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Polls fail in France: forecasts of the 1997 legislative election[☆]

Bruno Jérôme^{a,*}, Véronique Jérôme^a, Michael S. Lewis-Beck^{b,1}

^a*Faculty of Economics, University of Metz, 57045 Metz, France*

^b*Department of Political Science, University of Iowa, Iowa City, IA, USA*

Abstract

In France, political observers and politicians pay considerable attention to public opinion polls, using them as indicators of who will win the upcoming election. Before the 1997 French legislative contest, the polls consistently forecast a win for the ruling Right party coalition. To almost everyone's surprise, they were wrong. We document the extent of their error, then speculate on why it occurred. Finally, we propose a political economy model as an alternative, and more accurate, means of forecasting French legislative elections. © 1999 Elsevier Science B.V. All rights reserved.

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1. Introduction

In France, political polls are frequent, and frequently watched. The media regularly reports surveys on how different candidates, parties, and government officials are regarded. Voters use this information in deciding their vote, and politicians use it for making campaign decisions. President Chirac, on April 21 1997, dissolved the National Assembly and called for fresh elections, almost a year ahead of schedule. Many observers saw this unexpected move as a strategic calculation, based on opinion polls showing that his ruling majority on the Right would win reelection. Gérard Courtois, writing just after the announcement, (*Le Monde*, 1997, p. 12) summed up this sentiment well: 'There is no doubt that the

President of the Republic, before deciding to dissolve the National Assembly, consulted electoral experts to assure himself of the chances of success for the present majority. In fact, the most recent polls on vote intentions and their resulting seat projections would seem to make him right'.

As it turned out, in the legislative elections held May 25 and June 1, the president's party coalition went down to defeat, and Socialist leader Jospin was asked to form a new government. Did pre-election polls actually forecast the wrong outcome? If so, how many? How badly? Why? In answering these questions, we show that the pre-election polls, used as election forecasts, were incorrect in 1997. After a discussion of why this might have occurred, we offer an alternative forecasting method based on a political economy model.

2. Were the polls wrong?

In the month before the dissolution call, polls from leading firms consistently showed the government's

*Corresponding author. Tel.: +33-3-8763-6812; fax: +33-3-8731-5077; e-mail: jerome@univ-metz.fr

¹Corresponding co-author. Tel.: +1 319-335-2358; fax: +1 319-335-3400; e-mail: mlewisbe@blue.weeg.uiowa.edu

[☆]The data used in the paper were gathered from the public sources noted. More details on the data can be obtained from the authors.

core party coalition — the *Rassemblement pour la République* (RPR) and the *Union pour la démocratie française* (UDF) — well ahead of the core opposition party coalition — the Socialists and the Communists. (See the review in *Le Monde*, 1997, p. 12). A Harris Poll of first-round legislative vote intention, conducted April 18–19, gave the typical result (see Table 1). The UDF/RPR coalition led a Socialist/Communist coalition, 40% to 35.5%.

Further, because of the election rules, most

scenarios saw the governing coalition maintaining its lead after the second round of balloting, when seat totals were finally decided. A majority is necessary to win the seat on the first round, but only a plurality on the second. A candidate cannot go on to the second round unless he or she receives at least 12.5% of the first-round votes. These rules work against candidates of the smaller parties. For example, in the last National Assembly election, in 1993, no Ecologist candidate and only one National Front candidate won. On the second round, then, voters tend to gravitate to the leading candidates of their ‘political family’ (*famille politique*), the Ecologists to the Left, the National Front to the Right (Lewis-Beck and Mitchell, 1993; Michelat, 1993, p. 86). Overall, vote intentions for the Right in Table 1 dominate vote intentions for the Left. That is, Right = (UDF/RPR + National Front) = 54%; Left = (Extreme Left + Communist + Socialist + Ecologist) = 46%. As shall be shown, this estimate for the Right was significantly biased upward, along with the estimates from other polls.

Overall, the pre-election distribution of vote intentions from virtually every poll gave the government considerable optimism about an electoral victory. Tables 2–6 show vote intention polls from five major French organizations — SOFRES, IPSOS, BVA, CSA, IFOP — across the period March 29–May 23. These results, culled from an extensive data search,

Table 1
Vote intention in the 1997 French legislative election

Party ^a	Percent predicted	Percent received
Extreme Left	2	2
Communist	9	10
Socialist	26.5	29
Ecologist	8.5	7
UDF/RPR	40	36
National Front	14	15
Total	100%	

^aThese party categories are given as reported in the press. Note that ‘Divers Gauche’ is included with the Socialists, and ‘Divers Droite’ with the UDF/RPR.

Data sources: Harris Poll, April 18–19, 1997; first-round ballot results for Metropolitan France, May 25, 1997. See *Le Monde* (1997, p. 12. and p. 42).

Table 2
Poll predictions, the 1997 French legislative elections (institute: SOFRES; metropolitan: 555 seats)

Date	1st round			1st + 2nd round	1st round		1st + 2nd round
	Percent of vote forecast for Right (1)	Percent of actual vote for Right (2)	Number of seats forecast for Right (3)		Vote prediction error (forecast – actual) (5)	Seats prediction error (forecast – actual) (6)	
04/21/97	53.5	51.18	320	246	2.32	74	
04/28/97	54	51.18	330	246	2.82	84	
05/03/97	53	51.18	293	246	1.82	47	
05/09/97	53.5	51.18	356	246	2.32	110	
05/18/97	53	51.18	330	246	1.82	84	
05/19/97	53	51.18	321	246	1.82	75	
Average	53.33		325				
A.F.B.					2.15	79	

Data source: *Le Figaro* — Sofres; columns (1) and (3).

Data source: *Le Monde* (1997) ‘Dossiers et documents’; columns (2) and (4).

A.F.B., average forecasting bias.

Column (4): the total is composed of: 238 (RPR + UDF + Diverse Right) + 1 (National Front) + 7 (not registered members, but candidates favourable to the outgoing majority).

Table 3

Poll predictions, the 1997 French legislative elections (institute: IPSOS; metropolitan + foreign colonies and overseas territories (Dom-Tom): 577 seats)

Date	1st round			1st+2nd round	1st round	1st+2nd round
	Percent of vote forecast for Right (1)	Percent of actual vote for Right (2)	Number of seats forecast for Right (3)	Number of seats won by Right (4)	Vote prediction error (forecast – actual) (5)	Seats prediction error (forecast – actual) (6)
03/29/97	55	51.24	343	258	3.76	85
04/26/97	54.5	51.24	293	258	3.26	35
05/03/97	56	51.24	332	258	4.76	74
05/07/97	54	51.24	291	258	2.76	33
05/17/97	54	51.24	324	258	2.76	66
05/23/97 ^a	51	51.24	314	258	–0.24	56
Average	54.08		316.17			
A.F.B.					2.84	58.17

Data source: Le Point — Ipsos; columns (1) and (3).

Data source: Le Monde (1997) ‘Dossiers et documents’; columns (2) and (4).

A.F.B., average forecasting bias.

Column (4): the total is composed of: 250 (RPR + UDF + Diverse Right; included 12 from Dom–Tom) + 1 (National Front) + 7 (not registered members, but candidates favourable to the outgoing majority).

^aPolls unpublished in France, but available on Internet.

Table 4

Poll predictions, the 1997 French legislative elections (institute: BVA; metropolitan: 555 seats)

Date	1st round			1st+2nd round	1st round	1st+2nd round
	Percent of vote forecast for Right (1)	Percent of actual vote for Right (2)	Number of seats forecast for Right (3)	Number of seats won by Right (4)	Vote prediction error (forecast – actual) (5)	Seats prediction error (forecast – actual) (6)
04/05/97	51.5	51.18	271	246	0.32	25
04/26/97	53	51.18	297	246	1.82	51
05/03/97	53	51.18	295	246	1.82	49
05/10/97	52	51.18	303	246	0.82	57
05/18/97	52.5	51.18	303	246	1.32	57
Average	52.40		293.8			
A.F.B.					1.22	47.8

Data source: Paris-Match — B.V.A.; columns (1) and (3).

Data source: Le Monde (1997) ‘Dossiers et documents’; columns (2) and (4).

A.F.B., average forecasting bias.

Column (4): the total is composed of: 238 (RPR + UDF + Diverse Right) + 1 (National Front) + 7 (not registered members, but candidates favourable to the outgoing majority).

track the campaign period. In France the ‘official’ campaign for the National Assembly generally begins a month before the first ballot. However, the ‘semi-official’ campaign often starts a year before, and at that time there is a flush of polls. In this respect, it is noteworthy that, if the 1997 election had not been called early, it would have been held in

March 1998. Hence, the first polls in our series, from March 29, actually coincide with the launch of the semi-official campaign, and took place over a month before dissolution. (More details on the polls appear in Appendix A). There are four to seven surveys for each organization, for a total of 28. For purposes of comparison and clarification, we have grouped the

Table 5

Poll predictions, the 1997 French legislative elections (institute: CSA; metropolitan: 555 seats)

Date	1st round			1st+2nd round	1st round	1st+2nd round
	Percent of vote forecast for Right (1)	Percent of actual vote for Right (2)	Number of seats forecast for Right (3)	Number of seats won by Right (4)	Vote prediction error (forecast – actual) (5)	Seats prediction error (forecast – actual) (6)
04/22/97	56	51.18	333	246	4.82	87
04/28/97	53	51.18	297	246	1.82	51
05/05/97	54	51.18	286	246	2.82	40
05/12/97	53	51.18	318	246	1.82	72
05/17/97	52	51.18	299	246	0.82	53
05/18/97	51.5	51.18	297	246	0.32	51
05/23/97 ^a	52.5	51.18	301	246	1.32	55
Average	53.14		304.43			
A.F.B.					1.96	58.43

Data source: Le Parisien — C.S.A.; columns (1) and (3).

Data source: Le Monde (1997) 'Dossiers et documents'; columns (2) and (4).

A.F.B., average forecasting bias.

Column (4): the total is composed of: 238 (RPR + UDF + Diverse Right) + 1 (National Front) + 7 (not registered members, but candidates favourable to the outgoing majority).

^aPolls unpublished in France, but available on Internet.

Table 6

Poll predictions, the 1997 French legislative elections (institute: IFOP; metropolitan: 555 seats)

Date	1st round			1st+2nd round	1st round	1st+2nd round
	Percent of vote forecast for Right (1)	Percent of actual vote for Right (2)	Number of seats forecast for Right (3)	Number of seats won by Right (4)	Vote prediction error (forecast – actual) (5)	Seats prediction error (forecast – actual) (6)
04/27/97	55.5	51.18	323	246	4.32	77
05/04/97	52	51.18	285	246	0.82	39
05/09/97	54.5	51.18	345	246	3.32	99
05/18/97	53.5	51.18	326	246	2.32	80
Average	53.88		319.75			
A.F.B.					2.7	73.75

Data source: Le Journal du Dimanche — IFOP; columns (1) and (3).

Data source: Le Monde (1997) 'Dossiers et documents'; columns (2) and (4).

A.F.B., average forecasting bias.

Column (4): the total is composed of: 238 (RPR + UDF + Diverse Right) + 1 (National Front) + 7 (not registered members, but candidates favourable to the outgoing majority).

responses into vote intention for a party on the Right (RPR + UDF + Divers Droite + National Front). First round 'percent of vote forecast for Right' (column 1) can be contrasted to the first round 'percent of actual vote for Right' (column 2). What we observe is that, with one exception, the polls predict more votes for the Right than they actually received. The average prediction error ranges from a high of 2.84 percentage points with IPSOS to a low of 1.22 with BVA (column 5). Furthermore, a significance test (0.05 level), indicates that the polls

consistently generated estimates biased in favor of the Right.²

Of course, to wield legislative power, what ulti-

²The mean estimate for the Right vote = 53.5, among the polls reported herein published before the election. The standard error of this mean estimate (S.E.M.) = 0.24. For a 95% confidence interval, $53.5 \pm 1.96 \text{ S.E.M.} = 53.5 \pm 0.47$. In other words, we would expect the population value to fall between 53 and 54. However, the population value, Right vote = 51.2, lies well below that interval. Therefore, we conclude, at the 0.05 level of significance, that the surveys are biased ($1 - CI = 1 - 0.95 = 0.05$).

mately counts is not votes but seats. The total number of National Assembly seats is 577, thus requiring 289 seats for a majority. (Or a majority of 278, when considering only the 555 seats of metropolitan France). Each polling firm tried to project the number of seats the parties would finally have, after the second round was over. Fully 27 of the 28 polls gave the ruling party coalition a majority of seats. (None projected more than one or two seats for the National Front, which meant that virtually all the projected Right seats would be either RPR or UDF. See column 3). Further, every poll, after April 5, projected the government would achieve a seat majority. Small wonder that Chirac and the traditional Right expected to retain legislative control following the June 1 balloting. Instead they clearly fell short, gaining only 246 seats in Metropolitan France, plus 12 more seats from the overseas territories. Thus, the seat projections of the polls showed considerable upward bias, from an average of +48 seats with BVA to an average of +79 seats with SOFRES (see column 6).

3. Why were the polls wrong?

Although it is difficult to be definitive about why the pre-election polls failed to forecast the defeat of the Right in the French legislative elections of 1997, some useful speculation can be offered. First, we consider the failed forecast of first round vote. The sampling and interviewing conditions posed certain problems. Pollsters faced the difficulties of identifying those who would actually vote, and of getting them to express their opinion. For example, in the May 9–10 BVA survey, 12% of those who claimed they were registered and certain to vote refused to say for whom they would vote (*Paris Match*, May 22, 1997, p. 115). Further, supporters of extremist parties, especially the National Front, tend to not reveal their vote, a situation that might be aggravated by the face-to-face circumstances of almost all French surveys. Also, there are potential questions of statistical inference, due to the fact that full samples are routinely done in part with the quota method, and only have $N = 1000$. These problems are not necessarily unique to French polling. (For a point of comparison, see the discussion on British polling in Broughton (1995).)

Aside from these possibilities, we offer a par-

ticular hypothesis about what went wrong: voter preferences changed over time. That is, as the first round election date approached, voter preferences moved away from the ruling RPR-UDF coalition. Recall Table 1. One observes that it forecasts 40% for RPR-UDF, which actually only received 36%. These are only two data points, from April 19 and May 25, but they represent the tips of a downward trend that is visible in Tables 2–6. Look at the first and last results from each polling organization (column 1). For four of the five, the trend is downward: IPSOS, $55 > 51$; CSA, $56 > 52.5$; IFOP, $55.5 > 53.5$; SOFRES, $53.5 > 53$. With all of the surveys except BVA, there is a general downward trend, when the entire set of points are observed.

This pattern of decline is perhaps clearest with IPSOS data, where over the 2-month period Right support fell from 55% to 51% (Table 3, column 1). Also, the last IPSOS survey would seem to give extra strength to our argument. Since this poll was carried out May 23, just 2 days before the first-ballot, it was not published in France at the time. (French law bans the publication of vote intention polls in the final week of the campaign). Because of its closeness to the actual voting, it might be taken as a valid simulation of the election itself (much as observers in the US treat Gallup's final presidential pre-election poll). Its estimate of Right vote share is accurate, at 51%. Again, the implication is that voter preferences shifted away from the Right over the campaign period. (Further, that shift was away from the RPR-UDF, not from the National Front. In Table 1, one sees that the April prediction of the National Front — 14% — was quite close to the actual first-round share they received. Moreover, the other polls consistently showed the National Front holding this share (14–16%) across the period (Le Monde, 1997, p. 31).)

A formal test, in which the poll result is regressed (ordinary least squares) on a time counter variable, would seem to clinch the hypothesis of a systematic move away from the Right. As the election date approached, there was a statistically significant drop in Right vote intention.

$$VI = 54.48 - 0.11 * TC + e$$

$$(96.25)(2.08)$$

$$R^2 = 0.21 \text{ Adj. } R^2 = 0.16 \text{ S.E.E.} = 1.15$$

$$\text{Durbin} - \text{Watson} = 2.33 \text{ } N = 18$$

where VI is the percentage of vote forecast for the Right (averaged on days when more than one poll was taken); TC is a time counter rank-ordering the day the poll was taken, from the first day (1) to the last day (18); the figures in parentheses are absolute t -ratios; *statistical significance at 0.05, one-tail ($|t| > 1.75$).

Let us now consider the causes of the larger, and more important, failure of the seat forecasts. One immediately observes that, in contrast to the vote intention time series, no downward trend in seat forecasts emerges. Instead, seat forecasts tend to fluctuate up and down (around a positively biased base value), from survey to survey. To understand these fluctuations, an appreciation of the seat projection methodology is required. Each polling firm follows its own rules in generating these seat projections. The rules vary somewhat from firm to firm, and their details are not in the public domain. However, BVA regularly publishes an outline of its 'simulation' procedures, and that provides a window on the process. The variables they incorporate are: (1) first round participation levels in the 1993 legislative election; (2) first round vote intention survey data from a representative sample of districts (around 100) of the 555 districts of metropolitan France; (3) recent electoral history of the 555 districts; (4) vote intention reports from the first round to the second round, under different party choice hypotheses on the second-round (*Paris-Match*, May 22, 1997, p. 115).

Clearly, error has many opportunities to enter into such a simulation. It is hardly surprising that their projections are inaccurate. This is not necessarily an indictment of the pollsters. Forecasting seats from survey data in a political system with such complex rules and parties is not easy. We cannot solve the polling problem, but we can offer food for thought concerning it. Recall that one simulation — that of BVA on April 5 — got the correct winning side. They projected the Right losing its majority with a capture of only 271 seats (although that projection was still 25 seats too high). It may have been that in this particular simulation, the variables were properly chosen and weighted, thus producing the more accurate result. Note that their first-round vote intention estimate from that same date was, exceptionally, almost exactly on target. The implication is

that a key variable in the model is the quality of the first-round vote intention estimate. (Work done on the actual vote–seats ratio in French National Assembly elections bolsters this implication. Lewis-Beck and Rice (1992, p. 127) found that first round Opposition votes were highly predictive — $R^2 = 0.925$ — of total Opposition seats won.)

Another critical variable would appear to be the second round vote intention estimate. The second round vote depends on what candidates are running. To assess this choice, the polls pose hypothetical alternatives. For example, in a May 9–10 survey, BVA asked first round partisans whom they would select in a second round choice between the Socialists and the UDF-RPR. Among first round National Front supporters, 19% said Socialist on the second round, 53% said UDF-RPR, and 28% said they did not know what they would do (*Paris-Match*, May 22, 1997, p. 116). One observes that the bare majority would stay with their 'political family' on the Right. However, the rest would go elsewhere. Almost all second round votes are duels, most commonly between Socialist and UDF-RPR candidates. However, sometimes the competition is triangular. The high level of first round National Front strength, coupled with Le Pen's open hostility to the ruling majority, meant an unusually large number of triangular races compared to past contests. Specifically, in 76 districts a traditional Left candidate, a traditional Right candidate, and a National Front candidate faced off on the second round. In this competition, the Left candidates won 47 times, the UDF-RPR the remaining 29 times (*Le Monde*, 1997, p. 58). Thus, the National Front appeared as a spoiler, costing the traditional Right many seats. Overall, simulation misdiagnosis of FN second ballot maneuvers could well account for an upward error of 30 or so seats in the poll projections.

4. An alternative to the polls: political economy models

Election forecasting from political economy models provides an alternative to the forecasting model implied by polls, which is that vote at time t is a simple extrapolation of vote intention at time $t - 1$. The essential idea is prediction on the basis of

statistical modeling from prior aggregate observations on the economy and polity. In France, early studies modeled vote outcomes as a function of national economic and political indicators (Rosa and Amson, 1976; Lafay, 1977). However, the notion that such models can be used for forecasting is more recent (Lewis-Beck, 1985). Utilizing a simple two independent variable time-series equation and data on nine cases, Lewis-Beck (1995) reported a successful forecast of the 1993 legislative election. Going into the 1997 legislative contest, Fauvelle-Aymar and Lewis-Beck (1997) updated this model, which correctly foresaw the defeat of the ruling Right majority. By contrast, Lafay (1993) developed a pooled time-series model based on a large number of observations from the 22 official regions of France, which also accurately forecast the 1993 result. Our effort, while different from that of Lafay (1993), finds its inspiration there. The advantages of a regional, as opposed to a national, approach to political economic forecasting are at least two: one is sample size, the other is calculation of the votes–seats ratio. For example, the most recent national level model had $N=10$, which is a rather fragile data base (Fauvelle-Aymar and Lewis-Beck, 1997). Further, it generated a fairly accurate first round vote prediction, but a rather poor seat prediction (of only 185 seats for the Right). As shall be seen below, the regional model is based on $N=110$, and leads to a very accurate seat prediction.

The underlying theory of the vote is straightforward. The electorate will tend to continue to support the party coalition in power, if it is satisfied with how the government is handling the principal political and economic issues:

Incumbent vote = $f(\text{Politics, Economics})$.

Working in the months before the 1997 contest, we specified this predictive model for the legislative election outcome in a region:

$$\begin{aligned} \text{Legislative vote}(V) = & \text{Past presidential vote}(P) \\ & + \text{Unemployment change}(U) \\ & + \text{Regional ideology}(I) \\ & + \text{Political instability}(B). \end{aligned}$$

Here are the ordinary least squares (OLS) regres-

sion estimates, along with the operationalization of the variables, from the 1978–1993 election years:

$$V = 11.39* + 0.71*P - 4.73*U + 3.76*I - 1.31*B + e$$

(2.43) (7.69) (4.93) (4.27) (-1.90)

$$\text{Adjusted } R^2 = 0.71 \text{ S.E.E.} = 3.22 \text{ } N = 110 \quad (1)$$

where V is the percentage of the first round vote going to the ruling family of political parties in the Assembly (1978 = UDF + RPR + Diverse Right + Extreme Right), 1981 = same as 1978, 1986 = (Socialists + Communists + Diverse Left + Extreme Left + Ecologist), 1988 = (UDF + RPR + Diverse Right + National Front), 1993 = (Socialist + Communist + Diverse Left + Extreme Left + Ecologist); P is the percentage of the first round vote from the prior presidential election going to candidates allied with the ruling Assembly coalition; U is the change in the regional unemployment rate in the year prior to the election; I is the ideology of the region, scored 1 = majority of the first round legislative vote consistently to Right or Left parties since 1973, 0 = otherwise (when the ideology of the region accords with the incumbent, it carries a ‘+’ sign, otherwise it carries a ‘−’ sign; this means that an incumbent will be more rewarded by regions that are ideologically similar, more punished by regions which are ideologically dissimilar); B is the political instability of the region, where 1 = the first round legislative vote majority (Left versus Right) has changed at least twice since 1973, 0 = otherwise; e = error term; *statistical significance at 0.05 or better, one-tail ($|t| > 1.645$); adjusted R^2 is the coefficient of multiple determination corrected for degrees of freedom; S.E.E. is the standard error of estimate; N is the number of observations; data sources = economic data from the government bureau, INSEE, Paris; political data from *Le Monde: Dossiers et Documents*, various issues, Paris.

Before interpreting these results, it is important that the model satisfactorily passes a series of regression diagnostics. Since the data-set is a pooled time series, issues of heteroskedasticity and autocorrelation are of special concern (Kmenta, 1997, pp. 616–618). We carried out three tests. A White test, which suggested the residuals are not heteroskedastic. A Cochrane–Orcutt-type test, which failed to reveal significant autocorrelation. And, an ARCH test, which explored the presence of heteroskedastici-

ty and autocorrelation simultaneously, and found neither. It appears that interpretation of the parameter estimates can be made with some confidence. (Details of these tests are discussed in the footnote).³

The results of Eq. (1) suggest that legislative outcomes are heavily determined by political economic forces. First, consider the political variables — P, I, and B. The statistically significant coefficient of variable P indicates a ‘coat-tail’ effect from the last presidential election, with incumbent party coalition strength in that race tending to carry over into the subsequent legislative contest. In addition, when the long-term left–right ideology of the region (measured by I) agrees with that of the ruling coalition, it can expect a first ballot gain of almost four percentage points. However, if the region is quite unstable ideologically, tending to move back and forth from left to right over elections, the ruling coalition experiences a slight net loss (of just over one percentage point according to the B coefficient). This instability-induced loss appears akin to the ‘cost of ruling’ phenomenon described by Paldam (1986).

The economic effect from the unemployment variable seems especially potent, its coefficient suggesting that a one percentage point rise will cost the incumbent parties almost 5% of the legislative vote on the first round. This strong result is not surprising, when one considers that the unemployment issue has become a major preoccupation of the French electorate. For example, since 1981, the polling firm SOFRES has asked the following question:

Among the following things which should the government give priority to at present?

In 1981, an average of 56% of those surveyed said ‘the fight against unemployment’. By 1995, that average had risen to 83% (*Etat de l’opinion Sofres 1989, 1996*, éditions du Seuil).

Overall, the model describes the data reasonably well, according to the fit statistics. The key question for our purposes is how the model, based on data to 1993, forecasts the 1997 result. To answer, we plugged in the 1997 pre-election values for the independent variables of Eq. (1), and generated a forecast for each region. In Table 7 are the first-round Right party vote share forecasts, region-by-region (column 3). Some of the forecasts were almost exactly right — e.g. Aquitaine, Bourgogne, Picardie — and a few were several points off — e.g. Alsace, Auvergne, Pay de la Loire. But these prediction errors, and the prediction errors in general (see column 4) present no geographic pattern. Furthermore, the average prediction error for the regions is only 1.54 percentage points, which compares favorably to the first round errors from the pre-election polls.

How well do these vote predictions translate into total seats won? That depends on the ‘swing’ of votes to seats (Tufte, 1975). We hold that the ruling party coalition will gain seats, S, in the region as a

³According to the White test, the null hypothesis of no homoskedasticity may be accepted if: $N \cdot R^2 < \chi^2_{95} (df)$ (df, degrees of freedom). The test model is as follows:

$$e^2 = a + bU + cP + dI + eU^2 + fP^2 + gI^2 + h(U \cdot P) + i(U \cdot I) + j(P \cdot I) \\ R^2 = 0.091 \quad N = 110$$

where e^2 = the squared residuals from Eq. (1), and U, P, and I are from Eq. (1). (Because of high collinearity some exclusion was necessary in order to avoid a singular matrix, which would prevent the test. Therefore, variable B, which had the lowest original t -value in Eq. (1), was selected for exclusion). Applying the test, $110 \cdot 0.091 < 16.92 = 10.01 < 16.92$ = reject the hypothesis of heteroskedasticity.

To test for autocorrelation, we applied a Cochrane–Orcutt-type correction, adding to the right-hand side of Eq. (1) an autoregressive term (AR) measuring vote in the region in the last election, e.g. Alsace in 1986 and Alsace in 1981, etc.

$$V = 13.76^* + 0.66^* P - 4.48^* U + 4.34^* I - 1.39^* B - 1.39 \text{ AR} \\ (2.30) \quad (5.56) \quad (-3.79) \quad (3.97) \quad (-2.05) \quad (-1.49)$$

$$\text{Adj. } R^2 = 0.69 \quad \text{S.E.E.} = 3.35 \quad N = 88$$

where the variables V, P, U, I, B and the statistics are defined as in Eq. (1). The coefficient of the autocorrelation term (AR) falls well-short of statistical significance at 0.05, with a t -ratio of -1.49 . We reject the autocorrelation hypothesis.

We carried out an ARCH test to examine the presence of heteroskedasticity and autocorrelation at the same time.

$$e^2 = c + a(e^2)_t - 1 + b(e^2)_t - 2 + \dots v(e^2)_t - 22 \\ R^2 = 0.31 \quad n = 88 \quad \text{arch} = 22 \text{ lags}$$

where e^2 is the squared residuals from Eq. (1) (calculated without variable B to overcome the problem of a singular matrix) and $t - 22$ indicates the 22 lags for the 22 regions. The null hypothesis of no heteroskedasticity and no autocorrelation can be accepted if: $N \cdot R^2 < \chi^2_{95}(p)$ (p = number of autoregressive terms). Here $88 \cdot 0.31 < 36.42 = 28.04 < 36.42$. Therefore, we reject the hypotheses of heteroskedasticity and autocorrelation.

Table 7
Regional predictions, the 1997 French legislative elections vote percentages

Region	Region number	Percent of vote for Right (RPR+UDF+Diverse Right+FN) (1st round)			
		1993 Actual (1)	1997 Actual (2)	1997 Forecast (3)	1997 Prediction error (4)
Alsace	1	63.44	59.9	66.54	6.64
Aquitaine	2	51.5	47.6	47.91	0.31
Auvergne	3	55.73	46.54	49.79	3.25
Bourgogne	4	55.89	51.6	51.34	−0.26
Bretagne	5	56.91	48.96	50.59	1.63
Centre	6	57.39	52.11	52.66	0.55
Champagne–Ardenne	7	60.39	56.52	53.82	−2.7
Franche–Comté	8	56.39	51.89	51.24	−0.65
Languedoc–Roussillon	9	52.67	47.88	47.55	−0.33
Limousin	10	49.65	45.26	46.6	1.34
Lorraine	11	56.93	53.64	54.95	1.31
Midi-Pyrénées	12	53.1	46.17	46.59	0.42
Nord	13	48.87	44.64	43.96	−0.68
Basse Normandie	14	62.77	55.16	56.78	1.62
Haute Normandie	15	53.4	47.27	48.72	1.45
Ile de France	16	57.22	52.41	54.1	1.69
Pays de la Loire	17	62.02	53.02	57.96	4.94
Picardie	18	57	49.64	49.43	−0.21
Poitou Charentes	19	57.77	49.35	49.75	0.4
Provence–Alpes–Côte d’Azur	20	60.59	54.6	55.62	1.02
Rhône Alpes	21	60.78	54.71	55.16	0.45
Corse	22	50.56	55.72	53.76	−1.96

function of its first round vote share, V (Lewis-Beck and Rice, 1992, p. 127). But also, those seat gains will be influenced by the actions of parties at the extremes. For example, a generally high abstention rate (A) should cut into the ruling party's seats, because activist parties such as the National Front will still mobilize (barring explicit leadership directives to the contrary). Further, when the National Front (F) is weak, incumbent seat shares will tend to be less affected (because of the 12.5% first ballot requirement for passing to the second ballot). In sum,

$$\begin{aligned} \text{Legislative seats}(S) = & \text{Legislative votes}(V) \\ & + \text{Abstentions}(A) \\ & + \text{National Front strength}(F). \end{aligned}$$

Here is the ordinary least squares estimation of the

equation, accompanied by a description of the variables, from the 1978–1993 data:

$$S = \underset{(-5.83)}{-62.75*} + \underset{(13.40)}{2.86*}V - \underset{(-6.12)}{1.13*A} + \underset{(2.17)}{5.90*}F + e$$

$$\text{Adjusted } R^2 = 0.68 \text{ S.E.E.} = 13.28 \text{ } N = 110 \quad (2)$$

where S is the percentage of seats in the region going to the ruling family of parties in the Assembly; V is the first round vote share in the region going to the ruling family of political parties in the Assembly; A is the vote abstention propensity in the region on the first legislative ballot, (measured as the highest abstention score out of the 1978, 1981, 1986, 1988, and 1993 contests); F is the National Front strength, where 1 = a weak first round National Front vote (more than one standard deviation, 4.04 percentage points, below the mean National Front support of 9.85% for the elections 1986–1993), 0 = otherwise; the statistics are defined as for Eq. (1).

The statistical results support the model. In general, the first round vote share converts strongly into seats: a 1% vote share rise appears to lead to almost a 3% rise in seat share. However, as the other significant coefficients indicate, these gains can be blunted by high levels of abstention or National Front presence. (While other partisans may abstain, National Front supporters tend not to. Further, National Front levels of vote participation have increased, while general levels of vote participation have decreased (Habert, 1996).) If the National Front is relatively weak, then it cannot be an effective nuisance factor, and the ruling coalition gains almost 6% more seats.

Since Eq. (2) is based on data through 1993, it can be used to forecast the 1997 result. We simply plug the first round 1997 vote share estimates (the estimated V for each region from Eq. (1)) into Eq. (2), along with the pre-election A and F scores. These

region-by-region seat share forecasts appear in Table 8.

In column 4 are the percentage seat share forecasts for the parties on the Right, by region. The predicted percentage shares are generally not far from the actual 1997 percentage shares (column 3). Further, the model correctly predicts the fall of the Right from power ($<50\%$ seats) in 20 of the 22 regions. It misses only in the Lorraine, where it awards the Right a victory (with 52.2%), and in the Paris region (Idf), where it gives a bare defeat to the Right (with 49.5%). Importantly, then, the forecasts mark the critical shifts in the political tide. How much accuracy is there, when these percentages are converted into numbers of seats? Column 8 shows these conversions, which can be compared to the actual number of seats won in column 7. Overall, the error in seat prediction, region to region, is small. Only in the Aquitaine and the Languedoc-Roussillon is the

Table 8
Regional predictions, the 1997 French legislative elections, seat percentages and numbers

Region	Region number	Percent of seats for Right (RPR + UDF + Diverse Right + FN) (1st and 2nd round)				Region number	Seats for Right (RPR + UDF + Diverse Right + FN) (1st and 2nd round)			
		Seats/ region (1)	1993 Actual (2)	1997 Actual (3)	1997 Forecast (4)		Seats/ region (5)	1993 Actual (6)	1997 Actual (7)	1997 Forecast (8)
Alsace	1	16	87.5	81.25	87.5	1	16	14	13	14
Aquitaine	2	27	85.2	18.52	37	2	27	23	5	10
Auvergne	3	14	100	35.71	42.9	3	14	14	5	6
Bourgogne	4	17	82.4	35.29	41.2	4	17	14	6	7
Bretagne	5	26	84.6	38.46	46.2	5	26	22	10	12
Centre	6	23	95.7	52.17	52.2	6	23	22	12	12
Champ. Ardennes	7	14	100	78.57	50	7	14	14	11	7
Franche-Comté	8	13	84.6	30.77	46.2	8	13	11	4	6
Lang. Roussillon	9	21	85.7	4.76	33.3	9	21	18	1	7
Limousin	10	9	88.9	22.22	33.3	10	9	8	2	3
Lorraine	11	23	87	34.78	52.2	11	23	20	8	12
Midi-Pyrénées	12	26	76.9	19.23	34.6	12	26	20	5	9
Nord	13	38	63.2	15.79	26.3	13	38	24	6	10
Basse Normandie	14	14	92.9	57.14	64.3	14	14	13	8	9
Haute Normandie	15	17	70.6	29.41	35.3	15	17	12	5	6
Ile de France	16	99	80.8	52.53	49.5	16	99	80	52	49
Pays de la Loire	17	30	93.3	66.67	63.3	17	30	28	20	19
Picardie	18	18	83.3	27.78	44.4	18	18	15	5	8
Poitou Charentes	19	17	88.2	35.29	41.2	19	17	15	6	7
Paca	20	40	87.5	60	55	20	40	35	24	22
Rhône Alpes	21	49	89.8	55.1	53.1	21	49	44	27	26
Corse	22	4	75	75	50	22	4	3	3	2
		555					555	469	238	263

error greater than four seats. Overall, average prediction error is just 2.2 seats.

While this regional accuracy is impressive, what finally matters is how the model does overall, when the results are aggregated to the national level. Adding up the entries in column 8, with its 22 regional forecasts, yields a national forecast of 263 seats for Right. The actual coalition result was 238 seats (or 246 seats if, following *Le Monde* reports, seven unofficial majority seats plus one National Front seat are included). Thus, the seat forecast is close to the real outcome, and correctly foresees the defeat of the government. Moreover, the forecast was generated from data available a year or more prior to the election. Finally, in a specification test involving perhaps the leading rival formulation of the original model, these seat forecasts could not be improved upon.⁴ The implication is that the application of Eq.

⁴What may seem an obvious omission in the independent variables of Eq. (1) is some measure of executive popularity (Lewis-Beck, 1980). Below, we modify the specification to include a measure of presidential popularity (D), and reestimate:

$$V = 15.65^* + 0.68^*P - 1.99^*U + 3.95^*I - 1.05^*B - 0.22^*D + e$$

(4.16) (9.27) (-2.37) (5.62) (-2.07) (7.84)

$$\text{Adjusted } R^2 = 0.81 \text{ S.E.E.} = 2.56 \text{ } N = 110 \quad (3)$$

where the variables and statistics are defined as for Eq. (1), and D is the percentage in the national IFOP poll who are dissatisfied (mécontent) with the President 1 month before the legislative election (standardized by subtracting from it his percentage in the second month of his mandate, thereby correcting for an initial 'état de grâce' effect); during periods of cohabitation D=0.

These results appear an improvement over Eq. (1) results, in that the goodness of fit noticeably rises, and presidential popularity is easily significant at 0.05. Taken at face value, the coefficient of D indicates that, as the electorate becomes more dissatisfied with the President, they are more likely to vote against his party coalition in the first round of legislative elections. However, the difficulty with Eq. (3) comes in the forecasting of actual seat share. Following the same procedure as before, we plug the first round 1997 vote share estimates from Eq. (3) into the seats equation, Eq. (2). This generates region-by-region seat share forecasts which aggregate to a total forecast of 203 seats for the Right. This generates a prediction error of 43 seats, an error great enough that it is little better than the polls. (It looks closest to the seat error in the BVA polls of Table 4.) In contrast, the Eq. (1) first round vote share estimates lead to a forecast with an error of only 17 seats. Since our primary purpose is forecasting, we prefer the Eq. (1) specification. First, it leads ultimately to more accurate seat forecasts. Second, it has much greater lead time, using data from a year before the election, whereas Eq. (3) uses data not completely available until 1 month before the election.

(1) and Eq. (2) are preferred, when the goal is precise forecasting of overall seat shares.

5. Summary and conclusions

For the 1997 French legislative elections, the polls got it wrong. Before the contest, they consistently predicted that the ruling Right coalition would win. Instead, the Left came to power after election day. The polls do not always fail in France, or else they would not be taken so seriously by political observers. Why did they go wrong this time? We have offered some reasons. There was a real shift in first round preferences over the campaign period, away from the governing UDF-RPR. This shift was small enough that it was hard to detect in any one survey. With regard to actual seats, accurate projection was hindered by faulty assessment of first round vote intention, and by National Front party strategy and voter behavior on the second round. Other concerns could be raised, but these appear to tell much of the story.

An alternative to the polls is statistical modeling from systematic observation of relevant aggregate patterns. We offered one such model, based on political and economic fluctuations associated with prior legislative contests. It was able to forecast, with considerable accuracy, the fall of the Right, well before the election took place. It was able to do this in large part because it is based on a theory of vote choice, real ballot results, and a regional database close to the local arenas of legislative combat. None of these positive attributes can be assigned to the polls, which are atheoretical and focus on subjective vote intention in national samples. To forecast upcoming elections, French election observers might do well to pay more attention to political economy models and less attention to the polls.

A final, comparative note is perhaps in order. In the literature on forecasting US presidential elections, it appears that front-runners commonly experience a narrowing lead in the polls as the campaign moves toward election day (Campbell, 1996, p. 415). Further, political economy-type forecasting models are frequently able to call the presidential winner before the campaign is over (Gelman and King, 1993). What seems in play here is the campaign, whose course is largely set by issues of

partisanship, incumbency and the economy. As the number of voters who are undecided dwindles with the approach of the ballot, they tend to divide evenly, thus narrowing the margin of the leader. Campaigns matter, for they stage the contest, and as long as everyone acts their part, its effects will cancel out in predictable ways (Holbrook, 1996). The interaction of polls, campaigns, and political economic forces may be similar in French and US elections.

Appendix A

The poll data from these five leading firms are gathered from the following magazines and newspapers:

1. SOFRES. *Le Figaro*, sondages Figaro-SOFRES, April 21, April 28, May 5, May 18, and May 19, 1997.
2. IFOP. *Le Journal du Dimanche*, sondages Le Journal du dimanche-IFOP, April 27, May 4, May 9, May 18, 1997.
3. CSA. *Le Parisien*, sondages Le Parisien-CSA, April 22, April 28, May 5, May 12, May 17, May 18, and May 23 (not published), 1997.
4. BVA. *Paris-Match*, sondages Paris-Match-BVA, April 5, April 26, May 3, May 10, and May 18, 1997.
5. IPSOS. *Le Point*, sondages Le Point-IPSOS, March 29, April 26, May 3, May 7, May 23 (not published), 1997.

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Biographies: Bruno JÉRÔME and Veronique JÉRÔME are both Maître de Conférences, Faculty of Economics, Université de Metz, CREDES, France. They have also been associated with the Laboratoire d'Economie Publique, Université de Paris I. They have published articles in election forecasting, political business cycles, and fiscal policy.

Michael S. LEWIS-BECK is F. Wendell Miller Distinguished Professor of Political Science at the University of Iowa. He has published numerous articles, monographs, and books in the areas of political economy and data analysis, including *Economics and Elections: The Major Western Democracies*, *Forecasting Elections* (with Tom Rice), and *Applied Regression: an Introduction*. He has served as Editor of the *American Journal of Political Science* and is currently Editor of the Sage *Quantitative Applications in the Social Sciences* green monograph series.