

Is Private Campaign Finance a Good Thing?

Estimates of the Potential Informational Benefits

November 7, 2005

Abstract

What would happen if the current US campaign finance system, mostly based on private donations, were replaced by a public funding scheme of the same magnitude? It has been argued that public funding would deprive voters of useful information, but this can only be true if private donations are somehow targeted to ‘better’ candidates. Using a survey-based dataset about the effectiveness of state legislators in North Carolina, we ask what voters can learn about the characteristics of a legislator from the amount and pattern of contributions received during the campaign. The total amount that a candidate receives is a positive, but weak, predictor of that candidate’s effectiveness. However, the sum of contributions below a given threshold (\$2,000) is a *positive* and strong signal of effectiveness, while the sum of contributions above such threshold is a *negative* signal of effectiveness. We also find that only contributions from organizations

(rather than individuals, parties, or own money) convey a positive signal. In sum, our evidence contradicts the informational argument in favor of private funding when contributions are large or when they come from individuals and parties.

1 Introduction

Campaign finance regulation is a controversial topic. Supporters of stricter rules usually argue that the mixing of money and politics may cause a number of negative outcomes: politicians spend too much time fundraising, they modify their policy stance in order to attract donations, or they give preferential treatment to donors, thus skewing political outcomes in favor of the wealthy and the organized. Another charge is that campaign finance exacerbates the incumbency advantage, which in turn makes elected leaders less accountable to voters.¹

Instead, supporters of weak or no regulation usually make use of three lines of argument: a pragmatic one (it is better to have legal campaign contributions rather than illegal ones), a constitutional one (limits on campaign finance constitute a violation of the First Amendment on free speech),² and an informational one (campaign finance is an effective instrument to provide voters with useful political information). A forceful summary of the informational argument is provided by Bradley A. Smith, a commissioner with the Federal Election Commission:³

¹See Levitt [9] for a critical survey of campaign finance reform proposals.

²In *Buckley v. Valeo*, the U.S. Supreme Court distinguished between campaign contributions and campaign expenditures, ruling that limits on the latter do violate free speech and are therefore unconstitutional, while limits on the former are constitutional.

³Congressional testimony, February 27, 1997, House Subcommittee on the Constitution. Available

“[...] the fact of the matter is that, more than ever in American society, communicating in the political realm requires the expenditure of money. Money is not an evil in politics – it is a source of information to voters. Efforts to regulate the flow of money in politics over the past 20 years have done much more than money ever did to distort the political system and create a public distrust of government. It is now time to try a new approach – that is, it is time to deregulate politics. There is simply no a priori method to say what is fair or not fair – how much groups should be able to spend, or what kind of advocacy they can spend it on. The bureaucracy that has been established to regulate politics is stifling grassroots advocacy and political communication.”

The informational argument in favor of campaign finance is based upon two logical steps. First, as Bradley states, money must be “a source of information to voters.” But this is not sufficient, because private contributions could be replaced by a system of public funding in which candidates received the same amounts, subject to the same restrictions on spending (if any), that they would have received under the private system. This shift can potentially keep the source of information to voters but it would avoid the alleged negative side effects highlighted above. Many countries, especially in Europe, rely on generous public campaign financing. In the U.S. public financing plays a large role in presidential campaigns and in some states (e.g. Minnesota and

from: <http://www.cato.org/testimony/ct-bs022797.html>. Bradley joined the FEC in 2000.

New Jersey).⁴

A second logical step is therefore necessary to complete the informational argument: a given amount of private contributions must be more effective than the same amount of public funding in conveying information to voters. In a public system, the distribution of campaign funds among candidates could only be based on pre-determined criteria. Instead, with private contributions, the allocation of campaign money is at the discretion of donors. If donors are more likely to give money to high-quality candidates – whatever the definition of quality may be – then a private campaign finance system has a potential informational advantage over a public one. If, however, private contributions do not tend to go to better candidates, then shifting to a public funding system that provides the same overall amount of money would not deprive voters of useful information.

Hence, a key question to evaluate the strength of the informational argument is: What does the amount of campaign money that a candidate receives say about that candidate’s characteristics? In particular, do “better” candidates receive more money? One can also specialize the question to different classes of campaign funds. For regulatory purposes, it would be particularly interesting to know whether the informational value of campaign money varies according to the size of the donation made and to the characteristics of the donor.

⁴Obviously, replacing private funds with public funds would impose an additional tax burden. However, the overall amount of campaign spending in the U.S. is extremely low relative to the size of government (Ansolabehere, de Figuereido, and Snyder [1]).

In the North Carolina dataset we use, replacing all private contributions in a two-year electoral cycle would cost less than 0.01% of the aggregate income of North Carolina. See footnote 19 for details.

To the best of our knowledge, this set of empirical questions has not yet been addressed. The vast empirical literature on campaign finance has not attempted to estimate the informational benefit of campaign finance. It has mostly focused on the policy distortions caused by campaign finance (is there a link between private contributions and policy making?) and on the electoral effectiveness of campaign money (are candidates more likely to win if they receive more money?). Our empirical exercise is inspired by the theoretical literature on campaign finance with rational voters (e.g. Potters et al. [11], Prat [13], [14], Coate [4], [5], Gerber [6] and Ashworth [3]). This body of work identifies a trade-off between a policy distortion and an informational benefit, both due to the presence of private campaign finance. In equilibrium, high-quality candidates receive more contributions than low-quality candidates, and this money is used to provide voters with information about candidates' quality. However, candidates may need to distort their policy choices (away from voters' interests) in order to attract private donations. The overall welfare effect of allowing private donations depends on the relative magnitudes of the policy cost and the informational benefit. The goal of our paper is to provide a first assessment of the positive side of this trade-off.⁵

We use a dataset collected by the North Carolina Center for Public Policy Research (NC Center), which attempts to measure the “effectiveness” of North Carolina state legislators. The Center asks about 500 legislators, lobbyists, and journalists to assess

⁵In the conclusion, we will return in more detail to the connection between our findings and the existing literature on campaign finance.

the effectiveness of each legislator in the current legislative session. Every respondent is asked to provide a ranking of all legislators. Our data covers six electoral cycles, from 1990 to 2000. The North Carolina effectiveness score can be taken to represent the consensus view of political insiders on legislators' quality. We also have information on campaign contributions for every North Carolina legislator.

We put ourselves in the shoes of North Carolina voters who are trying to evaluate the effectiveness of their representatives, which we take to be proxied by the NC Center ranking. We suppose that voters do not observe the ranking directly, but they may have other kinds of information about incumbents. We consider two *classes of voters* and four *campaign finance information scenarios*. The two classes of voters differ according to their knowledge of biographical and professional information about the incumbent candidates. Uninformed voters are only aware of easily observable characteristics of representatives, i.e. their gender and their party affiliation, while informed voters, on top of gender and party affiliation, also know age, race, profession, tenure of their representatives, and whether the representative belongs to the majority party and/or holds key offices in the legislature. The campaign finance information scenarios are: (1) the voter has no information about campaign contributions; (2) the voter knows the total amount of contributions that each representative receives; (3) the voter also knows what amount comes from small contributions (less than \$2,000) or large (over \$2,000); (4) the voter knows the source of contributions received (candidate's own money, party money, funds from organizations, funds from individuals).

We analyze every combination of voter types and campaign finance information

scenarios, and we obtain four main results. First, the total amount of contributions that a candidate receives is a useful predictor of the candidate's effectiveness ranking both for the Senate and the House, but only in the eyes of uninformed voters. However, this effect is small. To increase her ranking (in the eyes of uninformed voters) by one percentage point, a House representative must spend an additional \$16,000 (the median amount of contributions received by a House representative is just \$24,600). The equivalent figure is around \$32,000 for a senator (median amount of contributions: \$37,500). On the other hand, in the case of informed voters, the correlation between effectiveness and total contributions received, albeit positive, is not statistically different from zero.

Second, the ability to disaggregate between small and large contributions (scenario 3) is particularly useful, for both chambers and for both classes of voters. The informational benefit of moving from scenario 2 to 3 tends to be greater than the informational benefit of moving from scenario 1 to 2. Small contributions are a strong *positive* predictor of effectiveness: House representatives only need an additional \$5,500 in small money to increase (again in the eyes of uninformed voters) their ranking of one percentage point. Senators only need \$6,100. Instead, the striking result is that large contributions are *negatively* related to candidate's effectiveness. This is true for both chambers and for all classes of voters. Only in the case of an uninformed voter trying to evaluate the effectiveness of his House representative, is the correlation with large contributions still negative, but not significantly different from zero.

Third, it is extremely useful to disaggregate total contributions according to their

source (scenario 4). In particular, contributions from organizations (both profit and nonprofit ones) are strongly and *positively* correlated with legislator effectiveness. This holds for both chambers and for all classes of voters. In the eyes of uninformed voters, House representatives only need an additional \$2,400 in funds from organizations in order to increase their ranking by one percentage point. The corresponding figure for Senators amounts to \$3,400. On the other hand, the effectiveness of a representative in the House is *negatively* related to the amount of donations from party sources and from private individuals, with the former having a larger effect than the latter. In general, these negative correlations are not statistically significant in the case of Senators.

Fourth, the explanatory power of campaign finance information is lower than the explanatory power of the other forms of voter information that we consider. The informational value of passing from the uninformed voter case to the informed voter case (i.e. learning about the candidate's race, age, tenure, profession, key offices held, and whether she belongs to the majority party) appears to be larger than any informational benefit that can be gained through campaign finance information.

The results about the size and the source of campaign funds are clarified by partitioning total contributions along these two classification grids at the same time, i.e. by looking at small and large contributions from the four different sources mentioned above. It turns out that *small* contributions from organizations are strongly and positively correlated with legislator effectiveness for both chambers and both classes of voters, while *large* contributions from organizations are positively and significantly correlated with legislator effectiveness only in the eyes of uninformed voters in the

House. On the other hand, both small and large contributions from political parties are significantly and negatively correlated with effectiveness in the case of the House, while for the Senate this holds only for large contributions. Finally, for both chambers, only large contributions from private individuals are significantly and negatively correlated with legislator effectiveness.

Our empirical exercise on the informativeness of campaign finance is based on the likely unrealistic assumptions that voters are able to: (1) observe the amounts of contributions that all incumbent candidates receive, and in some cases the actual sources of these contributions; and (2) use that information efficiently to make inferences about candidates' effectiveness. This assumption stacks the deck in favor of an informational role for private campaign finance. If voters only observed imperfect signals of contributions (such as the number of TV ads they see) or if they were boundedly rational in the way they process this information, then we should expect the amount of information generated by private campaign spending to be lower than under our assumptions. In this sense, our estimates should be seen as upper bounds on the informational value of private campaign finance.⁶

The main overall lesson of our exercise is that, at least according to our evidence, certain types of private funding provide no informational benefit (and perhaps an informational cost). This is true for large contributions and for contributions from organizations, individuals, and own money. For these types of funds, there appears to

⁶Of course, one should also keep in mind that our results may underestimate the informational benefit because our measure of effectiveness may contain noise and because voters may value other aspects of a candidate's personality, such as morality or ideology.

be no trade-off between informational benefit and policy cost. It is hard to see why one would not want to replace these funds with public funds of the same amount.

The paper is organized as follows. Section 2 discusses our data sources and Section 3 reports the results of our analysis. Section 4 relates our findings to the existing literature and concludes

2 Data

2.1 Some institutional background

The North Carolina legislature (the General Assembly) consists of two chambers: a House of Representatives with 120 members and a Senate with 50 members. All members are elected every two years, for two-year terms. The General Assembly is typically described a hybrid -a partially professional, partially amateur legislature⁷. In 2001 each member received a salary of \$13,951 plus a \$104 per diem for living expenses. Legislative leaders earned substantially more -*e.g.*, the Speaker of the House was paid a salary of \$38,151 together with an expense allowance of \$16,956.

Regular legislative sessions are biennial and convene in January following each election. The Democratic Party dominated the North Carolina General Assembly until recently. During the 1990-1999 period Democrats held 61% of all state legislative seats. However, in 1994 Republicans won control of the state House for the first time

⁷In fact, in 1986-88 the North Carolina legislature was ranked 22nd by Squire's [15] index of legislative professionalism.

in 100 years. They won again in 1996, but then lost control in 1998.

Internally, the legislature is mainly organized along party lines. The majority party controls all committee chairs⁸, but some vice-chairs and subcommittee chairs are left to the minority. Electorally, party organizations in North Carolina are stronger than in most other southern states, but still rank just below the U.S. average (see, e.g., Cotter, et al., 1984). Finally, Morehouse (1981) classified North Carolina as a state in which pressure groups are strong.

2.2 Data on Legislator Effectiveness

As mentioned in the introduction, we take the data on legislator effectiveness from the North Carolina Center for Public Policy Research (NC Center), an independent non-profit organization. At the end of each regular legislative session, the NC Center asks state legislators, lobbyists and legislative liaisons, and capital news correspondents to rate each member of the General Assembly according to their “effectiveness”. The NC Center has continuously conducted this survey since 1977. The sample of insiders being interviewed comprises all 170 legislators, all lobbyists registered in the state capital and residing in North Carolina (250-325 lobbyists), and all journalists who regularly cover the General Assembly (35-45 journalists): this amounts to a total sample size of 475-550. Every two years The NC Center publishes a handbook (*Article II: A Guide to the N.C. Legislature*), which contains the ranking of legislators, as derived from these

⁸Apart from the question on legislator effectiveness, in its survey the NC Center asks respondents to name the five or six “most powerful” committees in both houses. Such list almost always included Appropriations, Finance, Judiciary I, Rules, and Education (the latter one as of 1989).

ratings.

Here follows a quote from the handbook, which well explains how -according to the NC Center- respondents should interpret the effectiveness concept:

“[...] Ratings were to be based on their participation in committee work, their skill at guiding bills through floor debate, their general knowledge and expertise in special fields, the respect they command from their peers, the enthusiasm with which they execute various legislative responsibilities, the political power they hold (either by virtue of office, longevity, or personal attributes), their ability to sway the opinion of fellow legislators, and their aptitude for the overall legislative process.” (From *Article II: A Guide to the 1991-1992 N.C. Legislature*, p. 212.)

Similarly to what done by Padró i Miquel and Snyder [10], we invert the original ranking measure, so that higher values of our dependent variable correspond to greater effectiveness. Also, in order to make results more easily comparable across the two chambers, we normalise our effectiveness measure on a common 0-100 scale.

2.3 Data on campaign finance

We match the effectiveness measure with data on campaign finance contributions received by legislators running for reelection to the General Assembly. Such data comes from the North Carolina State Board of Elections⁹. Here, detailed pieces of information

⁹See the URL: <http://www.sboe.state.nc.us/>, under the “data and statistics” heading.

regarding contributions received by candidates running for the General Assembly are available in electronic format, beginning with the 1990 elections.

We aggregate this data to create a set of campaign finance figures for each candidate in each election year. All figures are in real terms, i.e. they are translated into 2000 dollars. First, we calculate the total amount of contributions received by candidate j in election t . To provide a cleaner measure of this, which should be independent of the timing of received contributions, we exclude all bank transactions from the computation, in particular interest rate payments.

Second, we calculate the total amounts of contributions which are respectively above and below a fixed threshold of \$2,000¹⁰. When doing this, we take into account the fact that some contributors may in fact donate in separate installments: if the total amount donated to candidate j by contributor i for election t is above the threshold, our procedure classifies this as a large contribution, even if each installment, separately considered, is below the \$2,000 threshold.

Third, we distinguish total campaign finance contributions according to their source. We consider four categories of donors: the candidate herself, her political party, organizations (both profit and nonprofit ones) and individuals.

Table 1 presents some summary statistics about this campaign finance data. We separately show figures about the Lower House and the Senate. As we are matching campaign finance data with information on legislator effectiveness, the tables refer to *incumbent* candidates, i.e. those for which an effectiveness score is available. In all

¹⁰Varying this threshold (\$1,500, \$2,500 and \$3,000) indeed produces qualitatively similar results.

cases (total contributions, small and large contributions, total contributions classified according to the source) and for both chambers the distribution of funds received by candidates is positively skewed, as witnessed by the fact that for each category the average contribution is larger than the median one. The median amount of total contributions to an incumbent candidate in the House is about \$24,600, while the average one is about \$47,000. The median sum of contributions received by an incumbent candidate in the Senate is slightly below \$37,500, with the average one almost reaching \$77,000.

2.4 Other data

When constructing the information set enjoyed by different class of voters, we make use of data on gender, age, race, party affiliation, tenure of incumbent legislators, and key offices held by them. These pieces of information are taken from the NC Center's *Article II* guides and various editions of the *North Carolina Manual*. In particular, the tenure variable is defined as the number of terms a given representative has continuously served in the House or Senate. The count restarts in case a representative switches from the Lower House to the Senate (or vice versa).

We use an ordinal variable to measure the relevance of the posts held by a candidate in the current legislature. This variable takes on a value of five if the representative is Speaker or Speaker *pro tempore*, a value of four if she is President *pro tempore* or Majority Leader, three if she is Minority Leader, two if she is Majority or Minority

Whip, one if she is chair of some top committee, and zero otherwise.

3 Results

We analyze both chambers of the North Carolina State Assembly. The basic specification is as follows:

$$R_{jt} = \boldsymbol{\alpha}' \mathbf{c}_{jt} + \boldsymbol{\beta}' \mathbf{x}_{jt} + \mu_j + \nu_{jt}$$

where R_{jt} is the normalised effectiveness ranking given to the incumbent candidate j at time t (regarding her performance during the past legislature), \mathbf{x}_{jt} is a vector of candidate characteristics that possibly vary across time, μ_j is an individual effect and ν_{jt} is an idiosyncratic error. The focus of our analysis is on \mathbf{c}_{jt} , which is a vector containing information on contributions received by candidate j during the electoral campaign taking place at time t . We consider four different scenarios regarding the campaign finance information available to voters:

1. No information about campaign contributions;
2. Total amount of contributions received by each representative;
3. Total amount of small contributions (less than \$2,000) and total amount of large contributions (at least \$2,000);
4. Total amount of contributions disaggregated by source (own money, party funds, funds from organizations, all other contributions).

The exact form of the \mathbf{c}_{jt} vector varies across these scenarios.

Our results, based on a random effects specification, are shown in Tables 2 and 3. Table 2 corresponds to the case of an uninformed voter - i.e. a voter who observes only gender and party affiliation of representatives. Table 3 is for the case of an informed voter - i.e. one who observes what the uninformed type knows, plus age, race, profession¹¹, tenure, key offices held in the past legislature, and whether the representative's party had the majority. In both tables we present estimates for both the Lower House and the Senate.

Rather than discussing each regression individually, it is more instructive to compare the role of the same variables across treatments. First, consider the coefficient on total campaign contributions in Scenario 2. For both chambers and both classes of voters, the estimated coefficient is positive. However, its strength decreases when voters become more informed. It is also lower for the Senate. For informed voters in both chambers, the coefficient is not significantly different from zero.

The estimates imply that an increase of \$1,000 in the campaign chest of a House representative would lead uninformed voters to predict an increase of 0.062 percentage points in her ranking. Put differently, a House representative who wishes to go up one percentage point in the ranking of uninformed voters must find an additional $\frac{\$1,000}{0.062} = \$16,100$. To put this in perspective, the median amount of contributions received by a House representative is \$24,600. The equivalent figure for a senator is

¹¹In practice, it turns out that the key distinction is whether the representative is a lawyer or not. We thus simplify the exposition by replacing profession with a dummy variable for lawyers.

\$32,250 (and the median contribution amount is \$37,500).

When we move to scenario 3, the coefficient on small money is significant at the 1% level for both classes of voters and for both chambers. As before, its estimate is higher for uninformed voters and for the House. Now, money is much more informative than in scenario 2. A House representative who wishes to go up a percentage point in the ranking of uninformed voters must find only an additional \$5,500 in small money (the median amount of small money received by a House representative is \$21,000). The equivalent figure for a senator is \$6,100 (median amount of small money: \$32,000). Even in the case of informed voters is the magnitude of the correlation sizeable: in order to increase her effectiveness ranking by one percentage point, a House representative needs an additional \$9,200 in small money, while a Senator would need almost the same amount, i.e. \$9,500.

Instead, the coefficient on large money is negative (and significant for all cases except uninformed voters in the House). The point estimate of the amount of large money needed to make the ranking of a representative go *down* of a percentage point ranges from \$12,000 (for an uninformed voter in the Senate) to \$23,800 (for an informed voter in the House).

In scenario 4, there is a strong and positive correlation between the ranking measure and the amount of funds from organizations. Such correlation is statistically significant at the 1% level for all class of voters and both chambers, and the estimated coefficient is large in magnitude. If one focuses on uninformed voters, it is sufficient for a House representative to raise an additional \$2,400 in funds from organizations in order to

increase her ranking by one percentage point (the median amount of funds from organizations received by House representatives is \$13,000). The corresponding figure for a Senator is \$3,400 (median amount of organizations' money: \$19,800). Even in the case of an informed voter is the correlation estimated to be large: the necessary increase in organizations' funds to obtain a percentage point increase in the effectiveness ranking amounts to \$5,700 and \$6,000, in the House and in the Senate respectively.

Party funds are significantly and negatively correlated with legislator effectiveness for both classes of voters in the Lower House, while such correlation is mildly statistically significant for uninformed voters in the Senate. The point estimate of the amount of party funds needed to make the ranking of a House representative go *down* of a percentage point ranges from \$3,000 (uninformed voters) to \$5,600 (informed ones). Similarly, contributions from individuals are significantly and negatively correlated with legislator effectiveness for both classes of voters in the House, while the correlation, albeit negative, is never statistically significant in the case of Senators. The size of the correlation is smaller than the one found for party money: in the eyes of uninformed voters, the amount of private individuals' money needed to decrease the ranking of a House representative by one percentage point amounts to \$19,200¹².

Finally, the coefficients on own funds are not significantly different from zero in any of the four cases being studied.

¹²As more thoroughly discussed in section 3.1, it turns out that are *large* (i.e. above \$2,000) contributions from parties and private individuals significantly and negatively correlated with effectiveness for both chambers and both classes of voters.

A clear pattern has emerged. Total contributions have a mild positive relation with effectiveness, which is the composition of two effects with opposite signs. Small contributions have a strong positive effect, while large contributions have a negative effect. The mild positive relation of total contributions with effectiveness can be also analysed by looking at the partition of funds according to the source: funds from organizations are strongly and positively correlated with the effectiveness measure, while funds from political parties and private individuals are negatively correlated, significantly so for the House.

How much information on effectiveness do voters gain when they have campaign finance information? Table 4 reports 16 R-squared values (the figures written in large, regular characters) corresponding to the two classes of voters and four campaign finance information scenarios for the House and for the Senate. Obviously, the (unadjusted) R-square coefficient increases when one adds information, either by looking at a more informed class of voters within the same scenario or by examining a more informative scenario for the same class of voters. It must be however noted that scenario 3 is not nested within scenario 4; on the other hand, scenario 2 is nested within both scenario 3 and 4 (which correspond to alternative partitions of total contributions received by candidates).

Every shift downwards or rightwards in Table 5 corresponds to adding one or more right-hand variables to the previous regression, again with the exception of the move from scenario 3 to scenario 4. Hence, it is possible to perform an F-test between each pair of neighboring cells, and between scenario 2 and scenario 4. The figures

written in small italic font correspond to P-values for the F-statistics computed for a pair of neighboring cells. For example, look at informed voters in the Senate and compare scenario 2 ($R^2 = 52.49\%$) and scenario 3 ($R^2 = 55.29\%$). The P-value of the F-statistics is 0.001. Regarding the P-values on the left of scenario 4, they correspond to the F-tests between scenario 2 and 4.

Table 4 highlights several patterns. Firstly, moving between the two classes of voters is, in general, more useful from an informational viewpoint than moving between campaign finance information scenarios. All 8 F-statistics for vertical comparisons are highly significant, while some of the 12 F-statistics for horizontal comparisons are not. The most powerful informational treatment appears to be the shift from uninformed to informed voters. This is particularly striking in the House, where in scenario 1, the R-squared for uninformed voters is 3.57% while that for informed voters is 43.53%. Campaign finance information can make up for only a small fraction of this gap: the R-squared for uninformed voters in scenario 4 is 20.89%. The patterns are similar in the Senate, but less pronounced. These findings put an upper bound to the importance of campaign finance as an informational channel.

When we focus on horizontal comparisons, we notice that the difference between scenarios 2 and 3 is always significant at the 1% level. The difference between scenarios 2 and 4 is always statistically significant, at the 1% level for both classes of voters in the House and uninformed ones in the Senate; it is significant at 5% level for informed voters in the Senate. Instead, the difference between scenarios 1 and 2 is not significant for informed voters in both chambers.

To sum up, the overall picture emerging from Table 4 is: (1) campaign finance information is useful, but less so than other (basic) types of information; and (2) the most informative part of campaign finance is the disaggregation of total contributions according to the size and the source.

Tables 2, 3 and 4 are based upon a random effects specification. Tables 6 and 7 show results for uninformed and informed voters respectively (i.e. they parallel Tables 2 and 3), but adopt a fixed effects design. The signs and significance levels of coefficients are broadly similar across the two designs.¹³ In addition, we examined the purely cross-sectional variation in the data using the “between” estimator, and find similar patterns but with even larger coefficients. In the interest of space we do not report these results, but they are available upon request.

3.1 Size and source of contributions compared

As discussed above, the partition of total contributions according to size and source gives voters a valuable amount of information about legislator effectiveness. Two related questions stem from this finding:

1. What is the relationship between the results about the size of contributions (scenario 3) and the ones about the source thereof (scenario 4)?
2. Which of the two partitions provides voters with “more” information about the unobserved ranking of legislators?

¹³The only notable exception occurs with organizations’ money for informed voters in the Senate, which is no longer statistically significant with a fixed effects specification.

In order to answer these questions, we classify total contributions according to the size *and* the source at the same time (i.e. we obtain eight campaign contributions figures for each incumbent candidate in each year). Again considering both classes of voters and both chambers, we re-run the regressions with this new scenario about campaign finance information. Results are presented in Table 5, where each column corresponds to a different class of voters in the Lower House and in the Senate.

A consistent pattern emerges here, which helps explain the results regarding scenario 3 and scenario 4. Firstly, small contributions from organizations are strongly and positively correlated with legislator effectiveness. For both classes of voters in the House and for uninformed ones in the Senate the coefficients are significantly different from zero at the 1% level, and the size of the effect is remarkably large. An incumbent candidate in the House, who wants to increase her ranking by one percentage point in the eyes of uninformed voters, needs only an additional \$1,800 of small contributions from organizations. An additional \$3,800 is needed to achieve the same one percentage point increase in the ranking if one considers the perception of informed voters. Regarding the Senate, the needed increase in small money from organizations ranges from \$3,100 (uninformed voters) to about \$7,500 (informed ones). In fact, *large* contributions from organizations are significantly (and positively) correlated with legislator effectiveness -at the 10% level- only for uninformed voters in the House.

Turning to the other contribution sources, we find that in the House both small and large funds from political parties are negatively related to legislator effectiveness, and significant at the 5% level or better. The magnitude of the effect is pretty large:

in the case of uninformed voters, a one percentage point increase in the effectiveness ranking would be achieved by a reduction of \$1,400 in small party contributions. On the other hand, only *large* contributions from individuals are significantly (and negatively) correlated with the ranking measure.

In the Senate, only *large* contributions from political parties are significantly correlated with legislator effectiveness, with a negative sign. The fact that in the Senate contributions from private individuals are not significantly correlated with legislator effectiveness finds an explanation when looking at the double partition according to size and source. Indeed, large contributions from private individuals are negatively and significantly correlated with our measure of quality, while small contributions from the same type of source are positively and significantly correlated with effectiveness.

Which partition of total contributions is more valuable to voters from an informational standpoint? We answer this question by performing two separate batteries of F-tests and reporting the associated P-values in Table 5. Firstly we test the hypothesis that the coefficients of all sources of small and large contributions respectively are statistically the same, i.e. they vary according to the contribution size and not according to the source. Secondly we test whether the partial correlations (with legislator effectiveness) of the different sources of funds do not depend on the size thereof. In the case of the Lower House, both the size and the source partition of total contributions convey valuable information to voters, as witnessed by the small P-values of the four F-tests. In the Senate as well both size and source of contributions convey valuable information, even though the P-values of the F-tests are systematically larger than in

the House.

4 Discussion and conclusions

One of the main challenges in the theoretical campaign finance literature is to provide a convincing theory of why and how campaign spending influences voting decisions (see Prat [12] for a survey). Why should a voter be more likely to vote for a candidate who spends more money? There are two main strands of literature, both of them built on an informational story.

Some authors (Potters et al. [11], Prat [13], [14]) focus on the signalling role of campaign finance. For instance, Prat [13] assumes that candidates are characterized by a non-directly observable quality parameter. First, lobbies receive a signal about candidates' quality and choose how much money to contribute. Later, voters may observe a signal about candidate quality as well. In equilibrium, lobbies are more willing to contribute to a candidate associated to a positive signal, because voters are likely to receive a positive signal as well. But then, in equilibrium the amount of money that a candidate receives reveals the lobbies' view about that candidate's quality. A rational voter is more likely to cast her ballot in favor of a candidate who receives a large amount of contributions.¹⁴

The first approach is based on the idea that lobbies' signals are non-verifiable.

¹⁴One may think that this signalling mechanism imposes an implausibly high demand on the rationality of the electorate. However, voters need not understand the model or follow this line of reasoning in a conscious way. For the signalling equilibrium to work, voters just have to respond to advertising in a positive manner.

The only credible way to transmit them to voters is by money burning. Other authors (Coate [4], [5] and Ashworth [3]) instead note that certain types of information, such as the candidate's record or characteristics, are verifiable. A candidate can make voters aware of his verifiable attributes (or his opponent's attributes) through advertising. Candidates with positive verifiable characteristics stand to gain from advertising and are more willing and able to receive money from lobbies. This approach also entails a potential policy distortion due to the candidates' desire to secure contributions.

Both classes of models predict that in equilibrium higher-quality candidates will receive more money than low-quality candidates. Hence, our exercise can be seen as a reduced-form exploration of this key prediction.

Could we distinguish between these two informative-advertising approaches? In the second approach, campaign spending conveys information only about verifiable candidate characteristics. Hence, if one controls for all relevant, observable characteristics, there should be no remaining correlation between candidate expenditure and candidate quality. In our case, this means that the coefficient of a regression of legislator effectiveness over campaign receipts should be zero for an informed voter. This is indeed the case for the overall amount of contributions. However, our data also reveal that the coefficient on contributions is positive and significant, even when voters are highly informed, for certain sources of contributions. This seems to indicate that the potential information that can be communicated is not limited to the observable characteristics that we consider.¹⁵

¹⁵A recent paper by Vanberg [16] studies, both theoretically and empirically, the opportunity of

In terms of the existing empirical literature, there are three main features of candidates that have been found to be correlated with the amount and pattern of campaign contributions received: incumbency, institutional power and legislative entrepreneurship.

First, an important and well-known regularity is that incumbent candidates on average receive more campaign contributions than challengers (see Jacobson [7]). This fact is typically coupled with the finding that the correlation between contributions received and electoral success is positive, significant and robust for challengers only¹⁶.

Second, regarding incumbents, Ansolabehere and Snyder [2] use PAC contributions as a metric of institutional power, both between different political institutions and between members of the same institution. The idea is that interest groups, differently from other groups of donors, primarily act as investors when financing politicians' campaigns, as they expect services and/or policies in exchange for their contributions. Hence interest groups would tend to donate more to politicians that have greater influence over the process (possibly) leading to the approval and enactment of these desired policies and services. They find for example that incumbents in the U.S. House systematically receive more PAC contributions when moving onto powerful committees

capping the size of the contribution that an individual can make. Every candidate is assumed to be characterized by a two-dimensional type: one dimension is verifiable and the other is not. On the unverifiable dimension, there is a conflict of interest between voters and a lobby. It is then shown that a candidate who receives large contributions is more likely to have negative hidden characteristics. The model predicts that candidates that rely on large contributions (controlling for the total amount of contributions they receive) have less electoral success. However, data on the US House of Representatives from 1990 to 2002 indicate no evidence of such a negative relation.

Vanberg's set-up is consistent with our observation that small money is positively correlated with effectiveness and large money is negatively correlated.

¹⁶See Jacobson [8].

like Ways and Means or Energy and Commerce. Our findings - in particular, the positive correlation between organizations' donations and legislator effectiveness - are consistent with their results.

Third, Wawro [17] analyses the link between PAC contributions and legislative "entrepreneurship" in the U.S. House. He defines an index of entrepreneurship using bill sponsorship and co-sponsorship behavior. He finds no statistically significant relationship between this index and the total amount of PAC contributions received by a representative. In contrast, we find a strong and positive relationship between incumbents' effectiveness and campaign funds from organizations. How can we reconcile these two sets of results? One possible explanation is that the index used by Wawro is a quite noisy measure of legislator quality. Another possibility is that there is much less variation in quality across incumbents in the U.S. House than in the North Carolina General Assembly. This is plausible because the U.S. House is a highly professional legislature, while the NC General Assembly is not.

While the variation across incumbents in the U.S. House might be small, scholars typically argue that the variance in quality across *non-incumbents* is large. Interestingly, when we look at non-incumbents for the U.S. House, we see a strong relationship between contributions received and their quality, as proxied for example by their previous officeholding. Averaging over the period 1978-1998, non-incumbents who held previous office (either as state legislators or statewide executive officers) received more than twice as much in total contributions as those who did not. The difference is even

starker - a three to one ratio - if one considers PAC contributions only.¹⁷

How do our findings relate to the informational argument invoked by opponents of campaign finance regulation? The amount of money that a candidate receives appears to be increasing in positive personal characteristics of the candidate, even though this effect is quite small. Hence, the informational argument appears to be valid but weak. However, more importantly, our results indicate that the informational benefits are mostly due to small contributions, and contributions from organizations, if one considers the partition according to the source. Large contributions are a confounding factor, since they are negatively correlated with candidate quality. This is also true for funds from political parties and private individuals, at least in the Lower House, and large contributions from parties and individuals in the Senate.¹⁸ Since most of the restrictions on campaign donations that have been introduced or proposed in the U.S. mainly apply to large contributions, our findings put into question the validity of the informational argument as a serious objection to such restrictions. On the basis of our analysis, it is quite difficult to argue that replacing large contributions with state funds -which are assigned according to pre-determined criteria- would deprive voters of useful information. If anything, eliminating the noise created by large contributions

¹⁷In 1992 dollars non-incumbents with previous officeholding received on average \$460,000 in total contributions, as compared to an average of \$240,000 for non-officeholders. The corresponding figures for PAC contributions are \$130,000 and \$40,000. Jacobson [7] reports similarly large differences for the 1972 to 1978 period.

¹⁸Moreover, it is *small* contributions from organizations that drive the positive correlation of interest group money with legislator effectiveness. Large contributions from organizations are positively and significantly correlated with legislator effectiveness only in the case of uninformed voters in the Lower House.

could increase the informative value of small ones.¹⁹

How can one interpret the results about the different sources of contributions? One possibility is that the organizations donating small funds to candidates know approximately as much about these candidates as the group of political insiders interviewed by the NC Center. Regarding the negative correlation of (large) party funds with legislator effectiveness, one plausible explanation is the following: in order to win as many seats as possible, political parties help their weaker candidates - i.e. those who have low effectiveness rankings and are unable to raise enough money from alternative sources - transferring additional funds to them. The negative correlation of funds from private individuals, and especially large ones, does not immediately find an intuitive political economy explanation²⁰.

We already highlighted the limitations of our approach in the introduction. Given these caveats, a natural question arising here is to what extent our findings about the relationship between campaign finance and legislator effectiveness in the North Carolina legislature would apply to other legislative bodies. Our conjecture is that other partially professional, partially amateur state legislatures could display the same type of correlations, with the pattern of campaign money being capable of discriminating

¹⁹Also, from the North Carolina taxpayer's point of view, public funding of state legislative campaigns would not be terribly expensive. In 2000, the total amounts of large contributions accruing to candidates in the Lower House and in the Senate were around \$5,600,000 and \$4,500,000 respectively. The corresponding figures for total contributions were \$12,000,000 and \$9,000,000. Since North Carolina total personal income in 2000 was \$218,668 million (BEA figure), replacing large contributions with public funds would cost less than 0.005% of total personal income. Replacing *all* private contributions would still cost less than 0.01% of personal income.

²⁰One suggestion (which deserves further analysis) is that many of those who give large individual donations to a candidate are actually friends or relatives. Alternatively they might be members of the candidate's political party, giving with a motive similar to that just described for political parties.

professional incumbents from amateur ones. We are less sure about the applicability of these results to more thoroughly professional state legislatures (e.g. California or New York). As we noted above, our analysis might apply to non-incumbent candidates for the U.S. Congress. By extension, it might also apply to non-incumbents in professional legislatures. Regarding incumbents, the pattern of contributions - classified according to size and/or source - might provide voters with relevant informational cues about legislator effectiveness even in professional legislatures.

References

- [1] Stephen Ansolabehere, John M. de Figueiredo, and James M. Snyder, Jr. “Why Is There So Little Money in U.S. Politics?” *Journal of Economic Perspectives*, Winter 2003.
- [2] Stephen Ansolabehere and James M. Snyder, Jr. [1999]. “Money and Institutional Power”. *Texas Law Review* 77(7): 1673-1704.
- [3] Scott Ashworth [2003]. “Campaign Finance and Voter Welfare with Entrenched Incumbents”, Working Paper, Harvard University.
- [4] Stephen Coate, “Pareto Improving Campaign Finance Policy”. *American Economic Review*, Vol 94, No. 3, June 2004, 628–655..

- [5] Stephen Coate [2003]. “Political competition with campaign contributions and informative advertising”, *Journal of the European Economic Association*, Vol 2, No. 5, September 2004, 772–804..
- [6] Alan Gerber [1996]. “Rational Voters, Candidate Spending, and Incomplete Information: A Theoretical Analysis with Implications for Campaign Finance Reform”. Working Paper No. 96-01.1, Yale University.
- [7] Gary C. Jacobson [1980]. *Money in Congressional Elections*. New Haven, Yale University Press.
- [8] Gary C. Jacobson [1990]. “The Effects of Campaign Spending in House Elections: New Evidence for Old Arguments”. *American Journal of Political Science*, 34(2): 334-362.
- [9] Steven D. Levitt [1995]. “Policy Watch: Congressional Campaign Finance Reform”. *Journal of Economic Perspectives* 9(1): 183–193, Winter.
- [10] Gerard Padró i Miquel, G. and James M. Snyder, Jr. [2006]. “Legislative Effectiveness and Legislative Careers”, *Legislative Studies Quarterly*, forthcoming.
- [11] Jan Potters, Randolph Sloof, and Frans van Winden [1997]. “Campaign expenditures, contributions and direct endorsements: The strategic use of information and money to influence voter behavior”, *European Journal of Political Economy* 13.

- [12] Andrea Prat. “Rational Voters and Political Advertising”. Written for the *Oxford Handbook of Political Economy* (eds. B. Weingast and D. Wittman), forthcoming.
- [13] Andrea Prat [2002]. “Campaign advertising and voter welfare”, *Review of Economic Studies* 69(4): 997-1017.
- [14] Andrea Prat [2002]. “Campaign spending with office-seeking politicians, rational voters, and multiple lobbies”, *Journal of Economic Theory* 103(1): 162-189.
- [15] Pervill Squire. [1992]. “Legislative Professionalism and Membership Diversity in State Legislatures.” *Legislative Studies Quarterly* 17:69-79.
- [16] Cristoph Vanberg. “‘One Man, One Dollar’? Examining the Equality Argument in Support of Campaign Contribution Limits.” mimeo, Max Planck Institute of Economics, Jena, October 2005.
- [17] Gregory Wawro [2000]. *Legislative Entrepreneurship in the U.S. House of Representatives*. Ann Arbor, The University of Michigan Press.

Table 1: Summary statistics on campaign finance*House*

| Variable | Obs | Mean | Median | Std. Dev. | Min | Max |
|---|-----|-----------|-----------|-----------|-----|-----------|
| total contributions | 652 | 47,006.48 | 24,613.29 | 84176.97 | 0 | 1,048,956 |
| total contributions below 2000\$ | 652 | 33,125.11 | 20,974.51 | 40802.02 | 0 | 469,018 |
| total contributions above 2000\$ | 652 | 13,881.37 | 2,195.03 | 51687.00 | 0 | 689,326 |
| own funds | 652 | 695.62 | 0.00 | 4071.78 | 0 | 95,001 |
| party funds | 652 | 4,094.30 | 263.50 | 14138.30 | 0 | 184,833 |
| organizations' funds | 652 | 20,508.47 | 13,078.10 | 28099.21 | 0 | 401,597 |
| other contributors' funds | 652 | 21,708.09 | 8,821.82 | 56527.29 | 0 | 765,413 |
| own funds below \$2000 | 652 | 372.77 | 0.00 | 1300.85 | 0 | 15,479 |
| own funds above \$2000 | 652 | 322.85 | 0.00 | 3868.85 | 0 | 95,001 |
| party funds below \$2000 | 652 | 953.64 | 184.11 | 4530.10 | 0 | 89,357 |
| party funds above \$2000 | 652 | 3,140.66 | 0.00 | 13306.89 | 0 | 184,833 |
| organizations' funds below \$2000 | 652 | 17,733.55 | 12,159.56 | 20775.27 | 0 | 263,412 |
| organizations' funds above \$2000 | 652 | 2,774.91 | 0.00 | 9893.99 | 0 | 138,185 |
| other contributors' funds below \$2000 | 652 | 20,260.72 | 8,747.60 | 46604.48 | 0 | 659,768 |
| other contributors' funds above \$2000 | 652 | 1,447.37 | 0.00 | 12940.17 | 0 | 205,584 |

Senate

| Variable | Obs | Mean | Median | Std. Dev. | Min | Max |
|---|-----|-----------|-----------|-----------|-----|-----------|
| total contributions | 280 | 76,798.57 | 37,466.19 | 117694.6 | 0 | 1,101,603 |
| total contributions below 2000\$ | 280 | 51,334.86 | 31,980.86 | 61971.5 | 0 | 521,566 |
| total contributions above 2000\$ | 280 | 25,463.72 | 4,637.39 | 62600.0 | 0 | 580,037 |
| own funds | 280 | 1,274.87 | 0.00 | 6242.4 | 0 | 81,369 |
| party funds | 280 | 11,402.35 | 269.24 | 36707.8 | 0 | 274,279 |
| organizations' funds | 280 | 26,560.81 | 19,869.54 | 28041.8 | 0 | 225,523 |
| other contributors' funds | 280 | 37,560.55 | 12,607.58 | 80027.7 | 0 | 876,080 |
| own funds below \$2000 | 280 | 212.39 | 0.00 | 459.61 | 0 | 3,301 |
| own funds above \$2000 | 280 | 1,062.48 | 0.00 | 6245.74 | 0 | 81,369 |
| party funds below \$2000 | 280 | 1,818.24 | 102.82 | 9912.94 | 0 | 118,522 |
| party funds above \$2000 | 280 | 9,584.11 | 0.00 | 35590.62 | 0 | 274,015 |
| organizations' funds below \$2000 | 280 | 22,582.29 | 17,116.21 | 21688.54 | 0 | 159,523 |
| organizations' funds above \$2000 | 280 | 3,978.53 | 0.00 | 9186.59 | 0 | 66,000 |
| other contributors' funds below \$2000 | 280 | 33,217.21 | 12,308.94 | 57428.84 | 0 | 538,980 |
| other contributors' funds above \$2000 | 280 | 4,343.33 | 0.00 | 26733.14 | 0 | 337,100 |

Note: figures refer to incumbent candidates, in the Lower House and in the Senate respectively.

Table 2: explaining legislator Effectiveness, uninformed voters, random effects regression

| | House | | | | Senate | | | |
|---|-------------------------|----------------------------|------------------------------|-------------------------------|-------------------------|----------------------------|------------------------------|-------------------------------|
| | [1] No contributions | [2] Total contributions | [3] Large and small money | [4] 4 categories of donors | [1] No contributions | [2] Total contributions | [3] Large and small money | [4] 4 categories of donors |
| total contributions (thousands of \$) | - | 0.062*** [0.011] | - | - | - | 0.031*** [0.011] | - | - |
| total contributions below 2000\$ | - | - | 0.182*** [0.032] | - | - | - | 0.165*** [0.035] | - |
| total contributions above 2000\$ | - | - | -0.011 [0.022] | - | - | - | -0.083*** [0.031] | - |
| own funds | - | - | - | 0.276 [0.248] | - | - | - | 0.066 [0.213] |
| party funds | - | - | - | -0.336*** [0.080] | - | - | - | -0.069* [0.035] |
| contributions from organizations | - | - | - | 0.419*** [0.045] | - | - | - | 0.298*** [0.056] |
| contributions from individuals | - | - | - | -0.052** [0.021] | - | - | - | -0.025 [0.020] |
| candidate is a woman | -1.991 [4.172] | -1.532 [4.077] | -1.21 [3.906] | -0.89 [3.817] | -5.785 [6.359] | -5.895 [6.311] | -7.208 [5.921] | -5.351 [5.840] |
| candidate belongs to the Democratic party | 10.558*** [3.219] | 11.197*** [3.148] | 11.997*** [3.027] | 13.277*** [2.964] | 34.318*** [4.699] | 32.934*** [4.690] | 33.590*** [4.382] | 33.273*** [4.356] |
| constant | 41.502*** [2.618] | 38.157*** [2.626] | 34.845*** [2.665] | 34.043*** [2.514] | 24.448*** [3.957] | 22.998*** [3.960] | 19.395*** [3.812] | 19.236*** [3.722] |
| Observations | 652 | 652 | 652 | 652 | 280 | 280 | 280 | 280 |
| Number of individuals | 238 | 238 | 238 | 238 | 107 | 107 | 107 | 107 |

Notes: random effects regressions, with normalised legislative effectiveness as dependent variable. Standard errors in brackets. *** indicates that the coefficient is significantly different from zero at the 1% level. ** (*) indicates 5% (10%) significance.

Table 3: explaining legislator Effectiveness, informed voters, random effects regression

| | House | | | | Senate | | | |
|---|-------------------------|----------------------------|------------------------------|-------------------------------|-------------------------|----------------------------|------------------------------|-------------------------------|
| | [1] No contributions | [2] Total contributions | [3] Large and small money | [4] 4 categories of donors | [1] No contributions | [2] Total contributions | [3] Large and small money | [4] 4 categories of donors |
| total contributions (thousands of \$) | - | 0.014 [0.009] | - | - | - | 0.007 [0.009] | - | - |
| total contributions below 2000\$ | - | - | 0.109*** [0.025] | - | - | - | 0.105*** [0.030] | - |
| total contributions above 2000\$ | - | - | -0.042** [0.017] | - | - | - | -0.075*** [0.026] | - |
| own funds | - | - | - | 0.096 [0.194] | - | - | - | 0.048 [0.182] |
| party funds | - | - | - | -0.178*** [0.065] | - | - | - | -0.035 [0.030] |
| contributions from organizations | - | - | - | 0.174*** [0.038] | - | - | - | 0.167*** [0.050] |
| contributions from individuals | - | - | - | -0.027* [0.016] | - | - | - | -0.027 [0.018] |
| candidate is a woman | 1.948 [3.335] | 2.039 [3.291] | 2.07 [3.172] | 2.31 [3.195] | 1.256 [5.106] | 1.164 [5.062] | 0.066 [4.950] | 1.02 [4.873] |
| candidate belongs to the Democratic party | 0.143 [2.787] | 0.388 [2.758] | 0.784 [2.670] | 2.258 [2.713] | 27.691*** [3.931] | 27.430*** [3.915] | 28.152*** [3.823] | 27.998*** [3.816] |
| candidate is black | -12.266*** [4.255] | -11.887*** [4.204] | -10.606*** [4.061] | -12.489*** [4.089] | -8.906 [5.587] | -8.585 [5.549] | -7.474 [5.419] | -8.543 [5.330] |
| candidate's age at the time of the elections | -0.423*** [0.120] | -0.426*** [0.118] | -0.389*** [0.115] | -0.391*** [0.115] | -0.011 [0.167] | -0.003 [0.166] | -0.038 [0.162] | 0 [0.162] |
| candidate is a lawyer | 18.677*** [3.895] | 18.767*** [3.847] | 18.463*** [3.713] | 19.183*** [3.741] | 13.497*** [3.977] | 13.487*** [3.939] | 12.143*** [3.861] | 12.697*** [3.804] |
| no of previous terms in office | 5.031*** [0.409] | 4.985*** [0.406] | 4.859*** [0.397] | 4.508*** [0.410] | 4.893*** [0.605] | 4.806*** [0.608] | 4.826*** [0.595] | 4.323*** [0.607] |
| candidate belongs to the majority party | 20.589*** [1.275] | 20.316*** [1.289] | 20.320*** [1.289] | 19.399*** [1.295] | - | - | - | - |
| post held by candidate during current legislature | 3.654*** [0.852] | 3.169*** [0.923] | 3.137*** [0.920] | 2.288** [0.935] | 3.227*** [0.935] | 3.130*** [0.958] | 2.673*** [0.952] | 3.106*** [0.967] |
| constant | 43.550*** [6.475] | 43.274*** [6.402] | 38.891*** [6.292] | 40.716*** [6.251] | 12.922 [9.781] | 12.313 [9.729] | 11.921 [9.494] | 10.798 [9.505] |
| Observations | 652 | 652 | 652 | 652 | 280 | 280 | 280 | 280 |
| Number of individuals | 238 | 238 | 238 | 238 | 107 | 107 | 107 | 107 |

Notes: random effects regressions, with normalised legislative effectiveness as dependent variable. Standard errors in brackets. *** indicates that the coefficient is significantly different from zero at the 1% level. ** (*) indicates 5% (10%) significance.

Table 4: overall R squared and F-tests, House and Senate

5.A: House (F-tests in italics)

| | [1] | | [2] | | [3] | | [4] |
|-------------------|--------------|--------------|---------------------|--------------|---------------------|--------------|------------------------|
| | no money | | total contributions | | big and small money | | 4 categories of donors |
| uninformed voters | 3.57 | <i>0.000</i> | 9.98 | <i>0.000</i> | 14.29 | <i>0.000</i> | 20.89 |
| | <i>0.000</i> | | <i>0.000</i> | | <i>0.000</i> | | <i>0.000</i> |
| informed voters | 43.53 | <i>0.123</i> | 44.21 | <i>0.000</i> | 46.82 | <i>0.000</i> | 47.34 |

5.B: Senate (F-tests in italics)

| | [1] | | [2] | | [3] | | [4] |
|-------------------|--------------|--------------|---------------------|--------------|---------------------|--------------|------------------------|
| | no money | | total contributions | | big and small money | | 4 categories of donors |
| uninformed voters | 30.37 | <i>0.004</i> | 33.91 | <i>0.000</i> | 38.75 | <i>0.000</i> | 40.49 |
| | <i>0.000</i> | | <i>0.000</i> | | <i>0.000</i> | | <i>0.000</i> |
| informed voters | 51.61 | <i>0.439</i> | 52.49 | <i>0.001</i> | 55.29 | <i>0.035</i> | 55.78 |

Notes: rows correspond to the three different informational scenarios, while columns refer to information about campaign finance. Overall R squared are reported on the junctions between rows and columns. P-values of the F-tests between one scenario and the other are reported in italics in the relevant cell. E.g., in the row about informed voters for the Senate, consider the figure in between the "no money" and the "total contributions" columns. The figure is 0.439: this is the P-value for the test that the coefficient on total contributions is equal to zero. The only exception is with the P-values on the left of scenario [4], which are referred to the F-tests between scenario [2] and [4], just because scenario [3] is not nested into scenario [4].

Table 5: explaining legislator Effectiveness with campaign contributions classified according to size and source, random effects regression

| | House | | Senate | |
|--|----------------------|----------------------|----------------------|----------------------|
| | [1] | [2] | [1] | [2] |
| | Uninformed voters | Informed voters | Uninformed voters | Informed voters |
| contributions below \$2000 - self | -1.061 [0.745] | -0.906 [0.592] | -2.959 [2.766] | -1.339 [2.349] |
| contributions below \$2000 - party | -0.717*** [0.222] | -0.424** [0.182] | -0.099 [0.103] | -0.077 [0.087] |
| contributions below \$2000 - organizations | 0.554*** [0.063] | 0.262*** [0.053] | 0.320*** [0.070] | 0.134** [0.062] |
| contributions below \$2000 - individuals and others | 0.023 [0.031] | 0.026 [0.025] | 0.086* [0.045] | 0.098** [0.039] |
| contributions above \$2000 - self | 0.255 [0.258] | 0.092 [0.203] | 0.016 [0.210] | 0.014 [0.180] |
| contributions above \$2000 - party | -0.306*** [0.084] | -0.163** [0.068] | -0.102*** [0.039] | -0.079** [0.033] |
| contributions above \$2000 - organizations | 0.232* [0.126] | 0.074 [0.099] | 0.178 [0.165] | 0.21 [0.140] |
| contributions above \$2000 - individuals and others | -0.371*** [0.111] | -0.252*** [0.088] | -0.210*** [0.077] | -0.257*** [0.066] |
| P-value of the F-test: the source of funds does not matter | 0.000 | 0.000 | 0.005 | 0.020 |
| P-value of the F-test: the size of funds does not matter | 0.000 | 0.003 | 0.078 | 0.010 |
| gender, race, age, party controls | yes | yes | yes | yes |
| Observations | 652 | 652 | 280 | 280 |
| Number of individuals | 238 | 238 | 107 | 107 |

Notes: random effects regressions, with normalised legislative effectiveness as dependent variable. Standard errors in brackets. *** indicates that the coefficient is significantly different from zero at the 1% level. ** (*) indicates 5% (10%) significance. The first F-test whose P-values is reported has as its null hypothesis that the coefficients of different sources of funds are the same, separately considering small and large contributions. The null hypothesis of the second F-test is that the correlation of the different sources of funds does not depend on their size.

Table 6: explaining legislator Effectiveness, uninformed voters, fixed effects regression

| | House | | | | Senate | | | |
|---|----------------------|----------------------|-----------------------|------------------------|----------------------|----------------------|-----------------------|------------------------|
| | [1] | [2] | [3] | [4] | [1] | [2] | [3] | [4] |
| | No contributions | Total contributions | Large and small money | 4 categories of donors | No contributions | Total contributions | Large and small money | 4 categories of donors |
| total contributions (thousands of \$) | - | 0.053*** [0.012] | - | - | - | 0.029** [0.012] | - | - |
| total contributions below 2000\$ | - | - | 0.115*** [0.038] | - | - | - | 0.115*** [0.044] | - |
| total contributions above 2000\$ | - | - | 0.019 [0.023] | - | - | - | -0.045 [0.038] | - |
| own funds | - | - | - | 0.246 [0.306] | - | - | - | 0.349 [0.481] |
| party funds | - | - | - | -0.242** [0.111] | - | - | - | 0 [0.045] |
| contributions from organizations | - | - | - | 0.379*** [0.049] | - | - | - | 0.264*** [0.060] |
| contributions from individuals | - | - | - | -0.059*** [0.022] | - | - | - | -0.034 [0.022] |
| candidate belongs to the Democratic party | 20.694 [15.589] | 16.457 [15.271] | 17.7 [15.251] | 19.72 [15.277] | - | - | - | - |
| constant | 38.729*** [8.902] | 38.634*** [8.703] | 36.370*** [8.781] | 33.608*** [8.695] | 50.614*** [0.886] | 48.388*** [1.271] | 45.823*** [1.769] | 44.430*** [1.668] |
| Observations | 652 | 652 | 652 | 652 | 280 | 280 | 280 | 280 |
| Number of individuals | 238 | 238 | 238 | 238 | 107 | 107 | 107 | 107 |

Notes: fixed effects regressions, with normalised legislative effectiveness as dependent variable. Standard errors in brackets. *** indicates that the coefficient is significantly different from zero at the 1% level. ** (*) indicates 5% (10%) significance.

Table 7: explaining legislator Effectiveness, informed voters, fixed effects regression

| | House | | | | Senate | | | |
|---|-------------------------|----------------------------|------------------------------|-------------------------------|-------------------------|----------------------------|------------------------------|-------------------------------|
| | [1] No contributions | [2] Total contributions | [3] Large and small money | [4] 4 categories of donors | [1] No contributions | [2] Total contributions | [3] Large and small money | [4] 4 categories of donors |
| total contributions (thousands of \$) | - | 0.002 [0.010] | - | - | - | -0.011 [0.011] | - | - |
| total contributions below 2000\$ | - | - | 0.051* [0.028] | - | - | - | 0.078** [0.036] | - |
| total contributions above 2000\$ | - | - | -0.025 [0.017] | - | - | - | -0.086*** [0.031] | - |
| own funds | - | - | - | 0.045 [0.230] | - | - | - | 0.265 [0.411] |
| party funds | - | - | - | -0.141* [0.084] | - | - | - | -0.034 [0.039] |
| contributions from organizations | - | - | - | 0.110*** [0.042] | - | - | - | 0.074 [0.056] |
| contributions from individuals | - | - | - | -0.024 [0.017] | - | - | - | -0.028 [0.019] |
| candidate belongs to the Democratic party | 3.282 [10.992] | 3.192 [11.020] | 4.296 [10.999] | 7.327 [11.519] | - | - | - | - |
| candidate's age at the time of the elections | 1.645* [0.929] | 1.629* [0.935] | 1.616* [0.932] | 1.727* [0.936] | 3.281 [3.491] | 3.657 [3.510] | 4.68 [3.476] | 3.485 [3.590] |
| no of previous terms in office | 1.571 [1.956] | 1.591 [1.962] | 1.55 [1.956] | 0.978 [1.966] | -0.712 [7.106] | -1.247 [7.125] | -3.244 [7.053] | -1.258 [7.274] |
| candidate belongs to the majority party | 22.643*** [1.302] | 22.618*** [1.313] | 22.666*** [1.309] | 21.936*** [1.329] | - | - | - | - |
| post held by candidate during current legislature | 1.920** [0.919] | 1.857* [0.998] | 1.803* [0.996] | 1.214 [1.014] | 1.736* [0.989] | 1.937* [1.008] | 1.527 [1.005] | 1.840* [1.017] |
| constant | -64.138 [47.594] | -63.269 [47.955] | -64.262 [47.803] | -69.97 [48.064] | -142.578 [187.826] | -162.685 [188.849] | -220.366 [187.153] | -154.129 [193.068] |
| Observations | 652 | 652 | 652 | 652 | 280 | 280 | 280 | 280 |
| Number of individuals | 238 | 238 | 238 | 238 | 107 | 107 | 107 | 107 |

Notes: fixed effects regressions, with normalised legislative effectiveness as dependent variable. Standard errors in brackets. *** indicates that the coefficient is significantly different from zero at the 1% level. ** (*) indicates 5% (10%) significance.