How Do Local Candidates Spend Their Money? And Does it Matter?

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1. Introduction

This paper has two goals. First, I wish to gain insight into how and why local candidates choose to distribute their money between TV or radio advertising and more local forms of campaigning, such as signs, volunteers, print brochures, and local infrastructure. Second, I wish to measure whether this money has an effect on the probability of winning (rather than on simple vote share). Importantly, it seeks to test if these effects differ across incumbency status *and* across party lines. And it does so while taking account of likely problems in the data.

I set out to do this over four stages. First, I review the principal existing literature, and identify significant shortcomings and remaining questions. Second, I examine the distribution of candidate spending, based on the incentives likely to determine the mix between advertising and local spending. I model this decision as a function of the efficiency of media advertising in a given region *and* the likely coverage provided by advertising in a given region. I bring new data to bear to achieve this. I then specify a multivariate model of the distribution of campaign moneys. Third, I specify a model of campaign spending effects, utilizing the data generated in the previous stage. This model represents a break from the previous literature, as it measures the effect of money on the probability of winning rather than on vote share. I then summarize my findings of the effects of money on the probability of winning in multiparty elections, and outline future lines of research.

2. Campaign Spending Effects Literature Review

An examination of the literature of campaign spending effects can easily be broken into two parts: that which is primarily theoretical, and that which is principally empirical.

The first category is comparatively weak. Indeed, aside from some work which focuses mainly on spending and fundraising as an entry deterrent (e.g. Epstein and Zemsky 1995, Goodlife 1999, 2001, Squire 1991) and others which focus on the optimal timing of spending (e.g. Indridason and Fox 2001) there is little formal theoretical work about the role of spending in elections. More importantly, the existent theoretical work is almost wholly focussed on the American case of two-party races, a context largely irrelevant for most democracies. Snyder (1990) is an exception to this. Ultimately, a theoretical argument about the mechanism which translates money into votes needs to be specified, though I do not take of that challenge here.

Empirical examinations of campaign spending generally suffer from one or more of five shortcomings. While this is certainly a function of scarcity more than neglect, paying close attention to these shortcomings can result in better empirical analysis. Accordingly, I review and quickly address my own approach to each shortcoming.

First, empirical analyses usually attempt to tease out different spending effects between incumbents and challengers, or between parties, but rarely both. We could expect differences in both measures, especially in multiparty, parliamentary races. First, in contrast to candidate-centred Congressional races, parliamentary races are fought as much as coordinated efforts between parties as between candidates. Indeed, candidates closely associate themselves with party policy, take advantage of party-produced (and party-centred) advertisements, and request visits to their riding by the party leader. To the degree that parties differ in their popularity and in their preparation for elections, we should expect some differences in the effects of money across parties. At the same time, races are fought between challengers and incumbents who enjoy the benefits of office (like full-time

constituency staff) as well as typically well-developed local networks. As such, incumbents may be better positioned both to raise funds and to spend those funds more efficiently. These differences could afford differential spending benefits for incumbents and challengers.

Second, empirical analyses are often poorly specified, especially in the measurement of spending. As Ansolabehere and Gerber have observed, the operationalization of campaign spending has been careless. Indeed, most studies take total campaign spending as a key independent variable, ignoring the reality that much spending is represented by transfers to other candidates, or to fundraising, and, in other instances, to personal perquisites to candidates. In the Canadian and British case, a measure of total spending is likely to include fundraising taxes to the central party. When this is the case, evaluations of the effectiveness of spending are likely to be biased downwards. Ansolabehere and Gerber solve this problem by limiting their analysis to spending which is directed towards contacting voters. I undertake a similar restriction. Indeed, I rely on Elections Canada's audited spending returns of local candidates (but do not yet consider national party spending). Moreover, few studies have considered differences in the cost of advertising across electoral districts (c.f. Snyder and Stromberg n.d.). Accordingly, a proper model would measure spending properly, and would measure its potential targets more discriminately.

Third, existing empirical analysis do not take sufficient account of the different types of spending which candidates can choose. In a sense, local campaigns can be understood as the combination of two things: first, an element of persuasion, represented by various types of advertising; and, second, efforts to contact and turnout local voters, represented by spending on organizers and local facilities. However, when existing literature does focus on different types of spending, the distinction is generally made within one of the two above types, as in the case of Hogan's examination of different types of mass advertising (Hogan 1997). Furthermore, those which do include measures of local organizational activity, such as Carty and Eagles (1998) or Whiteley and Seyd (1994), also include spending uncensored. In doing so, they are likely counting organizational activity twice, as no small amount of money is spent on campaign managers and facilities for the organization of campaigns and local volunteers. Accordingly, a better model would consider the types of spending candidates engage in, and would do so in a theoretically informed way which also avoids double-counting. I move towards this by differentiating advertising from other types of spending, and by not counting volunteers or other measures of campaign resources.

Fourth, several works ignore the endogeneity of campaign spending. The long-standing debate between Jacobson and Green and Krasno has demonstrated the importance of properly accounting for the fact that campaign spending is likely to be an independent predictor of vote share, but also a proxy measure of some expectation about the likely outcome of the race. To ignore the recursive relationship between spending and vote share is to welcome imprecise and faulty results.

Finally, existing empirical work is generally theoretically underspecified. First, few works conjecture about the likely distribution of candidate funds. Indeed, Hogan is the only work of which I know that explicitly examines spending as a dependent variable. Moreover, his theoretical development is largely stylized. Second, few works provide anything beyond post-hoc generalizations about the factors which are likely to influence the translation of money into votes. Typically, explanations fall along the lines of Pattie, Johnston and Fieldhouse who conjecture that incumbents are more likely to receive fewer votes per dollar, as they have largely maximized their popularity. A notable exception to this pattern is Gierzynski and Breaux (1991). They identify two sets of conditions on the effects of money: contextual and conversion. Contextual conditions refer to whether an incumbent is in the

race, whether the media pays attention, and partisan trends. Conversion factors include candidate incumbency status, levels of spending, party organizational strength, media market congruence, media costs, the length of the general election season, per capita income, district size and district population. However, while all of these are likely to condition the effects of money, they are each exogenously determined, and are thus not affected by the choices of candidates. That is, they are not subject to strategic choices. Accordingly, even to the degree that these condition money, they are likely to miss the degree to which interaction between candidates and their choices condition the effects of money. As such, a better model of campaign spending would posit which factors are likely to determine how candidates distribute their money, and would then suggest how that money is translated into votes. In a word, it would specify the *mechanism* by which votes are translated into money.

The next section makes a first attempt to address these shortcomings in testing a model of campaign spending distribution decisions. It particularly looks to address the first part of the mechanism, i.e. the process by which candidates decide to distribute money between campaign resources. I then turn to a search for positive effects.

3. Campaign Spending Distribution decisions.

3.1 Defining Efficiency and Coverage

I posit that two factors should determine a candidate's use of radio and television advertising rather than other campaign techniques, such as literature production and distribution, door to door canvassing, or the use of signage. First, the efficiency of advertising, i.e. how much it costs to reach a voter in a candidate's riding. Second, the coverage of advertising, i.e. how many voters in a riding can be reached, given a level of spending.

These two factors are central to understanding candidate spending distributions, not least of all because they are the costs which are most likely to vary the most across the ridings. The costs of printing and sign making are essentially invariant across ridings. Moreover, the cost of postage does not vary across ridings, regardless of their size. But, the cost of radio and TV advertising is highly variable. Accordingly, my measures seek to capture the two relevant aspects of media markets which will determine candidates trade-offs. Moreover, these factors are most likely independent of vote and expected vote, making them sufficient predictors to clean out the endogeneity between expected vote and spending. They thus serve convenient substantive and technical purposes.

To develop these measures, I have utilized the Broadcast Bureau of Measurement (BBM)'s 2000 measurement of media market radio audiences.[1] Each fall, the BBM takes an audit of the radio listenership in predetermined media markets. These audits determine how many radio listeners exist in each media market. These media markets often cover more than one riding, and occasionally one riding consists in two radio markets. Accordingly, candidates must decide whether to advertise when much of their message will be received by candidates outside of their riding. Because advertising is generally priced on a per-listener basis, the cost of advertising in a large media market can quickly become expensive. Candidates must thus consider the efficiency of advertising. I calculate the inefficiency of radio advertising in a given riding as the total media market divided by the population in a riding, or:

[1] In the four media markets which were not measured in 2000, I have relied on 1999 data.

Media market population/Riding i population

This measure thus captures the number of individuals a candidate must reach to reach one of her voters. I do not yet have data on the cost per thousand of advertising in a riding, but this measure stands in as a good proxy. The higher the inefficiency score, the less likely candidates should be to substitute advertising for local spending. I left censor this measure at 1.

Apart from considerations of inefficiency (and cost), candidates must also take account of how many of their voters actually listen to the radio. Even if a candidate can reach every listener in their riding, she must still consider just how many of her potential constituents listen to the radio. I measure coverage as the media market population divided by the number of ridings in the market, and then divided by the population in the riding, or:

(Media market population/# of ridings in market)/Riding i Population.

This measure thus captures the average percentage of voters who will be reached in a riding if every listener is reached. This variable can thus, theoretically, run from 0 to 1. The greater the coverage in a riding, the more likely candidates are to advertise in substitution to local spending as they will reach a great percentage of their potential voters. How well, then, are these expectations borne out by the data? I turn to this in the next section.

3.2 Candidate spending distributions

Candidates can choose to distribute their spending into one of two broadly conceived categories. First, they can choose to advertise via radio or television. Or, they can choose to spend their money on things closer to the ground, such as signage, volunteer training, office space, or literature drops. By using Election Canada's audited returns of candidate spending, I am able to correctly classify local spending into these two categories. I analyze these data in Tables 1-3.

Table 1 demonstrates simple mean spending levels on ad and local spending for each of the four national parties.[2]

The key measure in Table 1 is the ratio between ad and local spending. This provides a benchmark against which to measure the ratios in different media markets. As can be seen, with the exception of the NDP, ad spending, on average, consumes much more campaign dollars than local spending (it can also be seen just how badly outspent the average NDP and PC candidates were by their stronger opponents).

As can be seen in Table 2, some differences exist in the way incumbents and non-incumbents[3] distribute their resources. In the case of the Liberals and the Canadian Alliance, there is little difference in the ratios. However, in the case of the NDP and the PCs, non-incumbents are markedly more reliant on advertising than local spending. Indeed, incumbent NDP candidates are the only type, on average, who spend more on local campaign resources

[2] I restrict my analysis to outside of Quebec for three reasons. First, a distinct campaign is often run in Quebec. Second, the party system in Quebec is not replicated anywhere else in the country. Third, party spending returns in Quebec are, perhaps, more subject to question than in other jurisdictions, whatever the commitment of Quebec voters to witness clean campaigns.

[3] I refrain from the use of the word challenger to describe non-incumbents, as non-incumbents also includes candidates of the party holding the seat, in cases where the incumbent has relinquished the seat mid-term.

than on adverts. From this table, then, we have some evidence of different spending practices between incumbents and non-incumbents, as well as between parties. Whether this will result in different spending effects is left for a later section.

Is it possible that these differences are being driven by different media markets? Table 3 begins to test this assumption. It considers four cases. First, efficient markets (where a candidate has to reach no more than four listeners to reach one voter) with good coverage (where more than half of voters are listeners); second, efficient markets with bad coverage; third, inefficient markets with good coverage; and, fourth, inefficient markets with bad coverage. I expect the highest ratio of ad to local spending in the first case, smaller ratios in the middle two categories, and the smallest ratio in the final category.

These expectations are partly borne out. Indeed, they conform in the Liberal case, and in the case of the Alliance (excepting well-covered inefficient markets). The results for the PCs are mixed, and are reversed for the NDP.[4] A further, multivariate test of these variables will control for some of the effects of other factors, and allow us to better ascertain the real effects of these market structures.

Aside from better understanding the effect of media markets, performing a multivariate test affords me with an additional opportunity: it allows us to address the likely endogeneity between expected vote and spending. Because media market structure is exogenous to expected vote, we can use it to clean spending of the recursive effects of expected vote. Accordingly, I specify a multivariate model of ad spending and another of local spending with the intention of first using it to inform us of candidate spending decisions, and to provide us with predicted values to be inserted in the next set of equations testing the effects of money on the probability of winning.

I specify a model with two endogenous variables and four exogenous variables. This is a decidedly small model, and certainly ignores the demographic characteristics which are acknowledged predictors of vote share (Eagles 2004). However likely these variables (and countless) others are to exist in the "true" model of campaign spending, including them only complicates the model, and does not necessarily reduce omitted variable bias (Clarke 2005). Accordingly, I opt for a simpler model.

My endogenous variables, Party Vote in 1997 and an Incumbency dummy, should both predict higher spending. The better a party performed in the previous election, the more easily a candidate should raise funds. Holding previous vote constant, incumbents should be able to raise and spend more funds, as they have higher profiles, as well as the instruments of office to facilitate fundraising. My four exogenous variables consist in my two media market measures, as well as the margin between first and second in the last election, and the percentage obtained by the first place party (see Eagles 2004 for similar measures). The first measure captures the competitiveness of the riding, with lower margins corresponding to more competitiveness. Thus, the smaller the margin, the more the spending. The absolute vote of the first place party indicates how competitive the riding is for third place and worse parties. As the winning vote share approaches zero a contest becomes more competitive for all parties, regardless of the margin between first and second.

[4] These results are likely caused by the fights for survival in which the incumbents in each of the smaller two parties were engaged. Eagles (2004) has observed that the national NDP and PC parties are given to targeted spending in attempts protect incumbents. I replicated Table 3 for NDP candidates spending more than the mean and candidates spending less. Candidates spending less have ratios which conform to my expectations. Those spending more – i.e. incumbents – are driving the exceptional results. A likely explanation is that these candidates were overwhelming in efficient ridings, so the results are being driven by a few high spending incumbents in inefficient and poorly covered ridings.

Accordingly, a lower first place total should predict higher spending. As for media markets, higher inefficiency scores should correspond with more local spending and less ad spending, while higher coverage scores should correspond with more ad spending and less local spending.

Tables 5 and 6 display the results of these first-stage regressions. The results indicate important differences across parties, and across incumbents and non-incumbents. For Canadian Alliance and Liberal candidates, incumbency predicts less local spending, while for Conservative and New Democratic candidates the opposite holds. Incumbency has no effect on ad spending. Finally, vote share always predicts spending, and always in the expected directions.

The results for exogenous variables are more mixed. Efficiency correctly predicts Conservative ad spending, but it predicts in the incorrect direction for Liberal candidates (though here the level of confidence only borders on 95%). Coverage performs better, correctly predicting Alliance ad spending and Conservative local spending. Importantly, neither of these measures predict NDP ad or local spending. The decisions of their candidates, as could be suspected from the earlier marginals, are made independent of these factors. (Indeed, they may be made independent of the candidates)! Margin and first place vote share perform as expected when they are significant. On the whole, these results suggest two things about local candidate spending distribution decisions. First, they are principally driven by local strategic considerations. Second, they are influenced, to a limited but measurable degree, by the structure of the media markets in which they occur. In the next stage, I measure whether these outlays have measurable effects on the probability of winning election.

4. Money and the probability of winning

4.1 Measuring the probability of winning

In the second-stage specification of my model, I deliberately make a break with the previous literature. Rather than measuring changes in vote share using an ordinary least squares set up, I measure the probability of winning using a logistic regression. This is a direct break from, for example, Eagles, who wishes to determine if "local spending matters to the *share of vote* a party receives" (Eagles 2004 118, emphasis added). At least four reasons should compel us to question the appropriateness of ordinary least squares estimation for the testing of spending effects. These questions suggest that the employment of a logit may be more appropriate.

First, in multiparty races, one party's vote is not a simple function of another party's vote. As a consequence, when we observe a positive coefficient for spending effects on vote, we can not be certain that this actually increases a candidate's chances of winning. Consider the case of a three-party race where parties A, B, and C begin with 40, 35, and 25 percent of the vote (note that the vote ratio between A and B is 53.3 to 46.7). Now suppose that, in separate equations, we observe a positive spending coefficient for party A and B. Does this mean that spending increases party B's chances of winning? It may not if what we are witnessing is the cannibalization of party C's vote by both parties A and B, where C's vote disappears, but the ratio between A and B remains constant. Indeed, what appear to be spending effects which increase the probability of winning may just be Duverger's law in action.

Second, the logit bounds upper and lower probabilities at 1 and 0. This is a desirable property, especially in light of OLS returning possibly meaningless predicted vote shares, i.e. above 100 or below 0, and especially because we have reason to believe the effects of spending are not linear, but marginally decreasing after a certain point.

Third, if we want to understand the behavior of candidates, and if we believe that on average their comportments represent rational expectations, then we should choose a dependent variable and consequent model which most closely captures the motivations of candidates. The principal interest of candidates is to win, not to increase their vote. No doubt, candidates want to do as well as possible, but in choosing between two spending strategies where one increases vote but not the probability of wining, and the other increases both, then candidates will choose the second. Accordingly, we need to consider this likelihood and driving motivation when testing the effects of money.

Fourth, we should ask which measurement gives researchers the most leverage in understanding the normative implications of campaign spending. If our normative concern is to understand if more money gives candidates a greater chance of winning, then we ought to use a measure which captures this. The logit fits this bill.

As a result of this, in testing whether spending affects the probability of winning, I regress a win/loss dummy variable on the predicted values for local and ad spending, as well as the party percentage from 1997, a dummy for incumbency, and a variable which is the sum of all other spending by the a candidate's opponents in each riding.

4.2 Results

Tables 6 displays the effects of money on the probability of winning local election. As can be seen, ad spending never increases the probability of winning, while in the case of Liberal candidates it actually decreases the probability of victory (a case which largely reflects Jacobson's earliest and most interesting findings). Local spending never has an effect. Finally, spending by other candidates does not decrease a local candidate's probability of winning. Only in the Liberal case is the effect different than zero, and here it is predicted to increase rather than decrease a candidate's chance of winning.

We can, from these results, draw two tentative conclusions. First, there are some differences between spending effects for local candidates for candidates from different parties. Indeed, Liberal candidates are harmed by advertising spending, and helped by more opposition spending, while no other candidates are affected by their spending decisions. Second, incumbency does not lead to different spending effects. For incumbency to matter for spending effects in this set-up, it would have to predict more spending in the first stage for a form of spending which then had a measurable effect on the vote at another level. This is never the case. In short, while previous analysis have found that campaign spending by local candidates has a measurable effect on the vote, and that this effect is different between parties or between incumbents and non-incumbents, I find little evidence that this spending actually increases the probability of winning.

4.3 Further test

It is, of course, possible that I simply do not have enough cases and thus statistical power to reveal the real effects. As a test of this, I specify a final pooled model, considering the cases of all 885 local campaigns in the rest of Canada in 2000. By pooling the cases, I test whether the average effects of spending, regardless of party, affect the probability of winning.

Because I am using cases from the same ridings, there is a chance of spatially correlated error terms. I estimate robust standard errors to address this potential problem. Table 7 displays these results. Again, party percentage in the previous election increases the probability of winning. Local spending has no effect, while spending by other candidates also has no effect. As before, incumbency greatly increases the probability of winning, independent of spending. Most importantly, ad spending has a consistent, positive effect. That this was not uncovered in the previous example was thus likely a result of a paucity of cases. This, then, calls into some question the earlier negative findings. Whether a pooled analysis is a proper specification, however, is of some question. Utilizing this model necessitates trading-off the ability to detect differences by candidate-type or party.[5] Whether this trade-off is beneficial ultimately depends on the goals of the researcher.

5. Conclusions and future directions

This paper had two principal objectives. First, to begin specifying a model of campaign spending decisions. Second, to see if spending has some effect on the probability of winning. As for the first objective, candidate spending decisions are driven principally by strategic considerations, though this affects levels of spending more than type of spending. The characteristics of the media market in which a candidate operates has some effect over their spending decisions, though this is far from consistent. An obvious future step in this research is to develop more precise measures of media markets. This can likely be achieved, for instance, by perfectly mapping media markets to ridings using FSA codes.

The second objective, to see if spending matters, and if it differs between parties and candidate types, was met. For the most part, these findings were negative. However, this negative finding is discounted by, first, the collection of evidence which does suggest that spending matters, and by the quality of my exogenous variables. Second, it is discounted by my pooled findings. A logical next step, then, is to turn to more elections in the hopes of amassing more evidence. Another step is control for the spending of national parties, by parceling out national spending on advertising and leader's tours over the relevant ridings. This is a difficult but not impossible task. Provided data from the national parties on their distribution of advertising spending is married to Elections Canada national party spending returns, this could be achieved. In the meantime, these findings hopefully call for more thought about how to measure spending effects and, as importantly, how to understand the mechanism which turns campaign spending effects into votes, given that such a mechanism exists.

[5] Technically, this could be overcome by specifying a series of interactions for three of four parties, interacting a party dummy with each spending variable. However, this is an invitation to an unnecessarily large model, and it does not overcome the difficulty of interpreting interaction coefficients in a logit set-up.

Table 1 - Mean advertising and local spending by all candidates

	Liberals	CA	NDP	PC
Ad spending	27130	27420	9035	12200
(s.d.)	*11430*	*14464*	*8783*	*11272*
Local spending	19810	12619	8382	6600
(s.d.)	*9506*	*8246*	*11221*	*7925*
Ad/Local ratio	*1.369510348*	*2.172914*	*1.077905*	*1.848485*
N	223	223	223	223

Table 2 - Advertising and local spending by incumbents (i) and non-incumbents (ni)

	Liberal (i)	Liberal (ni)	CA (i)	CA (ni)	NDP (i)	NDP (ni)	PC (i)	PC (ni)
Ad spending	29972	23614	36140	24881	22659	7785	28796	11104
(s.d.)	*9754*	*12400*	*11221*	*14339*	*5685*	*7921*	*7254*	*10619*
Local spending	22203	16850	15412	11805	30922	6313	22937	5517
(s.d.)	*8040*	*10352*	*6829*	*8461*	*6470*	*9094*	*9141*	*6553*
Ad/Local ratio	*1.35*	*1.40*	*2.34*	*2.11*	*0.73*	*1.23*	*1.26*	*2.01*
N	122	101	175	48	19	204	14	209

Table 3 - Mean advertising spending by coverage type and efficiency

		Liberal	CA	NDP	PC
Ad	Good coverage, efficient	29024	27007	11671	13608
	Good coverage, inefficient	27997	27925	6941	10486
	Bad coverage, efficient	23958	27537	9510	13443
	Bad coverage, inefficient	19514	17902	10142	12726
Local	Good coverage, efficient	19213	12272	11781	7494
	Good coverage, inefficient	21944	13485	6242	4966
	Bad coverage, efficient	16920	11757	8143	8354
	Bad coverage, inefficient	20148	8953	8228	5560
Ad/Local ratio	Good coverage, efficient	1.51	2.20	0.99	1.82
	Good coverage, inefficient	1.28	2.07	1.11	2.11
	Bad coverage, efficient	1.42	2.34	1.17	1.61
	Bad coverage, inefficient	0.97	2.00	1.23	2.29

Table 4 - Determinants of Ad Spending by Party (OLS)

	Liberal			CA			PC			NDP		
	Coef.	S.E.	t	Coef.	S.E.	t	Coef.	S.E.	t	Coef.	S.E.	t
Party Vote 1997	0.30	0.09	3.45	0.52	0.07	7.28	0.64	0.06	11.17	0.52	0.05	10.64
Incumbent	-1.33	2.21	-0.6	-0.57	2.90	-0.2	1.89	2.61	0.72	-0.50	2.04	-0.25
First Place Vote Share 1997	0.11	0.20	0.53	-0.20	0.14	-1.38	0.07	0.10	0.75	0.02	0.07	0.28
Margin of Victory 1997	-0.37	0.12	-3.14	-0.09	0.24	-0.36	-0.37	0.16	-2.28	-0.16	0.12	-1.27
Ad efficiency	0.14	0.07	1.97	0.05	0.09	0.61	0.10	0.06	1.76	0.01	0.04	0.23
Ad coverage	-0.84	3.42	-0.25	7.97	4.08	1.95	-0.68	2.77	-0.25	-0.15	2.08	-0.07
Constant	19.65	7.86	2.5	17.77	9.53	1.87	17.84	6.54	2.73	8.66	5.04	1.72
Adjusted r-squared	0.28			0.31			0.49			0.54		
N	223			223			223			223		

Table 5 - Determinants of Local Spending by Party (OLS)

	Liberal			CA			PC			NDP		
	Coef.	S.E.	t	Coef.	S.E.	t	Coef.	S.E.	t	Coef.	S.E.	t
Party Vote 1997	0.39	0.07	5.53	0.32	0.04	7.58	0.38	0.04	9.92	0.62	0.05	11.46
Incumbent	-3.67	1.83	-2.01	-4.12	1.75	-2.36	8.18	1.76	4.65	5.13	2.26	2.27
First Place Vote Share 1997	-0.03	0.10	-0.27	-0.03	0.09	-0.36	0.06	0.07	0.98	0.03	0.08	0.36
Margin of Victory 1997	-0.27	0.16	-1.64	-0.13	0.15	-0.92	-0.22	0.11	-1.99	-0.22	0.14	-1.60
Ad efficiency	0.02	0.06	0.26	0.08	0.05	1.62	0.11	0.04	2.91	0.00	0.05	-0.04
Ad coverage	1.13	2.83	0.40	3.79	2.46	1.54	-3.71	1.86	-1.99	1.53	2.30	0.67
Constant	20.14	6.51	3.09	9.42	5.74	1.64	10.62	4.40	2.41	7.84	5.58	1.40
Adjusted r-squared	0.25			0.24			0.53			0.63		
N	223			223			223			223		

Table 6 – Effects of local candidate spending on the probability of winning (Logistic regression)

	Liberal			CA			PC			NDP		
	Coef.	S.E.	z	Coef.	S.E.	z	Coef.	S.E.	z	Coef.	S.E.	z
Ad Spending (predicted)	-0.67	0.20	-3.32	0.09	0.43	0.21	5.87	3.66	1.61	0.53	0.85	0.63
Local Spending (predicted)	0.36	0.28	1.32	-0.50	0.94	-0.54	-0.56	1.54	-0.36	-1.23	1.09	-1.13
Total opposition spending	0.08	0.04	2.05	0.05	0.03	1.42	-0.18	0.13	-1.34	0.03	0.08	0.39
Party Vote 1997	0.43	0.14	3.04	0.42	0.15	2.85	-2.46	1.39	-1.77	0.27	0.36	0.75
Incumbent	2.68	1.08	2.48	0.49	3.51	0.14	7.77	9.03	0.86	13.55	8.17	1.66
Constant	-11.30	3.27	-3.45	-13.41	4.55	-2.95	-4.35	11.64	-0.37	-13.27	10.01	-1.33
Pseudo r-squared	0.73			0.80			0.75			0.72		
N	223			222			223			217		

Table 7 - Effects of local candidate spending on the probability of winning (Logistic regression, pooled)

	Coef.	R.S.E.	z
Ad Spending (predicted)	0.14	0.04	3.80
Local Spending (predicted)	0.06	0.05	1.42
Total opposition spending	-0.02	0.01	-1.38
Party Vote 1997	0.06	0.02	3.43
Incumbent	3.23	0.42	7.68
Constant	-7.01	1.46	-4.82
Pseudo r-squared	0.76		
N	885		

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