a range of alternative estimation strategies.

Keywords: Elections, Campaign financing, Campaign expenditures, Campaign finance reform
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†julia [dot] cage [at] sciencespo [dot] fr.

1 Introduction

There is growing concern that, with rising inequality, money may increasingly corrupt politics. Such a risk explains why, in the majority of the developed countries, there is legislation to control and limit the amount both firms and individuals can give to either or both politicians and political parties. In the United States, where all these reforms have been removed during the last decades[1], the last elections smashed previous records for outside expenditures (Kuhner, 2015). Furthermore, mega donors fuel the rising costs of elections.[2]

In France, a number of important reforms providing public funds for campaigns and parties and limiting campaign spending have been enacted since 1988 (Gunlicks, 1993). However, campaign spending is still at the core of the debate, as the trial over the 2012 Nicolas Sarkozy's campaign overspend ("Bygmalion affair") reminded us. An important difference between France and the United States is indeed that, while in the United States a candidate can chose to go over the spending threshold specified by the campaign finance law – and in this case is not eligible for public funding – in France, campaign overspend is forbidden by law.

How much does campaign spending influence the election? This empirical question has important implications for the debates over the relevance of campaign finance reforms. Although it has generated a very important literature both in economics and in political sciences, the jury is still out. Determining the causal impact of spending on votes is indeed complicated by the endogenous nature of campaign spending. A number of papers in the literature have tried to tackle this question, using different strategies to address the endogeneity issue.[3] E.g. Levitt (1994) uses repeat challengers in U.S. Congressional elections to deal with endogeneity (assuming that a candidate's quality, relatively to her opponent, is constant over time), and Gerber (1998) instrument spending by variables that affect a candidate's ability to raise campaign funds, such as her wealth level.[4] As an alternative empirical strategy, one could use field experiments to study campaign-spending effects (see e.g. Gerber, 2004, for a review of

[1] In the United States, since 1976, the Supreme Court has struck down a host of campaign finance reforms (Kuhner, 2014; Post, 2014), the most recent change being the Supreme Courts 2014 opinion in McCutcheon v. FEC. In this campaign finance case challenging the section 441 of the Federal Election Campaign Act (FECA) which imposed a biennial aggregate $123,300 limit on individual contributions to national party and federal candidate committees, the Court declared aggregate limits unconstitutional and allowed an additional $3.47 million per individual donor over a two-year period.

[2] In the 2014 elections, 31,976 donors – equal to roughly one percent of one percent of the total population of the United States – accounted for $1.18 billion in disclosed political contributions at the federal level, i.e. 29% of all fundraising that political committees disclosed to the Federal Election Commission in 2014 (OpenSecrets.org). During the 2016 Presidential election, 1% of donors give 67% of the money.

[3] An important number of papers have also treated campaign spending as exogenous. See e.g. Palda and Palda (1998) on the 1993 French legislative elections and Jacobson (1978, 1990) on the U.S..

[4] Related to this literature on the impact of spending on candidates' vote share, there is a large literature on the effects of campaign spending on the electoral fate of citizen initiatives. This literature faces similar identification issues. To solve the endogeneity problem, de Figueiredo et al. (2011), who analyze ballot propositions in California from 1976 to 2004, use how concentrated the costs and benefits of an initiative are as a new instrument for spending.

this literature). In the face of the conflicting results of the existing research, Jacobson (2006) focuses on changes in support for candidates over the course of a campaign using survey data.

In this article, we seek to address this consequential controversy in the literature by analyzing a new comprehensive dataset of all the French municipal and legislative elections since the 1990's. France has indeed enacted important reforms granting public funding for campaigns and parties and regulating political financing since 1988. Our dataset covers four municipal and five legislative elections, with a total of around $36,000$ candidates. The data is mostly paper data that we digitize and merge from various historical sources.

We first document the evolution of campaign finance in France. Despite strict contribution limits and public funding of the campaigns, we show that both the amount and sources of campaign contributions vary widely from one candidate to another. In particular, private donations represent a much higher share of funding for right candidates than for left candidates. On average, right candidates receive an extra $€1,800$ in private donations.

We then develop a number of empirical strategies to overcome the endogenous nature of campaign spending. First, we focus on candidates who run multiples times, and investigate the effect of spending on vote shares controlling for candidate and election fixed effects, as well as candidates' party interacted with time fixed effects. Our identifying assumption is that the candidates' quality is constant over time conditionally on the electoral "popularity" of their political party on a given electoral year. Then, following Levitt (1994), we reduce our sample of candidates to pairs of candidates facing one another on multiple occasions. The assumption here is that the *relative* quality of the candidates is constant over time, still controlling for the party interacted with election fixed effects. Finally, exploiting a change in campaign finance legislation, we propose a new instrument for campaign spending. In 1995, France enacted a law according to which it was no longer allowed for a candidate to receive donations from legal persons. We exploit the fact that this change in the legislation only affected those candidates who previously rely on private donations from legal persons.

We obtain a positive impact of spending on votes, both for municipal and legislative elections. This effect is statistically and economically significant: a one-standard deviation increase in the log of spending per voter increases the candidate's first round vote share by 8 percent of a standard deviation for municipal elections, and by 7 percent of a standard deviation for legislative elections. We show that this effect is mainly driven by private donations for municipal elections, despite private donations represent on average only around 15% of total spending. Finally, we find that personal contributions also matter for legislative elections, but not for the municipal ones. Our estimates are robust to a number of different empirical specifications.

Our contribution to the existing literature is threefold. First, there is a lack of empirical information about the flow of money and its impact on politics outside the case of the United

States.[5] Yet it is critical in this area to develop a broad comparative perspective in order to better understand and analyze the forces at play; in this paper, we document the long-run evolution of campaign resources and spending in France[6] and show that, despite regulations limiting campaign spending, money still plays an important role in French politics. Second, we propose a new empirical strategy to overcome the empirical issues linked to the endogeneity of empirical spending. Finally, we investigate the heterogeneous effects of spending depending on the sources of revenues (e.g. personal contributions vs.private donations).

The remainder of the paper is organized as follows. Section 2 provides historical background on the evolution of campaign finance laws in France. Section 3 introduces the new dataset we built for this study and provides descriptive statistics. In Section 4, we estimate the relationship between campaign spending and vote shares, both in municipal and in legislative elections. Section 5 concludes.

2 Historical background & today's rules

2.1 Campaign finance reform in France

The French legislation on campaign and party financing has changed quite dramatically since the 1980's. Financing rules are now stable and mainly focus on the following aspects of political finance: public funding of campaigns (through the reimbursement of campaign costs) and of political parties, donations to candidates and political parties and limitations to campaign spending.

France has enacted important reforms granting public funding for campaigns and parties since 1988.[7] Although candidates were reimbursed as early as 1962 for certain campaign costs, this is much later than in other countries. The laws of 1988 opened the way for a complete redesigning of the legislation on political financing.[8] Before that, parties were considered as simple associations (subjected to the law of 1 July 1901). Thus, they were not allowed to accept donations (neither from legal nor natural persons) nor they received subsidies from the State. Political parties relied – at least officially – solely on membership dues, capped to 100 Francs (i.e. around €25), and the party group of caucus assessment.

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

[5] An exception is Foucault and François (2005) who investigate the effect of campaign spending on the 1997 French legislative elections. However, their focus is on a single election while we consider all the municipal and legislative elections from 1993 to 2014, providing an overview of the evolution of campaign spending in France depending on changes in the legislation. Scarrow (2007) review the literature on the impact of money in politics in democracies outside of the United States.

[6] Ansolabehere et al. (2003) document the sources and amounts of campaign contributions in the U.S..

[7] This section partly draws on Gunlicks (1993) for the 1988-1993 period.

[8] Laws no 88-286 and no 88-227 of 11 March 1988.

some elective officials have to declare their wealth and assets. Political campaigns themselves were rethought with the prohibition of advertising on television and radio and the limitation of press advertising 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 is 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.

Regarding indirect funding, candidates for a seat in the national assembly are entitled to a flat rate campaign cost refund. Those candidates who obtain more than 5% of the votes in their constituency receive public support amounting to 50,000 Francs (around €12,000). The remaining candidates receive nothing. Campaign expenditures are limited, however. In order to qualify for public funds, the candidates are 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 may spend 500,000 Francs (€121,000) in her electoral district (400,000 Francs in the constituencies with less than 80,000 residents). Finally, the legislation also requires candidates to account for the campaign costs incurred.

Thanks to this law, candidates are also allowed to receive donations. These donations are limited: a natural person may donate yearly a maximum of 30,000 Francs (€7,300) and a legal person a maximum of 50, 000 Francs (€12,000) to a candidate. Donations of more than 1,000 Francs must be paid by check. In addition, the donations may cover only 20% of the campaign expenditures. Contributions to candidates carry tax privileges. The donations to a candidate may be deducted from taxes up to 1.25 percent of the income of a natural person and to 2 pro mille of the turnover of a company.

Finally, every political party is now a regular corporate body, even if it is not registered as an association. Parties may indeed also receive private donations, but they are 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.

The 1990 law[9] 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 is allocated for the funding of parties and political associations and is dependent upon the result of the election to the national assembly in 1992. This part is set aside for the parties and political groups that ran candidates in at

[9]Law no 90-55 of 15 January 1990.

least 75 constituencies. The distribution is carried out in relation to the number of votes on the first ballot. The second part of the public subventions is allocated to those parties and associations represented in parliament. These subventions are granted in proportion to the number of deputies in parliament.

Second, the 1990 law also concerned the limits on election expenditures and a clarification of the funding of political activities. Donations to the parties are tax deductible in the amount of 1.25 percent of the income of a natural person and 2 pro mille of the sales of a legal person.

The 1990 law also created the *"Comission Nationale des Comptes de Campagne et des Financements Politiques"* (CNCCFP) that 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 elections' candidates have to provide a detailed account of their spending and revenues to the CNCCFP within the six months following the election, but only municipal elections' candidates running in cities larger than 9,000 inhabitants have to do so. Candidates have to appoint a financial representative (*"mandataire financier"*) who is the intermediary between the CNCCFP and the candidate. The representative is in charge of collecting funding and managing the campaign account.

The law of 1995[10] marked an important change in party and election financing in France with the prohibition of donations from legal persons. The maximum amount of donations from natural persons remained the same. This change reduced the revenues of those candidates who were relying a lot on donations from legal persons (and we will exploit it in the empirical analysis).

The 1995 law also modified the public financing of election campaigns. Candidates who win more than 5% of the votes receive as a flat rate reimbursement for campaign cost a sum equal to 50% of the campaign expenditure limit. The payment of the flat rate for campaign costs is based on the condition that the respective candidate actually incurred so many expenses during the campaign.

Finally, the 2003 law[11] concerned public party funding. It modified the division of the amount budgeted. The first part is allocated for the funding of those parties and political groups that ran candidates that receive more than 1% of the votes in at least 50 constituencies.

At the end of the day, candidates can finance their campaign from: donations (only from natural persons since 1995); personal contributions; party contributions[12] and contributions in kind. As of today, a natural person may donate yearly a maximum of €7,500 to parties or political groups. Public party funding is still regulated by the law no 2003-327 of 11 April

[10] Law no 95-65 of 19 January 1995.

[11] Law no 2003-327 of 11 April 2003.

[12] In 2014, party contributions to electoral campaigns (*"aides financières aux candidats"*) have represented on average 9.6% of total parties spending (9.37% for the Parti socialiste but 1.05% for the UMP)

2003. €63 million have been allocated to the parties in 2015. As to the funding of the election campaigns, candidates who win more than 5% of the votes receive as a reimbursement for campaign cost a sum equal to $47,5\%$ of the campaign expenditures. Campaign expenditure limits vary by elections and with the size of the constituencies. In the majority of the cases, total revenues equal total spending. The balance of the account (the difference between revenues and spending) cannot be negative but in the case of a positive balance, this amount has to given to a state approved association or a political party.

We will now describe more precisely the main aspects of the legislation regarding campaign finance and review, for its three main dimensions, the evolution of the rules that apply to candidates running for the municipal and the legislative elections.

2.2 Changes in campaign finance legislation

2.2.1 Spending limits

Municipal elections Spending limits for campaign expenditures have been introduced with the 1990 law (the *"dépenses de propagande"*, meaning the expenditures related to the printing of ballots, campaign letters to the voters and campaign posters are directly paid by the state and are not included in this limit). Those spending limits are summarized in Figure 1. For municipal elections, the spending limit depends on the size of the city for cities larger than $9,000$ inhabitants. For cities below $9,000$ inhabitants, there is no spending limit and no requirement to provide an account for campaign spending and revenues. The spending limit is different (and higher) for candidates qualified for the second round of the election. Let us take the example of the 2008 municipal elections: the maximum amount that can be spent per inhabitant for candidates not qualified to the second round (respectively qualified) was €$1,22$ up to the 15,000th inhabitant (respectively €$1,68$), €$1,07$ from the 15,001st inhabitant to the 30,000th (respectively €$1,52$) until the last bracket of €$0,53$ (respectively €$0,76$) from the 250,001st inhabitant. Those coefficients have not been modified since 1995, even with the transition to the euro.[13] Those coefficients are discounted every three years to follow the evolution of the price index.

Legislative elections For legislative elections, the spending limit does not differ depending on whether candidates are qualified to the second round. Contrarily to municipal elections, rules have changed since the 1993 elections. From 1991 to 1995, candidates were allowed to spend up to $500,000$ Francs (€$121,000$) per election, and only $400,000$ Francs for constituencies with less than $80,000$ inhabitants. Since 1995, there is a new spending limit composed of a flat rate and an additional amount depending on the size of the constituency. In 1995, can-

[13] Before 1995, there was only one coefficient for the candidates whether or not they qualified to the second round

didates were allowed to spend 250,000 Francs per election plus 1 Franc per inhabitant of the constituency. Those amounts were basically changed to €38,000 and €0,15 per inhabitant with the euro changeover, and have been updated every three years since then. Interestingly, this change from a flat function of the population size (below and above the 80,000 inhabitant threshold) to to a linear relationship sharply decreased the spending limit faced by candidates for those elections. This change in the legislation impacted the legislative elections of 1997 and the following.

[Figure 1 about here.]

2.2.2 Public Refund

Since the 1993 legislative elections, candidates have been refunded for their own (personal) contribution to the campaign if they reach 5% of the first round vote shares for both municipal and legislative elections. The maximum amount of this refund depends on the spending limit. For municipal elections, this refund could not exceed 50% of the spending limit for the 1995 elections. This maximum refund has been changed to 47.5% of the spending limit since the 2014 municipal elections. For legislative elections, the refund was far lower for the 1993 election with a maximum of 10% of the spending limit that could be refunded. Since the 1997 legislative elections, and partly to compensate the lost of revenues resulting from the prohibition of donations from legal persons, the maximum amount of reimbursement was raised to 50%, before being lowered to 47.5% for the 2012 elections. For both elections, candidates are not refunded if their accounts are not approved by the CNCCFP.

2.2.3 Donations

The 1995 law changed the rules concerning donations to candidates for both elections. Donations from legal persons are no longer allowed since the 1995 municipal elections and the 1997 legislative elections. Before that, legal person (i.e. firms) were allowed to donate to candidates as long as their donations did not exceed 10% of the spending limit and 500,000 Francs (€121,000). Natural persons were not allowed to give more than 30,000 Francs (€4,600) per election (even if split between several candidates). The maximum amount of donation from a natural person has remained the same for both elections since then, as did the maximum amount for donations to political parties.

Donations to candidates are tax deductible. As of 2017, the deduction was of 66%, limited to 20% of the taxable income, which means that an individual who have given €1,000 to a candidate can reduce her taxable income by €660.

2.3 Electoral system

Mayoral elections The French electoral system for municipal elections is a two-round list system with proportional representation (*"scrutin de liste à deux tours avec représentation proportionnelle"*). If a list obtains the absolute majority in the first round, then half of the seats are attributed to this list, and the other seats are shared between all the other lists following the proportional representation with highest averages method. If no list obtains the absolute majority in the first round, then there is a second round where only the lists which obtained more than 10% of the recorded votes can take part. Half of the seats are attributed to the list which obtains most votes and the other seats are shared between all the other lists following proportional representation.

Legislative elections The French electoral system for legislative elections is a two-round system. The 577 constituencies are single-member constituencies. In this article, we focus on the constituencies that are in metropolitan France, excluding the French overseas territories. If a candidate obtains the absolute majority in the first round, as well as a minimum of 25% of all the registered voters, then she is elected. If no candidate obtains the absolute majority in the first round, then there is a second round where the two most-voted candidates and the candidates who obtained more than 12.5% of the registered voters can take part. The candidate who obtains most votes win.

3 Data and descriptive statistics

We create a new exhaustive dataset on campaign financing, expenditures and electoral results at the candidate level, for all the municipal elections since 1995 and the legislative elections since 1993. Producing this data is our first contribution. We do it by computing and merging information from several sources, in particular data on electoral results from the Interior Ministry and campaign spending and revenues data collected from the CNCCFP's paper reports (described in more details below). Our dataset also includes information on the candidates' characteristics (computed from the *"Repertoire national des élus"*) as well as electoral districts' socio-economic and demographic information from the census. In the online Appendix Sections A.2 and A.3, we describe in detail the different steps that have been used to merge the information together, and in particular identify the candidates between sources and from one election to another. In this section, we present each dataset in turns and provide descriptive statistics.

3.1 Data on electoral results

The electoral data comes from the Centre de Données Socio-Politiques (CDSP), the Interior ministry, Bach (2011) and Cagé (2014).[14] We have data for the four municipal elections which have taken place in France since the first campaign finance laws, in 1995, 2001, 2008 and 2014. Our electoral data are exhaustive with respect to the municipalities for which we have campaign expenditures information. Similarly, we have information for all the five legislative elections since 1993.

Our data contains information for 10,287 different candidates for municipal elections, and 26,973 for legislative elections. Out of these candidates, 2,421 (4,023) appear for more than one municipal (legislative) election. We will focus on these candidates when performing our empirical analysis with candidate fixed effects. Table 1 presents descriptive statistics on the number of candidates running for both rounds. On average, around four candidates run in the first round of municipal elections. The number of candidates is much higher on average for legislative and it is increasing over time (from 9.3 on average in 1993 to 11.4 in 2012). As explained by François and Phélippeau (2015), changes in the legislation regarding public funding to political party has led to a sharp increase of the number of candidates running for legislative elections. Indeed, the subsidy granted to political party depend on the number of candidates from this party in the previous election. The amount of the subsidy also depends on the vote share of those candidates. Political party are this incentivized to increase the number of candidates running on their behalf for legislative election. Moreover, while municipal elections are sometimes not contested, this is never the case for legislative elections. More candidates are elected from the first round for municipal elections: 30% in 1995, 39.7% in 2001, 49% in 2008, and 36% in 2014[15] compared to 11% in 1993, 1.2% in 1997, 8.6% in 2002, 19% in 2007, and 5.4% in 2012 for legislative elections.

Nonetheless, on average, there are more candidates running in the second round for municipal than for legislative elections. This comes from the fact that the second round qualification threshold is much higher for legislative elections (12.5% of the registered voters compared to 10% of the recorded votes for municipal elections).

[Table 1 about here.]

For all the candidates running, we obtain information either on their political party or on the name of their list (while legislative election candidates tend to be mainly attached

[14] We had to combine data from all these different sources because, expect for the most recent years, the CDSP and the Interior ministry data do not inform about the name of the candidates. Yet we need the same information in order to identify incumbents and candidates running multiples times.

[15] If we exclude the elections with only one candidate, 15.5% of the candidates were elected from the first round for municipal elections in 1995, 36.8% in 2001, 45% in 2008, and 35% in 2014.

to a political party, a number of municipal election candidates run as independent).[16] We aggregate the information on political affiliation into six categories: (i) extreme left; (ii) greens; (iii) left; (iv) right; (v) extreme right; and (vi) other. Online Appendix Table B.3 provides information on the share of candidates running in each election depending on their political affiliation.

Finally, for each candidate running, we identify whether she is the incumbent. There is a very large literature on the existence of incumbency effects, but mainly theoretical (Rogoff and Sibert, 1988; Alesina and Rosenthal, 1989; Rogoff, 1990; Besley and Case, 1995; Levitt and Poterba, 1999; Hodler et al., 2010). There is much less empirical evidence, exceptions being Ansolabehere and Snyder (2002) and Ansolabehere et al. (2006) who find a sizable incumbency advantage. In this paper, we will always control for the incumbency status of the candidates.

3.2 Data on election campaign costs and expenditures

We collect very detailed data on election campaign costs and expenditures. The data are paper data that we digitize and merge from the official reports on election campaign costs and expenditures (*"Publication simplifiée des comptes de campagne"*) published by the CNCCFP. Online Appendix Figure A.1 provides an example of this data.

We focus on two types of elections: the local (mayoral city-level) elections and the legislative elections. For local elections, we have data for all the elections since 1995 (1995, 2001, 2008 and 2014). For legislative elections, we have data for all the elections since 1993 (1993, 1997, 2002, 2007 and 2012). This data is at the electoral district level; for mayoral elections our data covers all the electoral districts with more than 9,000 inhabitants, since the campaign financing rules are only enforced for these municipalities (there is no public funding nor limits for other municipalities and so no information is available on spending).[17] There are around 850 municipalities with more than 9,000 inhabitants per election.

Total spending Table 2 presents summary statistics on total spending. The upper table presents the numbers for municipal elections, the bottom table for legislative elections. (Online Appendix Figures C.1 and C.2 plot the distribution of the spending per registered voters, respectively for municipal and legislative elections.) All the number are in constant 2014 euros.

Regarding municipal elections, the average spending per candidate is equal to 23,000€. Normalized by the number of registered voters, candidates spend on average 1.19€ per voter. Candidates tend to spend less on average for legislative elections: 14,559€, which amount to

[16] Moreover, regarding municipal elections, our focus here will be on the first-round list. Municipal election candidates qualified for the second round are indeed allowed to merge their lists between the two rounds.

[17] All electoral constituencies are concerned by spending rules for legislative elections.

0.21€ per registered voter. However, note that there are much more candidates running for legislative elections. We do not aim at explaining differences between the number of candidate running for legislative and municipal elections in this paper. However, this is most probably due to the fact that public funding of political parties in France depends on the one hand on the number of deputies in parliament, and on the other hand on the number of candidates running in the legislative elections (funding is granted to parties that run candidates that receive more than 1% of the votes in at least 50 constituencies). This also may explain why the share of candidates spending nothing is much higher for legislative than for municipal elections: parties do their best to present candidates in every single constituencies for legislative elections so as to guarantee funding, even in constituencies where the candidate has no chance to win and so does not even campaign.

[Table 2 about here.]

Regarding the legislative elections, we observe a strong decrease in spending after the 1993 election. This is due to a change in regulation, with a strong decrease in the spending limit for the legislative elections (but no change for the municipal ones). The drop in the number of observations in 2012 is due to a change in the reporting requirement rules: since 2012 election, candidates who obtain less than 1% of the cast votes do not have to report their spending.

The main caveat of this incredibly rich data is that it only provides total spending for candidates, i.e. the spending information is not split between first round and second round spending. Hence, for a candidate qualified to the second round, we cannot "isolate" the specific impact of first round spending on the vote shares obtained in first round. Moreover, if anticipating a high probability of being qualified, a candidate may have spent more than the first round limit before the first round. This may bias our results. In the next section, we detail how we empirically deal with this issue.

Because different candidates are willing to spend different amounts – and can, inasmuch as they respect the spending limit[18] – the focus of this article is on the impact of differences in spending on the probability of being elected. Figure 2 shows the correlation between spending per voter and vote shares for municipal elections. In the upper Figure 2a, we plot the average spending depending on the competitiveness of the election (the number of candidates running) and isolate the winner. Winners tend to spend relatively more than the average candidate. The bottom Figure 2b shows the relationship between spending and the vote share obtained in the first round of the election: spending increases for candidates who obtained less than 50% of the votes in the first round, and then declines given that candidates elected from the first round do not have second round spending. We also observe a very low level of spending

[18] In the online Appendix Table B.1, we report summary statistics on spending with respect to the spending limit for municipal elections. We show that on average, candidates spend much less that what they are allowed to.

for those candidates who obtain less than 5% of the votes in the first round: this may be due to the fact that they are anticipating they will not be paid back.

[Figure 2 about here.]

Obviously, correlation does not imply causality and the goal of the article is to determine the extent to which this relationship is causal.

Sources of funding Until now, our focus has been on candidates' spending. Let us now focus on their revenues.[19] Note that while in the large majority of the cases, total revenues are equal to total spending, this is not always the case, however. The difference between revenues and spending is called the balance of the campaign account (*"solde du compte de campagne"*). By law, it is forbidden to have a negative balance: in this case, accounts are not approved and financial and legal sanctions apply. However, candidates can decide to have a positive balance, i.e. to spend less than their revenues. E.g. Alain Juppé, then candidates in the June 1995 municipal elections in Bordeaux (and Prime Minister since May 1995), had positive balance equal to 117,000€ (it spent 168,000€ but received 222,000€ in private donations, of which 172,000 donations from seven legal persons).

Our dataset indeed provides revenue data by source: (i) private donations (since 1995, only individuals are allowed to finance campaigns; legal entities are not allowed to donate) ; (ii) party contributions; (iii) contribution in kind; (iv) personal contribution; and (v) others. Table 3 provides summary statistics on the relative importance of these different sources of funding. (Numbers are average for all the years included in our dataset; in the online Appendix Figure C.3, we plot the evolution of the relative importance of the different sources of funding.)

Municipal election candidates' revenues come mainly from private donations (16%)[20] and personal contributions (75%). Moreover, private donations tend to represent a higher share of the revenues for incumbents (we come back to this point in Section 4). Parties contribute much more for legislative than for municipal elections. Party contributions indeed represent on average around 28% of the revenues of legislative election candidates. In every instance, personal contributions nonetheless represent the highest share of total revenues.

[Table 3 about here.]

[19] There is large literature on the determinants of campaign contributions (see e.g. Chamon and Kaplan, 2013; Cotton, 2009, 2012; Petrova et al., 2017). In this paper, we take contributions as given, but investigate the extent to which electoral results vary depending on the nature of the contributions.

[20] Unfortunately, we only have data on the total amount of private donations received, not on the number of donors and their individual contributions. Vanberg (2008) develops a model in which the composition of a candidate's campaign budget matters. Using data from the US Congress, Dharmapala and Palda (2002) find a negative relationship between the concentration of contributions and vote share.

For all that, municipal election candidates spend on average, on their own funds, an amount equal to 70% of the repayment upper bound; 80% if they are qualified for the 2nd round (see online Appendix B.2). This may be due to the fact that candidates obtaining less than 5% of the votes in first round may anticipate they won't be paid back (even if, obviously, this is endogeneous). This may also be partly explained by the fact that some candidates may not be able to borrow money so as to finance their personal contributions. If we rather consider legislative elections candidate, we see that the ratio of their personal contributions over the repayment threshold is even lower: 23.5% on average. This is linked to the fact that, as we noted above, many legislative election candidates run because this is needed for their party to get public funding, not because they think they can win. Indeed, if we focus on candidates qualified for the second round, then the average ratio goes up to 66%.

How does funding vary depending on the political party for which the candidate is running? Table 4 presents summary statistics. We focus here on the difference between the left and the right (and consider candidates running for municipal and legislative elections together). It appears clearly that private donations represent a much higher share of funding for right candidates (21%) than for left candidates (14%). The difference is statistically significant at the 1% level. On average, right candidates receive an extra €1,800 in private donations. This is of particular importance given that, as we will see in the empirical analysis part of the paper, the effect of spending on electoral results is mainly driven by private donations.

[Table 4 about here.]

3.3 Data on candidate characteristics

Finally, we obtain data on candidate characteristics from the *"Répertoire national des élus"*, an official directory prepared by the Interior ministry. This directory includes information, for each candidate, on her sex, age, and profession. Regarding the profession, we have very detailed information with 65 different professions that we assemble into standardized categories (using usual *"CSP"* categories).

In the Online Appendix Figure C.4, we provide some graphical evidence on these variables. It appears clearly that there is a strong under-representation of women among candidates for mayoral elections, and that this under-representation is even stronger when we focus on elected candidates. Moreover, this is only slightly changing over time, despite the 2000 parity law in politics. Regarding the professions of the candidates, there is a very large over-representation of senior executives and knowledge worker (*"cadres et professions intellectuelles supérieures")* among candidates: this category indeed represents above 45% of the candidates against less than 10% for France taken as a whole. Nothing but lawyers represent 3.2% of the candidates, as do doctors.

However, an important caveat of this repository is that it only contains information for the candidates who have been elected at some point to an elected office. In other words, we do not have information for those candidates who have never been elected. Hence, out of the $10,290$ candidates running for municipal elections, we obtain information on candidates' characteristics for $5,454$ candidates, i.e. more than half of our sample.

4 Empirical analysis

The main empirical challenge we have to deal with is the endogeneity of spending. This endogeneity can drive the results in a number of different directions. On the one hand, bias can come from the fact that it is difficult to measure the quality of a candidate empirically. Yet high-quality candidates are likely to receive a higher share of the votes and have high campaign expenditures. This may lead us to overestimate the effect of spending on votes. On the other hand, one may underestimate the effect of spending if candidates having a hard time spend large amounts to win[21], whereas candidates with a high probability of winning can spend less and still win.

On top of these endogeneity concerns, to adequately measure the causal impact of spending on votes, we have to overcome a number of empirical issues linked to particularities of the French electoral system and of the campaign spending legislation. First, as we noted above, while municipal and legislative elections in France are two-round elections, we only have data on aggregate spending (we do not know how much the candidates spend for each round). Hence, candidates elected from the first round will by definition spend less. Second, to be paid back, a candidate needs to obtain at least 5% of the votes in the first round; candidates anticipating low scores may decide *ex ante* not to spend much. However, this should only affect expenditures that are actually paid back, i.e. personal contributions but not private donations.

We develop three different empirical strategies to deal with these issues, that we present in turns in this Section.

4.1 OLS using candidate fixed effects

First, to reduce the endogeneity concerns detailed above, we introduce candidate fixed effects. Hence we reduce our sample of candidates to those than run in at least two elections. Our empirical specification is the following:

[21] This was for example the case of Nicolas Sarkozy in the 2012 presidential election.

$$\text{vote share}_{cmt} = \alpha + \beta\,\text{spending}_{cmt} + \gamma\,\text{spending}_{c'mt} + \delta\,\text{Incumbent}_{cmt} + \phi\,\text{competitiveness}_{mt} + \lambda_c + \eta_t + \zeta_t * \text{party}_{ct} + \epsilon_{cmt} \quad (1)$$

where t index the election (1995, 2001, 2008, and 2014 for municipal elections; 1993, 1997, 2002, 2007, and 2012 for legislative elections), m the district & c the candidate. We perform the analysis separately for municipal and legislative elections. The outcome of interest, vote share$_{cmt}$, is the candidate's vote share in the first round of the election. spending$_{cmt}$ is the candidate's spending per registered voter; and spending$_{c'mt}$ is the sum of all the other candidates' spending per registered voter. Spending variables are in logarithm: we know from the existing literature that the marginal returns from spending are decreasing (see e.g. Green and Krasno, 1988; Gerber, 1998; de Figueiredo et al., 2011). (In Section 4.2 below, we show that our results are robust to the use of spline regressions as an alternative way to account for the non-linearity of the relationship between spending and vote share.)

Incumbent$_{cmt}$ is an indicator variable equal to one if the candidate is the incumbent, and we measure the competitiveness of the election (competitiveness$_{mt}$) by using the number of candidates running. λ_c and η_t denote fixed effects for candidates and elections, respectively. We control for the candidates' party interacted with time ($\zeta_t * \text{party}_{ct}$), to account for the fact that political affiliation may have a different effect depending on the year of election, in particular due to the national context. Standard errors are clustered at the electoral district level. Our identifying assumption here is that the candidates' quality is constant over time conditionally on the electoral "popularity" of their political party on a given electoral year.

Table 5 presents the results for municipal (columns 1 to 4) and legislative (columns 5 to 6) elections. In columns 4 and 6 we control for the candidates' party interacted with time. We find that a 1% increase in spending per voter leads to a 0.014 percentage point increase in the vote share for municipal elections, 0.012 when controlling for the party interacted with election fixed effects. For legislative elections, the estimated effects are of 0.0069 and 0.0039 percentage points, respectively.

In terms of magnitude, a one-standard deviation increase in the log of spending per voter increases the first round vote share by 10 percent of a standard deviation for municipal election (column 4), and 13 percent for legislative elections (column 6).[22] Interestingly, controlling for the candidates' party interacted with time fixed effects decreases the estimated beta coefficient by 0.02 for municipal elections (column 4) and by 0.06 for legislative elections (column 6). The idea behind this control is that it is more likely that our assumption according to which a candidate quality is constant over time holds once we control for the popularity of the party

[22] Table D.1 in the online Appendix reports the standardized coefficients (beta coefficient).

she is affiliated to at the time of the election. One may expect the "party popularity bias" we control for with these fixed effects to be stronger for legislative elections where national issues tend to play a more important role than in (more local) municipal elections.[23] It is thus reassuring that the magnitude of the effect, as captured by the standardized beta coefficients, decreases more for legislative than for municipal elections. Overall, once we control for party interacted with election fixed effects, the magnitude of the spending effect is stronger for municipal than for legislative elections.

[Table 5 about here.]

Depending on the sources of funding Does this effect vary depending on the sources of funding? Determining whether this is the case is of particular importance given that, as we have noted above, different candidates rely on different sources of funding, and in particular differ regarding the importance of the private donations they receive. We estimate equation (1) but rather than considering spending as a whole, study independently the effect of personal contributions, private donations and party contributions. Table 6 presents the results.

We find that what matters the most to explain electoral results are private donations, in particular for municipal elections. A one-standard deviation increase in the logarithm of private donations increases the candidate's first round vote share by 8 percent of a standard deviation for municipal elections, and 7 percent for legislative elections.[24] How can we rationalize this result? First, it may be due to a signaling effect: citizens may choose to vote for the candidate who they know is receiving more donations, e.g. because they anticipate she will win (a "bandwagon effect"[25]).

Second, citizens may vote for the candidates who receive more private donations if these candidates are also those that spend more because they are "impressed" by money. Money can indeed buy influence over "impressionable" voters (Baron, 1994; Grossman and Helpman, 1996). E.g. the size of contributions may show a candidate's ability as a fundraiser (Potters et al., 1997) or affect voters' perceptions about the social benefits of a project (Helsley and O'Sullivan, 1994).[26] Private donations can also be seen as an effective instrument to provide voters with useful political information if donors are more likely to give money to high-quality candidates. However, Snyder et al. (2010) show that large donations and donations from individuals provide no informational benefit.

[23]The "national dimension" of the legislative elections also come from the fact that, since the 2002 Presidential election and the move from a seven-year term to a five-year term for Presidents, legislative elections follow the Presidential elections cycle and take place in France within a month after the President is elected.

[24]See online Appendix Table D.2 for the standardized coefficients.

[25]There is a large literature on bandwagon effects, i.e. the fact that pools may lead to changes in preferences. See e.g. Simon (1954); Fleitas (1971); Gartner (1976); Duffy and Tavits (2008); Großer and Schram (2010). However, in a recent study, Gerber et al. (2017) find no causal evidence of bandwagon effects with respect to actual voting.

[26]Lohmann (1993) develops a similar argument regarding the size of mass political action.

Moreover, private donations can benefit the candidate by deterring challenges. E.g. Epstein and Zemsky (1995) develop a signaling model in which the incumbent employs strategic fundraising to deter strong challengers from running. They show that by raising a lot of funds, the incumbent tries to convince potential challengers that she is of "high" quality, and thus very hard to beat in an election. However, they find that only in certain, limited cases fundraising actually deter quality challengers from entering the race.

Third, the relative importance of private donations may come from the fact that they are the main source of spending differences between candidates in a given electoral district. There are indeed more variations in private donations than in personal contributions. If candidates are not willing (or able) to spend their own money, then they are limited by the reimbursement threshold as to their personal contribution.

Finally, citizens may chose both to vote for a candidate, and to contribute money to her campaign.

[Table 6 about here.]

4.2 Spline regressions

An alternative way to account for the non-linearity of the relationship between spending and vote share, without constraining this relationship to be logarithmic, is to use spline regressions. We thus allow the slope of the function to differ for intervals chosen beforehand and defined by the knots displayed by the function. Spline regressions are usually used for fitting a nonlinear functional form, when the locations of the knots are known. In our case, to identify those knots, we need to represent vote share as a function of spending and look at the shape of the function obtained. This is done in Figure 3 where we plot this relationship (respectively for municipal – Figure 3a – and legislative – Figure 3b – elections), excluding those candidates that have been elected from the first round[27] (online Appendix Figure C.5 plots the same relationship but taking into account candidates elected in the first round). The knots for the spline regression have been chosen from these graphs, in order to preserve a linear relationship between vote shares and spending within those intervals.

[Figure 3 about here.]

Once the knots are chosen, we can perform the spline analysis by allowing the slope of the linear function to differ depending on those intervals. The results are presented in Table 7 for municipal elections and in Table 8 for legislative elections. We display the results of this regression (column), as well as the results of the simple linear regression (column 1) and of the

[27] As highlighted above, given that we do not have the spending disaggregated by round, we most probably underestimate spending for the candidates elected from the first round.

level-log regression (column2) presented abvoe to make comparisons easier. For a candidate who has spent less than €1.03 per voter, we obtain that a one euro increase in spending per registered voter leads to an increase in vote share by 5.13 percentage point. Above the €1.03 threshold and below €1.5, the increase in vote share reaches 7.15 percentage point.

Legislative elections presents a different pattern with better returns on spending for the first part of the distribution (below €0.28 per voter): a one euro increase in spending per voter leads to an increase in vote share by as much as 17.99 percentage point while this leads to an increase of only 9.5 percentage point above this threshold.

[Table 7 about here.]

[Table 8 about here.]

4.3 Multiple matches

As an alternative estimation strategy, and in the spirit of Levitt (1994), we restrict our analysis to elections in which the same candidates face one another on multiple occasions. We cannot reproduce exactly the empirical strategy developed by Levitt (1994) given than the American and the French electoral systems differ in a number of ways. In particular, while US Congressional elections are one-round elections with most of the time only two candidates (the incumbent and the challenger), municipal and legislative elections in France are two-round elections with multiple candidates. We can nonetheless isolate pairs of candidates facing one another on multiple elections, which we do here, and isolate the pairs of candidates including the incumbent. The identifying assumption is that the relative quality of the candidates is constant over time.

We define the relative vote share of the incumbent as follows:

$$\frac{\text{incumbent's number of votes}}{\text{incumbent's number of votes} + \text{challenger's number of votes}}$$

The empirical specification is the same as in equation (1), except that we now introduce "pair" of candidates fixed effects. Table 9 presents the results. We find that the challenger spending has a positive and statistically significant effect on the challenger's relative vote share, but that there is no effect of the incumbent spending. Note however that the incumbent has a much higher probability of being reelected.

[Table 9 about here.]

4.4 IV estimation

Finally, we propose a new instrumental variable to deal with spending endogeneity. Our strategy uses a change in legislation.[28] In 1995, France enacted a law according to which it was no longer allowed for a candidate to receive donations from private entities. This law was applied for the first time for the 1997 legislative elections. Interestingly for us, it did not affect all the candidates the same way: some candidates were relying strongly on private donations from legal person, while others were not, as illustrated in Table 10.

[Table 10 about here.]

We instrument the change in spending between the 1993 and the 1997 legislative elections by the donations from legal persons received in 1993. Figure 4 indeed illustrates that those candidates who rely strongly on donations from legal persons were not able to recover from the ban. On average, an additional euro received from legal persons in 1993 is associated with a .46 decrease in total revenues between 1993 and 1997.

[Figure 4 about here.]

Equation 2 describes our identification equation:

$$\Delta\text{vote share}_{cm} = \alpha + \beta\,\Delta\text{spending}_{cm} + \gamma\,\Delta\text{spending}_{c'm} + \phi\,\text{competitiveness}_{mt}\zeta_t * \text{party}_{ct} + \epsilon_{cmt} \quad (2)$$

where $\Delta\text{vote share}_{cm} = \text{vote share}_{cm1997} - \text{vote share}_{cm1993}$ and $\Delta\text{spending}_{cm} = \text{spending}_{cm1997} - \text{spending}_{cm1993}$. (The sample of candidates is reduced to the 1,410 who run both in the 1993 and in the 1997 legislative elections). Table 11 presents the results. (Reduced-form estimates are reported in the online Appendix Table D.3). We find that a one euro increase in spending per voter leads to an increase in vote share by 3.21 percentage point (level-level specification). For the average constituency in 1993 and 1997 ($68,000$ registered voters and $44,710$ vote casts), this is equivalent to an increase of $1,435$ votes. Since a one euro increase in spending per voter corresponds to an increase of €$68,352$, the price of a vote according to the IV estimates is €48.

[Table 11 about here.]

[28] There is a large literature on contribution limits in the U.S.. E.g. Stratmann et al. (2006) investigate whether campaign contribution restrictions have an effect on candidates' vote shares and find that they narrow the margin of victory of the winning candidate; Primo and Milyo (2006) study the effects of changes in campaign finance laws on political efficacy, Hamm and Hogan (2008) on patterns of candidacy, and Barber (2016) on the ideologies of legislators in office.

4.5 Robustness checks

Finally, we perform several robustness checks. This section briefly describes them; the detailed results for these tests are available in the online Appendix.

1993-1995 First, we show that our effects are robust to dropping years when donations from legal persons were allowed (1993 for legislative elections and 1995 for municipal elections). Online Appendix Table E.1 presents the results. There is no change in the statistical significance nor in the magnitude of the effects.

Second round vote shares We investigate the effects on second round vote shares. Online Appendix Table E.2 presents the results. We find a positive effect of spending on the second round vote shares for municipal elections. Moreover, this effect is of similar magnitude than the first round effect: a one-standard deviation increase in the log spending per voter increases the second round vote shares by 15 percent of a standard deviation. However, regarding the second round vote shares, we obtain no effect for legislative elections, but this may be due to the much lower variation we observe in the data.

Dropping candidates elected from the first round We investigate whether our results are robust to dropping those candidates that are elected from the first round. These candidates indeed "artificially" spend less because in their case there is by definition no second round spending. Online Appendix Table E.3 shows that our results are not affected by this exclusion; if anything, the estimates we obtain are of higher magnitude for municipal elections.

Dropping candidates that spend less than 0.1€ per voter As we highlighted above, the average number of candidates running tend to be much higher for legislative than for municipal elections. This is most probably due to the fact that, given that political parties funding partly depends on the number of constituencies in which a candidate runs and obtain more than 1% of the cast votes, parties do their best to present candidates in all constituencies, even in already lost ones. Online Appendix Table E.4 presents the results for legislative elections when candidates that spend less than 0.1€ per voter are excluded from the analysis. We find a strong increase in the point estimates: a 1% increase in spending per voter leads to a 0.024 percentage point increase in the vote share for legislative elections. Regarding the magnitude of the effect, once we control for political party interacted with time fixed effects, we find that a one-standard deviation increase in the log of spending per voter increases the first round vote share by 11 percent of a standard deviation for legislative election, compared to 7 percent when these "small" candidates are not excluded (online Appendix Table E.5).

Regarding the relative importance of the different sources of funding, once we drop these

"small" candidates, personal contributions no longer matter (online Appendix Table E.6). This is consistent with the findings we obtain for municipal elections.

Dropping candidates that do not have to report Finally, for legislative elections, we drop all the candidates who obtain less than 1% of cast votes (given that they do not have to report in 2012). Doing so increases the magnitude of the estimated effects (online Appendix Table E.7). However, it does affect the effects depending on source of funding (online Appendix Table E.8).

5 Conclusion

What role does money play in direct democracy? In this paper, we investigate the impact of campaign spending on votes in local (mayoral and legislative) elections in France over three decades. We exploit changes in legislation to estimate the causal effect of spending on votes. We find that, despite strict limitation in campaign spending and contributions, money still plays an important role in French politics. In particular, we highlight the particular role played by private donations. The results we obtain question the relevance of existing legislations to control and limit the amount private individuals can give to candidates. If it is relative cheap to buy a vote (around €50 according to our IV estimates), then it means that the current level of contribution limits may be too high. Obviously, determining the optimal level of contribution limits is beyond the scope of this paper. We hope nonetheless that these results will benefit the public debate. While it seems that political power is increasingly conditioned upon wealth (see e.g. Ferguson, 1995; Ferguson et al., 2013), lessons can be drawn from France to improve legislations in other countries.

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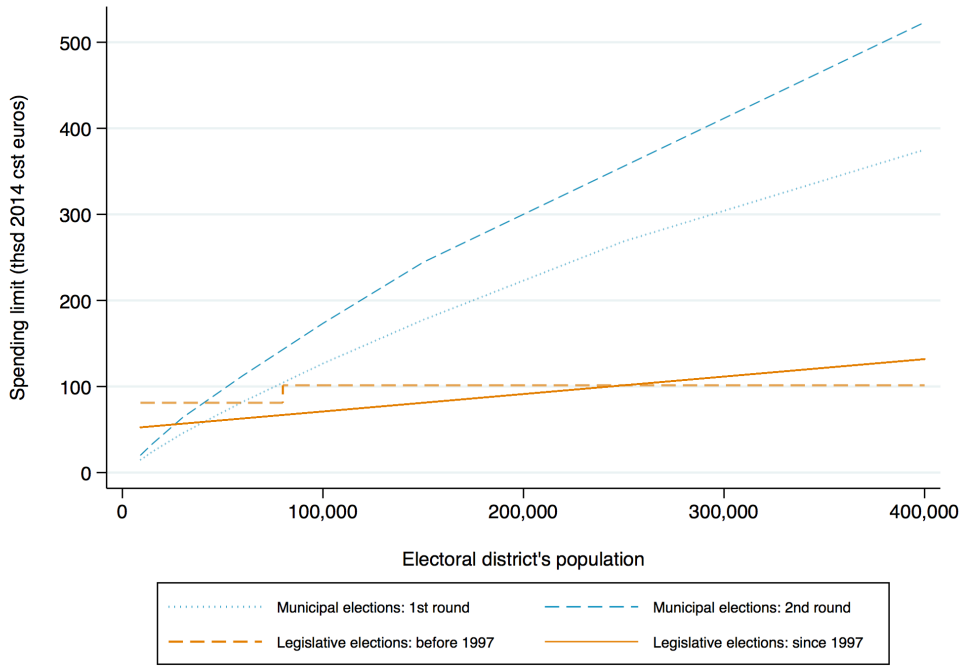
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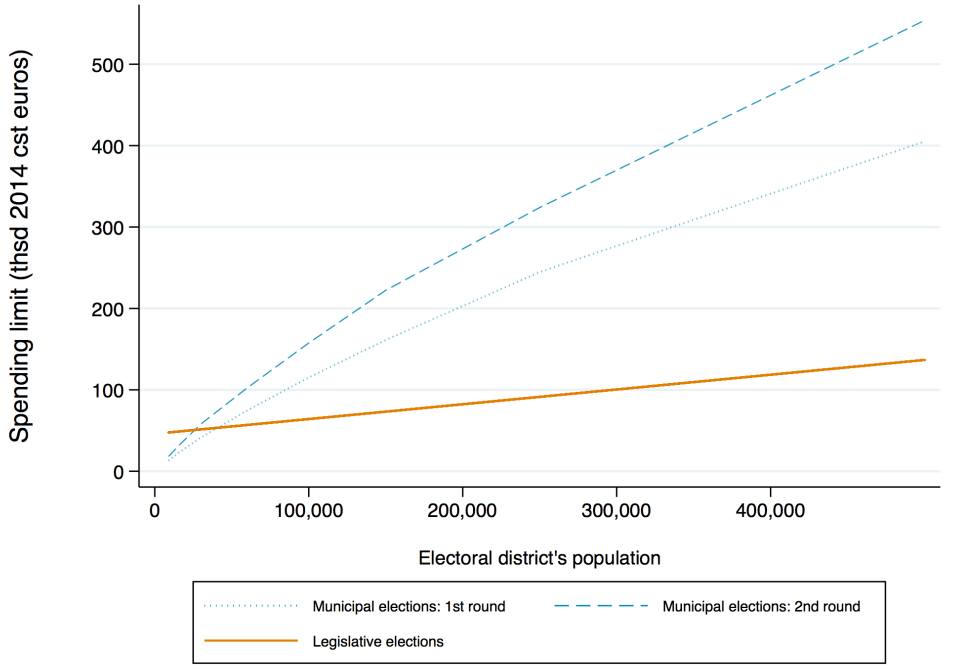
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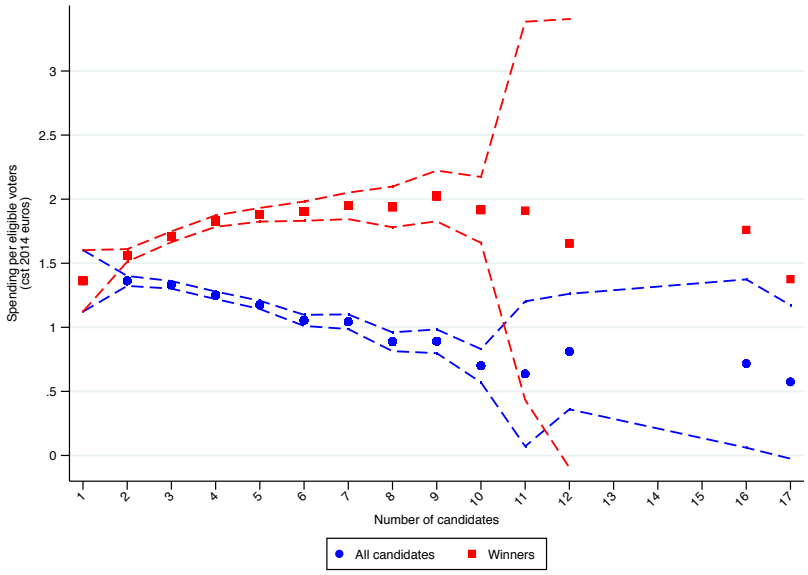
(a) Change in spending limits' rules



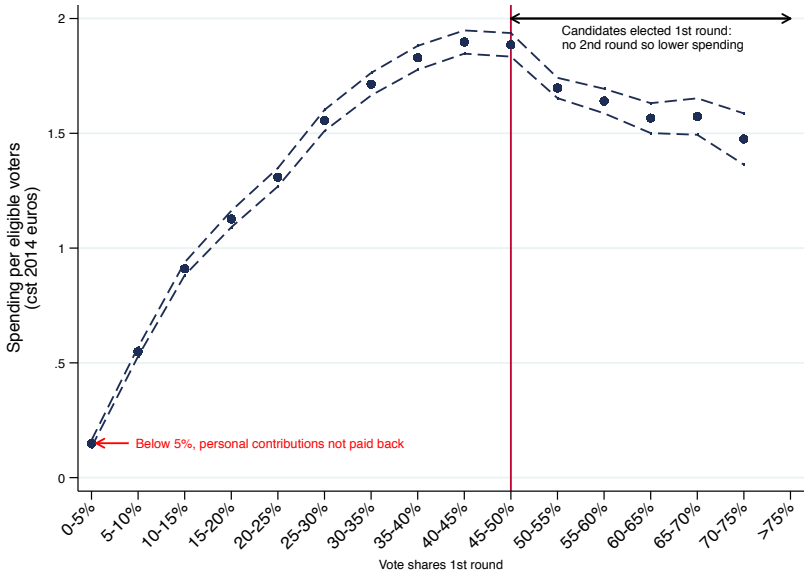
(b) Today's rules

Notes: The figures plot the spending limit depending on the electoral districts' population. In the upper figure 1a, we illustrate the decrease in the spending limit introduced by the law of 1995. Bottom figure 1b plots today's rules as they apply for municipal and legislative elections. Campaign finance legislations are described in details in the text and in the online Appendix.

Figure 1: Spending limits



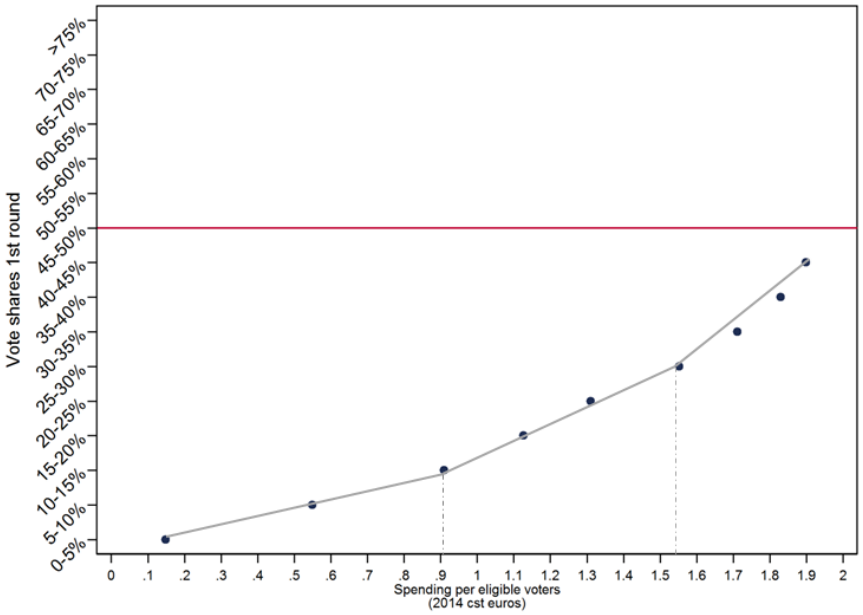
(a) Spending depending on the competitiveness of the election



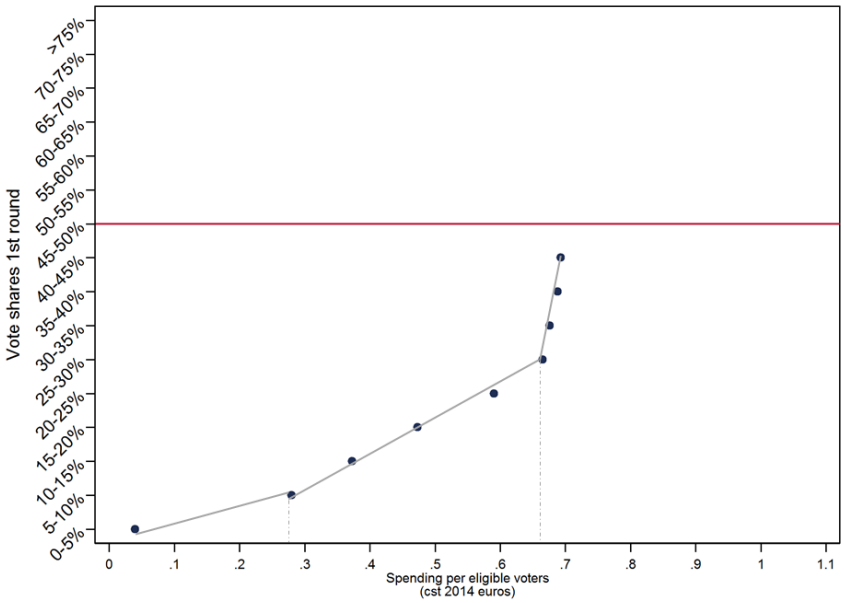
(b) Spending and first round vote shares

Notes: The figure plots the relationship between spending per eligible voters and electoral results for municipal elections. The upper figure 2a shows the average spending depending on the competitiveness of the election. The bottom figure 2b shows the relationship between spending and the vote shares obtained in the first round of the election.

Figure 2: Correlation between spending and vote shares: Municipal elections



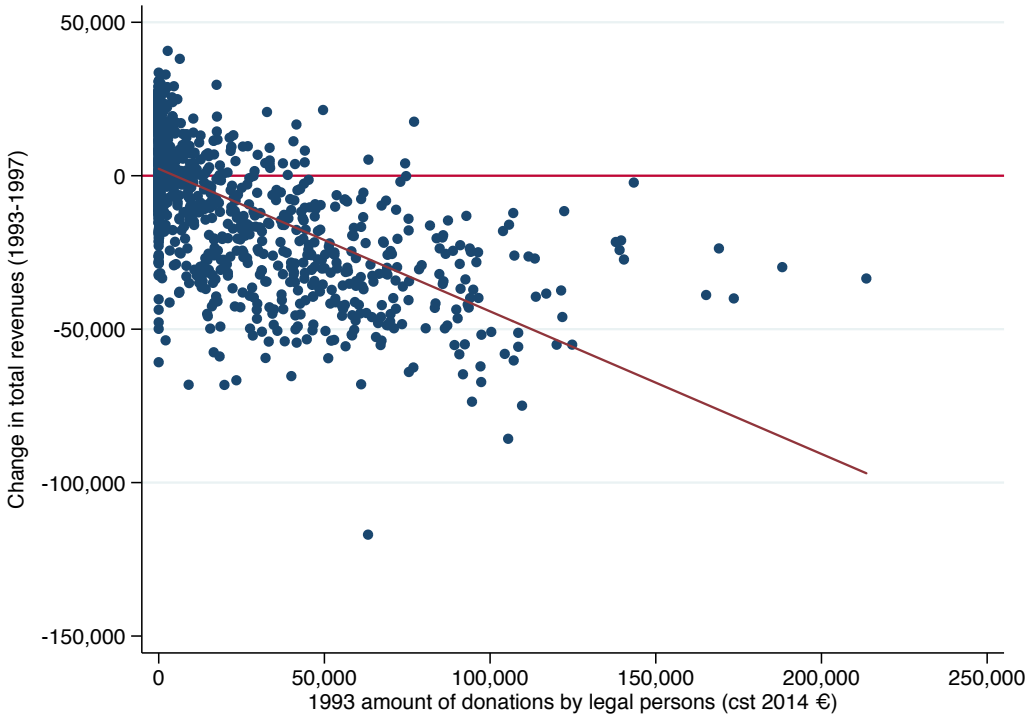
(a) Municipal elections



(b) Legislative elections

Notes: The figures plot the vote share with respect to the spending per voter. Candidates elected from the first round are excluded. Upper figure 3a plots this relationship for municipal elections. Bottom figure 3b plots this relationship for legislative elections.

Figure 3: Vote share with respect to spending per voter (without candidates elected in the first round)



Notes: The figure plots the correlation between the change in total revenues between 1993 and 1997 the donations from legal persons received in 1993.

Figure 4: Change in total revenues between 1993 and 1997 depending on the donations from legal persons received in 1993

Table 1: Summary statistics: Number of candidates running

(a) **First round**

	Number of candidates 1st round					
	Mean	Median	sd	Min	Max	N
Municipal elections						
1995	4.2	4.0	1.6	1	10	855
2001	3.7	3.0	1.7	1	10	811
2008	4.0	4.0	1.8	1	16	851
2014	4.3	4.0	1.7	1	17	842
Legislative elections						
1993	9.3	9.0	2.2	5	18	555
1997	10.9	10.0	3.4	4	29	554
2002	14.7	14.0	3.2	6	28	553
2007	13.4	13.0	2.0	7	21	555
2012	11.4	11.0	2.6	6	23	539

(b) **Second round**

	Number of candidates 2nd round					
	Mean	Median	sd	Min	Max	N
Municipal elections						
1995	3.0	3.0	0.8	1	5	503
2001	2.8	3.0	0.7	1	5	395
2008	2.7	3.0	0.7	1	6	350
2014	3.0	3.0	0.7	2	5	452
Legislative elections						
1993	2.0	2.0	0.3	1	3	482
1997	2.1	2.0	0.4	1	3	547
2002	2.0	2.0	0.2	1	3	499
2007	2.0	2.0	0.1	1	3	445
2012	2.0	2.0	0.3	1	3	506

Notes: The table presents summary statistics on the number of candidates running in municipal and legislative elections. The observation is an election/year. The upper Table 1a shows the results for the first round of the elections, and the bottom Table 1b for the second round.

Table 2: Summary statistics: spending

(a) **Municipal elections**

	Spending (cst 2014 €)					
	Mean	Median	sd	Min	Max	N
Total spending						
1995	22,509	14,325	29,899	1	426,652	3,313
2001	24,343	15,587	32,896	1	477,550	2,772
2008	21,616	14,197	28,511	1	393,380	3,126
2014	22,148	14,528	28,931	1	460,387	3,513
Per registered voter						
1995	1.24	1.15	0.89	0.00	4.80	3,199
2001	1.34	1.33	0.88	0.00	4.51	2,725
2008	1.12	1.12	0.74	0.00	3.97	2,924
2014	1.08	1.04	0.70	0.00	3.69	3,432
Incumbents						
1995	1.98	2.03	0.69	0.00	4.07	502
2001	2.00	2.03	0.65	0.17	4.44	438
2008	1.64	1.61	0.55	0.00	3.58	530
2014	1.65	1.64	0.52	0.14	3.61	623

(b) **Legislative elections**

	Spending (cst 2014 €)					
	Mean	Median	sd	Min	Max	N
Total spending						
1993	21,626	11,131	26,903	1	170,564	5,115
1997	15,115	2,186	19,404	1	75,226	6,034
2002	11,253	1,404	17,145	1	81,169	7,943
2007	10,531	536	16,500	1	76,281	6,920
2012	18,282	17,320	17,164	1	71,351	3,942
Per registered voter						
1993	0.33	0.16	0.42	0.00	4.08	5,111
1997	0.23	0.03	0.30	0.00	1.87	6,034
2002	0.17	0.02	0.26	0.00	1.58	7,943
2007	0.14	0.01	0.23	0.00	1.50	6,919
2012	0.23	0.20	0.22	0.00	1.29	3,942
Incumbents						
1993	1.02	0.99	0.38	0.24	2.25	342
1997	0.73	0.71	0.26	0.07	1.87	407
2002	0.67	0.63	0.25	0.05	1.53	380
2007	0.62	0.61	0.21	0.20	1.50	364
2012	0.53	0.51	0.19	0.12	1.25	362

Notes: The table presents summary statistics on spending by candidates running in municipal and legislative elections. The observation is an candidate/election. The upper Table 2a shows the results for municipal elections, and the bottom Table 2b for the legislative elections.

Table 3: Summary statistics: revenues per source

(a) **Municipal elections**

	Mean	Median	sd	Min	Max	Obs
All candidates						
Private donation (%)	15.7	5.9	22.2	0	100	12,499
Party contribution (%)	6.5	0.0	18.7	0	100	12,499
Personal contribution (%)	75.0	85.4	28.5	0	100	12,496
Kind contribution (%)	2.4	0.0	7.1	0	100	12,580
Other (%)	0.3	0.0	2.5	0	94	12,578
Only incumbents						
Private donation (%)	22.8	15.9	23.6	0	100	2,085
Party contribution (%)	6.2	0.0	15.1	0	100	2,085
Personal contribution (%)	69.1	73.5	26.0	0	100	2,085
Kind contribution (%)	1.5	0.0	3.5	0	41	2,098
Other (%)	0.2	0.0	1.6	0	35	2,098

(b) **Legislative elections**

	Mean	Median	sd	Min	Max	Obs
All candidates						
Private donation (%)	15.3	0.0	26.9	0	100	24,492
Party contribution (%)	28.3	5.1	37.5	0	100	24,492
Personal contribution (%)	50.5	55.9	41.6	0	100	24,477
Kind contribution (%)	3.4	0.0	13.0	0	100	24,499
Other (%)	0.8	0.0	5.0	0	100	24,500
Only incumbents						
Private donation (%)	26.7	18.7	26.1	0	100	1,857
Party contribution (%)	20.2	15.8	20.5	0	100	1,857
Personal contribution (%)	47.3	50.5	31.3	0	100	1,856
Kind contribution (%)	2.8	0.0	5.5	0	53	1,857
Other (%)	1.3	0.0	4.9	0	63	1,857

Notes: The table presents summary statistics on candidates revenues depending on the source of funding.

Table 4: Summary statistics: revenues per source depending on the political party

	(1) Left	(2) Right	(3) Difference
	mean/sd	mean/sd	b/t
% of total revenues			
Private donation (%)	15.8	21.2	5.5***
	(22.7)	(27.1)	(15.6)
Party contribution (%)	11.6	19.9	8.3***
	(23.4)	(30.8)	(21.4)
Personal contribution (%)	68.9	52.8	-16.1***
	(32.4)	(37.3)	(-32.9)
Kind contribution (%)	2.7	4.3	1.6***
	(8.6)	(14.4)	(9.5)
In euros			
Private donations (cst 2014 €)	4,672	6,521	1,848***
	(11,211)	(15,801)	(10)
Party contributions (cst 2014 €)	2,635	3,698	1,064***
	(8,084)	(8,978)	(9)
Personal contributions (cst 2014 €)	16,928	11,712	-5,217***
	(18,542)	(17,946)	(-22)
In kind contributions (cst 2014 €)	462	536	74***
	(1,336)	(1,734)	(4)
Total revenues (cst 2014 €)	25,508	23,996	-1,512***
	(27,284)	(30,928)	(-4)
Obs	9,636	15,302	24,938

Notes: The table presents summary statistics on candidates' revenues per source of funding depending on their political party. An observation is a candidate/election. The four municipal elections and the five legislative elections are included. Column 1 presents the results for candidates running for the left. Column 2 presents the results for candidates running for the right. In column 3, we perform a t-test on the equality of means (standard errors are in parentheses).

Table 5: Spending and first round vote share: controling for candidate fixed effects

	Municipal elections				Legislative elections	
	(1)	(2)	(3)	(4)	(5)	(6)
Spending per voter (log)	1.17***	1.61***	1.44***	1.17***	0.69***	0.39***
	(0.30)	(0.28)	(0.28)	(0.28)	(0.05)	(0.05)
Other candidates' spending (log)		-7.60***	-5.09***	-4.86***	-4.17***	-3.87***
		(1.00)	(0.78)	(0.77)	(0.54)	(0.50)
Incumbent			3.17***	3.95***	2.57***	3.88***
			(0.56)	(0.55)	(0.43)	(0.42)
Competitiveness (log)			-11.67***	-11.50***	-2.70***	-2.96***
			(0.98)	(0.95)	(0.61)	(0.56)
Election FE	Yes	Yes	Yes	Yes	Yes	Yes
District FE	No	No	No	No	No	No
Candidate FE	Yes	Yes	Yes	Yes	Yes	Yes
Party*Election FE	No	No	No	Yes	No	Yes
R-sq	0.89	0.92	0.93	0.94	0.93	0.95
Adjusted R-sq	0.80	0.86	0.88	0.89	0.88	0.91
Observations	5,441	5,364	5,364	5,363	9,424	9,424
Cluster (district)	846	845	845	845	555	555
Mean DepVar	33.6	33.1	33.1	33.1	16.1	16.1
Sd DepVar	20.4	19.9	19.9	19.9	15.9	15.9

Notes: * p<0.10, ** p<0.05, *** p<0.01. Models are estimated using OLS estimations. Standard errors are clustered at the electoral district level. All the estimations include candidate and election fixed effects. The dependent variables are in logarithm. Variables are described in more details in the text.

Table 6: Spending and first round vote share: depending on the sources of funding

	Municipal elections						Legislative elections	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Personal contributions pv (log)	0.03				0.16	0.08	0.25***	0.11***
	(0.14)				(0.10)	(0.10)	(0.04)	(0.03)
Private donations pv (log)		0.36***			0.46***	0.42***	0.20***	0.23***
		(0.12)			(0.10)	(0.09)	(0.05)	(0.05)
Party contributions pv (log)			0.05		0.10	0.13**	0.04	0.19***
			(0.09)		(0.06)	(0.06)	(0.04)	(0.04)
Other spending pv (log)				0.03	0.04	0.06	0.01	0.12***
				(0.08)	(0.07)	(0.07)	(0.04)	(0.04)
Other candidates' spending (log)					-5.05***	-4.83***	-4.31***	-3.96***
					(0.77)	(0.75)	(0.59)	(0.51)
Incumbent					3.17***	3.92***	2.68***	3.89***
					(0.57)	(0.55)	(0.43)	(0.42)
Competitiveness (log)					-11.86***	-11.69***	-2.74***	-3.04***
					(0.98)	(0.95)	(0.64)	(0.56)
Election FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
District FE	No	No	No	No	No	No	No	No
Candidate FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Party*Election FE	No	No	No	No	No	Yes	No	Yes
R-sq	0.89	0.89	0.89	0.88	0.93	0.94	0.93	0.95
Adjusted R-sq	0.80	0.80	0.80	0.80	0.88	0.89	0.87	0.91
Observations	5,434	5,434	5,434	5,727	5,332	5,331	9,421	9,421
Cluster (district)	846	846	846	846	845	845	555	555
Mean DepVar	33.6	33.6	33.6	33.6	33.1	33.1	16.1	16.1
Sd DepVar	20.4	20.4	20.4	20.5	19.9	19.9	15.9	15.9

Notes: * p<0.10, ** p<0.05, *** p<0.01. Models are estimated using OLS estimations. Standard errors are clustered at the electoral district level. All the estimations include candidate and election fixed effects. The dependent variables are in logarithm. Variables are described in more details in the text.

Table 7: Linear regression, spline regression and level-log regression for municipal elections

	(1)	(2)	(3)
expenditures per voters	4.22***		
	(0.85)		
expenditures per voter (log)		1.32***	
		(0.49)	
expenditures (< 1.03)			5.13***
			(1.86)
expenditures ($1.03 - 1.5$)			7.15***
			(2.08)
expenditures (> 1.5)			1.81
			(1.42)
Incumbent	2.41**	2.97***	2.38**
	(1.11)	(1.13)	(1.10)
Competitiveness (log)	-8.23***	-7.77***	-8.07***
	(1.50)	(1.58)	(1.50)
Other candidates spending per voter (log)	-1.39***	-1.37***	-1.40***
	(0.25)	(0.25)	(0.24)
Model	linear	level-log	linear spline
Election FE	Yes	Yes	Yes
District FE	No	No	No
Candidate FE	Yes	Yes	Yes
Party*Election FE	Yes	Yes	Yes
R-sq	0.97	0.97	0.97
Adjusted R-sq	0.83	0.82	0.83
Observations	10,627	10,627	10,627
Cluster (district)	864	864	864
Mean DepVar	20.6	20.6	20.6
Sd DepVar	13.6	13.6	13.6

Notes: * p<0.10, ** p<0.05, *** p<0.01. Models are estimated using OLS estimations. The first column presents the simple linear regression, the second column, for the sake of comparison, the level-log regression already displayed in previous table and the third column the spline regression. Standard errors are clustered at the electoral district level. All the estimations include candidate and election fixed effects. The dependent variables are in logarithm. Variables are described in more details in the text. Those regressions only for candidates elected directly in first round.

Table 8: Linear regression, spline regression and level-log regression for legislative elections

	(1)	(2)	(3)
expenditures per voters	6.24***		
	(1.40)		
expenditures per voter (log)		0.40***	
		(0.08)	
expenditures (< 0.28)			17.99***
			(3.37)
expenditures ($0.28 - 0.66$)			9.50***
			(2.84)
expenditures (> 0.66)			0.90
			(2.26)
Incumbent	4.15***	4.00***	3.87***
	(0.77)	(0.76)	(0.75)
Competitiveness (log)	-2.73***	-2.54***	-2.55***
	(0.89)	(0.93)	(0.88)
Other candidates spending per voter (log)	-1.75***	-1.72***	-1.63***
	(0.32)	(0.33)	(0.32)
Model	linear	level-log	linear spline
Election FE	Yes	Yes	Yes
District FE	No	No	No
Candidate FE	Yes	Yes	Yes
Party*Election FE	Yes	Yes	Yes
R-sq	0.98	0.97	0.98
Adjusted R-sq	0.86	0.85	0.86
Observations	29,682	29,682	29,682
Cluster (district)	572	572	572
Mean DepVar	8.5	8.5	8.5
Sd DepVar	11.6	11.6	11.6

Notes: * p<0.10, ** p<0.05, *** p<0.01. Models are estimated using OLS estimations. The first column presents the simple linear regression, the second column, for the sake of comparison, the level-log regression already displayed in previous table and the third column the spline regression. Standard errors are clustered at the electoral district level. All the estimations include candidate and election fixed effects. The dependent variables are in logarithm. Variables are described in more details in the text. Those regressions only for candidates elected directly in first round.

Table 9: Spending and first round vote share: multiple matches

	Municipal elections			Legislative elections		
	(1)	(2)	(3)	(4)	(5)	(6)
Incumbent spending per voter (log)	3.16	3.17	2.11	2.48	2.10	2.05
	(2.48)	(2.94)	(2.56)	(2.62)	(2.67)	(2.70)
Challenger spending per voter (log)	-2.06**	-1.76**	-1.68**	-1.37***	-1.33***	-1.30***
	(0.81)	(0.79)	(0.80)	(0.31)	(0.31)	(0.29)
Other candidates' spending per voter (log)		0.36	0.38		0.93	0.67
		(0.28)	(0.30)		(1.37)	(1.33)
Competitiveness (log)		1.12	1.36		2.69	2.94
		(3.83)	(3.88)		(2.83)	(2.84)
Election FE	Yes	Yes	Yes	Yes	Yes	Yes
Couple FE	Yes	Yes	Yes	Yes	Yes	Yes
Party FE	No	No	Yes	No	No	Yes
R-sq	0.92	0.92	0.93	0.93	0.93	0.93
Adjusted R-sq	0.75	0.75	0.75	0.80	0.80	0.81
Observations	1,054	966	966	1,781	1,781	1,781
Cluster (district)	522	497	497	512	512	512
Mean DepVar	72.3	73.4	73.4	81.1	81.1	81.1
Sd DepVar	15.2	15.2	15.2	17.4	17.4	17.4

Notes: * p<0.10, ** p<0.05, *** p<0.01. Models are estimated using OLS estimations. Standard errors are clustered at the electoral district level. All the estimations include pair of candidates and election fixed effects. The dependent variables are in logarithm. Variables are described in more details in the text.

Table 10: Summary statistics: Donations from legal persons

	Legislative elections (1993)					
	Mean	Median	P95	P99	Max	Obs
Donations from legal persons	8,558	1	58,229	103,571	350,355	5,143
Per registered voter	0.1	0.0	0.8	1.6	6.7	5,139
As a % of total revenues	16.2	0.0	88.5	100	1079	5,117

Notes: The table gives summary statistics. Year is 1993. Variables are values for the candidates running in the legislative election.The observations are at the candidate level.

Table 11: IV Estimation

(a) **First stage**

	(1) Change in expenditures	(2) Change in expenditures
93 legal persons' donations pv	-0.46***	-0.35***
	(0.03)	(0.03)
Other candidates spending per voter	-0.01	0.01**
	(0.01)	(0.01)
Observations	1,410	1,410
Cluster (district)	540	540

(b) **Second sate**

	(1) Change in vote shares	(2) Change in vote shares
Change in expenditures pv	3.58***	3.21***
	(0.80)	(0.95)
Other candidates spending per voter	-1.55***	-1.44***
	(0.13)	(0.12)
Extreme right		2.59***
		(0.61)
Extreme left		2.96***
		(0.38)
Left		8.35***
		(0.35)
Green party		0.85**
		(0.40)
Observations	1,410	1,410
Cluster (district)	540	540
F stat	245	140

Notes: * p<0.10, ** p<0.05, *** p<0.01.