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More on the Seasonal Determinants of Turnout: Holidays and French Presidential Elections

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This article aims to test a proposition widely spread among scholars and journalists according to which holidays would have an impact on electoral turnout. To our knowledge, this possibility has not been investigated in the French case yet. Our data, gathered for the last three presidential elections, strongly support a negative effect of holidays on turnout. Since turnout and left vote are linked, this negative influence helps to explain the defeat of the main left-wing candidate in 2002 even though it does not represent the sole factor.
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Introduction

> One can miss the first round, not its holidays.
> Advertising slogan[1]

In a previous paper, we emphasized the role of the climate in the determination of the electoral turnout in France (Ben Lakhdar and Dubois, 2006). Variables such as temperature, precipitation or sunshine have a strong and significant impact on the turnout at legislative elections.

Our purpose in this brief article is to assess the influence of another circumstantial variable on turnout: the holidays.[2] This work is then encompassed in a larger framework dealing with turnout. It takes as its starting point the theoretical assertion that the choice as to whether to vote or not is rational. According to this theory, individuals decide to vote or not

according to the expected utility they receive from their vote defined as the difference between the expected benefits derived, for example, from the political program and the costs of voting. These costs include, among others, opportunity costs concerning the collection of information about political programs as well as transport costs, such as the time spent on the way to the polls. Our work goes further by assuming that seasonal factors alter the perception of the voting costs. We consider that they translate the strong discontent of some people. Seasonal factors can be used by 'fragile citizens' as a pretext of not voting. Regarding holidays, they value their holidays, which take them far from home, more than the ballot day, which requires their presence at home.[3] Holidays have been invoked as a reason to explain the large level of abstention at the first round of the French presidential election of 2002 (see e.g., the newspapers *Le Figaro* and *Libération* in the days following the ballot or INSEE Aquitaine, 2002). In 2002, about 20 million French were on holiday and one study estimated that about 4–5 million of them left home.[4] In a poll after the first round, 16% of the abstainers said that they did not vote because 'they were on holidays, gone away for the weekend or were out for a walk'.[5]

Scholars have long identified holidays as a determinant of turnout. Numerous studies mention a possible link between holidays and turnout (e.g. Abrams, 1970; Turner, 1972; Denver and Hands, 1974; Crewe, 1975; Sigelman and Berry, 1982; Swaddle and Heath, 1989; Blondel *et al*., 1997) but formal tests are few (Blais *et al*., 2004; Anderson and Beramendi, 2006). In Blais *et al*. (2004), the authors introduce a dummy variable in their microanalysis of vote participation in Canada that is worth 1 if the election is held in winter or in summer, and 0 otherwise. This variable, interpreted as a proxy for holidays since holidays generally take place in these seasons in Canada, is significant and negative-signed. Anderson and Beramendi (2006) confirm this result in their analysis of the turnout in 14 OECD countries for the period 1980–2002. In this study, the holiday variable is a dummy that takes 1 if the election is held on a holiday, and 0 otherwise. In a somewhat similar way, Franklin (1996) shows that in countries where people vote on Sunday the turnout is higher.

In countries where the Election Day is a working day, setting the ballot on the weekend or on a holiday has been proposed as a way of reducing abstention (e.g. Squire *et al*., 1987; Green and Shachar, 2000; Freeman, 2003; Just, 2005; Hill, 2006). But Gray and Caul (2000) show that setting elections on a weekend or holiday when it was previously not on a holiday is not relevant in explaining the trend of change in turnout in 18 OECD countries between 1950 and 1997. In Brazil, the Election Day is declared as a public holiday to facilitate voting, which is compulsory (Power and Roberts, 1995). But declaring Election Day as a public holiday may be dangerous if the Election Day is close to the weekend. Indeed, people can take an extended

weekend that leads to a weak turnout as it was apparently the case in South Africa (Alence, 2004; Piombo, 2004).

One wonders why so few empirical studies have included holidays, and more generally seasonal factors, among their determinants of turnout. At least three arguments can be advanced. Firstly, turnout can be mainly explained by socio-demographic variables (age, gender, study level, diploma, religious practice, etc.). Most empirical studies then privilege these 'heavy variables' and others variables are seen as marginal. Secondly, one might think that the impact of seasonal factors on turnout is recent. Indeed, until the 1980s, turnout rates were quite high; to vote was the rule and to abstain was the exception. The appearance of a dramatic decreasing trend in turnout (lassitude due to political scandals, repetition of ballots, similarities in political platforms, poor performances of the incumbent, etc.) has modified the behavior of some people. Turnout is no longer viewed as a duty. Abstention is now commonplace and anything is a pretext to abstain. This is why the importance of seasonal factors has grown. Studies in the past do not take them into account simply because they were not relevant at this time. Thirdly, the lack of data (especially climatic ones) or the complexity of the holiday agenda may explain the difficulties for some authors to introduce these variables in their models.

If the influence of climatic conditions on turnout in France is now established, the impact of holidays has not been tested in the French case yet. Our study aims to fill this gap.[6] Firstly, we present the setting of the French holidays. After having described the variables, the data and the methodology, we then show the estimations' results. One extension is explored before closing by some conclusive remarks.

The setting of holidays in France

In France, there are about 16 weeks in the year when there are holidays. In a general way, the holiday agenda is the following: the school year starts in September and the first two holiday weeks are in November (All Saints' Day holidays). The next holidays are in December and in January with Christmas and New Year holidays (2 weeks). French schoolchildren have 2 weeks holiday in February, called 'winter holidays', and 2 weeks holiday during April or May called 'spring holidays'. The end of the school year is in early July and 8 weeks holidays follow.

People do not have holidays at the same time because the holiday agenda is set up according to three geographical areas (or 'zone' in French), called A, B and C. For the same type of holidays (winter, spring, etc.), the holiday period is different from one area to another. For instance, in 2005, spring holidays stretched from 8 April to 23 April for area C and from 22 April to 8 May for area A.

The areas A, B and C are determined according to school districts ('académies' in French) and were fixed by the decree of 24 July 1995. There are 26 school districts in metropolitan France and they correspond to Regions with few exceptions.[7] Departments in each area are shown in Table 5.

It must be underlined that the holiday agenda has changed several times since the 1960s in both the date and the geographical division of the areas. It has been only since the 1964–1965 school year that metropolitan France was divided into several areas, except for the 1971–1972 school year where there was a single area. Another exception was for the 1980–1981 and the 1981–1982 school years when the holiday agenda was set by each school district.

The Model

The dependent variable, noted *TURN*, is the turnout in the French departments for the first round of the last three presidential elections. We have then four choices to justify: the electoral unit, the relevant round, the level of elections and the period under consideration.

France is subdivided into 'regions', each of them being subdivided into several 'departments'. Each department is composed of several electoral districts. There are 22 regions, 96 departments and 555 electoral districts in metropolitan France. The district level has been left aside because too few data were available to define our independent variables.[8] We have chosen the departmental level because we think it is a more homogeneous electoral territory than the region. Our argument here is theoretical. Departments were created in 1790 on the basis of sociological criteria that respected the religious organization of the dioceses, whereas regions date back only to 1960 and were mainly motivated by national planning considerations. However, the empirical proof remains to be provided. A hint can be found in Dubois and Fauvelle-Aymar (2004). By estimating the same model (same dependent variable, same explanatory variables, same period) at different levels of data (national, regional, departmental), they shown a clear superiority of the departmental model at least in terms of vote forecasting.

Furthermore, our study only concerns the first ballot. First, this choice allows us to avoid more complicated modeling resulting from triangular contests (left/right/extreme-right), fratricidal duels (left/left or right/right), single candidates at the second round or even the absence of a second round. Second, at the first round, the electoral supply (i.e. the number of candidates) is larger and then the turnout is *a priori* less constrained.

We have chosen presidential elections because these elections are the most important in the eyes of French citizens.

Finally, our sample begins with the 1988 elections because, as we will see later, data for one important variable do not exist before 1982. They are then

unavailable for the 1981 ballot. The election dates in our sample are the following: 24 April 1988, 23 April 1995 and 21 April 2002.

We have six potential explanatory variables. The first one is a variable that catches the discontent due to the economic situation. The argument is that, in case of poor macroeconomic performance, voters who usually supported the incumbent prefer to abstain rather to vote against her. We have retained the unemployment rate to account for the economic situation. More precisely, *UNEM* is the difference in the departmental unemployment rate between the quarter prior to the election and four quarters before (that is one year). This measure is frequently retained in the French vote-functions literature (see e.g. Jérôme and Jérôme-Speziari, 2004). We expect a negative sign for the coefficient of *UNEM* since this variable is a sign of discontent. Two remarks can be made. First, when macroeconomic performance is poor, turnout might be higher since some voters who usually abstain go to polls to sanction the ruling majority. Second, *UNEM* expresses one particular form of discontent, namely an economic one. Other forms of discontent can be envisaged, for example discontent linked to scandals or to the weariness effect of being in power.

According to a theory well documented elsewhere (see e.g. Lewis-Beck and Rice, 1983; Rice and Macht, 1987), a candidate has an advantage in her own electoral territory. This is the so-called 'friends and neighbors effect'. Because she is known by a lot of voters in her native area and since voters are proud to have a candidate born in the same region as theirs, she gets additional support. This effect, which is traditionally applied to voting, may be transposed to the issue of turnout. People who usually abstain can vote for a candidate with the same geographical origins as themselves. We define then a variable, noted *LOC*, that takes 1 in the department from which a candidate originates, and 0 otherwise. We retained only the professional origin, that is the department where mandates were fulfilled. We also limited ourselves to the three main candidates for the first round since most minor candidates do not have any mandate. A positive sign is expected for the coefficient of this variable.

The first round of a presidential election generally presents, quantitatively speaking, a different political supply; the number of candidates varies. There were nine in 1988 and 1995, and 16 in 2002. This can have two opposite effects on turnout (Fauvelle-Aymar and François, 2005). On one hand, turnout can be higher since, for a potential voter, the probability to express a sincere choice increases. On the other hand, people can be embarrassed by this abundance of choice and may abstain in order to wait until the second round. To investigate a possible effect of the heterogeneity of the political supply, we have constructed a variable that is simply for each election of our sample the number of candidates at the first round. Owing to the two aforementioned arguments, the sign of the coefficient of this variable is unknown.

The two following independent variables are the climatic variables on the Electoral day: temperature and precipitation. In order to take into account the geographical heterogeneity, we chose to withdraw the long-term trend of our climatic data. Indeed, for example, 20° are not experienced in the same way in a northern department than in a southern department. In order to erase these disparities and therefore to capture the exceptional character of certain periods of rainfall, temperatures or sunshine, we use the 'climatic standard' that is the monthly average on a 30-year period. We then use the following variables: *PREC* is the height in millimeters of precipitation that fell between 6 a.m. and 6 p.m. on the voting day and *TEMP* is the arithmetic mean of the temperature in Celsius degrees measured at 6 a.m. and 6 p.m. on the voting day. Both are expressed in terms of the difference with the long-term tendency observed in the period 1961–1990.[9] We expect a negative sign for *PREC* and for *TEMP*, due to possible non-linearity, the expected sign is unknown.[10]

The second seasonal factor is the holidays. Since, in our sample, elections are held in late April, the only holidays that may affect turnout are the spring holidays. Table 1 records their dates for each area.

We can see that two elections are concerned by the holidays: 1995 (all areas) and 2002 (areas A and C). We introduced a dummy variable, noted *HOL*, that is worth 1 in departments belonging to areas on holidays, and 0 otherwise. Since ballots take place on Sunday in France and not on a working day, we expect a negative sign for the coefficient of *HOL*. We can note that, by extension, this variable implicitly supposes that the behavior toward holidays is identical from one department to another.

In relation with this last variable, it is interesting to mention here the possibility of a vote by proxy ('procuration' in French). Until 1993, absence from one's place of residence did not make a person eligible for a vote by proxy. After the law of 6 July 1993, people on holidays[11] and not present on the Electoral Day can ask for a proxy vote providing they can verify their absence according to the decree of 18 April 1997. Finally, an edict of 8 December 2003 eliminated the obligation to produce written proof and replaced it by a solemn declaration. In 2002, aware of the difficulties entailed by the procedure and the possible negative impact of holidays on turnout, in a circular (dated 8 March)

Table 1 Dates of spring holidays

School year	*Area A*	*Area B*	*Area C*
1987–1988	03/26–04/11	04/01–04/18	05/01–04/18
1994–1995	04/08–04/24	04/22–05/09	04/15–05/02
2001–2002	04/06–04/22	03/30–04/15	04/13–04/29

the government indicated that it was willing to respect the spirit of the decree rather than the strict application of its clauses. Since the two elections concerned by holidays (1995 and 2002) held between the law of 1993 and the edict of 2003, the modifications of the procedure of the vote by proxy are then without any effect.[12]

An interesting extension of our holiday variable is to examine whether the turnout is affected by the fact that the ballot is held on the first, the second or the third weekend of the holidays. Spring holidays last 2 weeks and include three weekends. Intuitively, since holidays begin on a Saturday in France, people might postpone their departure if the ballot is held on the first weekend and bring forward their return from holidays if the ballot is held on the third weekend. The abstention then should be higher on the second weekend. To assess such an impact, we have split our *HOL* variable into three weekend variables noted *WE1*, *WE2* and *WE3*. *WEj* is a dummy variable that takes 1 if the department is in an area on holidays and if the ballot is held on the *j*th weekend, and 0 otherwise. By extension, we have then $WE1 + WE2 + WE3 = HOL$. We expect a negative sign for all three variables and a larger coefficient in absolute value for *WE2*.

Numerous other variables explaining the turnout may exist (see, among others, Blais and Dobrzynska, 1998). These variables are essentially socio-demographic factors that affect turnout in the long run: age, level of education, religion, etc.[13] They explain why a department systematically has a higher turnout rate than another. To capture these spatial disparities, we estimate a fixed-effects model.[14] In this kind of model, the intercept term varies from one department to another and then takes into account the long-run specificities of each department (see Dubois and Fauvelle-Aymar, 2004).

We can cite three other potential explanatory variables, this list being non-exhaustive. The first is the interest of people in the campaign. The more people are aware about the issues of the campaign, the larger the turnout is. Unfortunately, such data, mainly taken from polls, do not exist for all the elections in our sample. The second variable is the density of population. When areas are lightly populated, some people are far from the polls and they can choose to abstain. We can compute the density for 1995 and 2002 only.[15] The correlations with the turnout are, respectively, -0.38 and -0.28 and then go in the sense of the aforementioned depressive effect. Finally, with regard to our holiday variable, we might hypothesize that if people go on holidays near their place of residence, they can just go back there to vote. We can even think that they choose their holiday destination according to the possibilities it offers to be present on the voting day. No data are alas available regarding the choices of people in matters of holiday location.

The basic model to estimate is:[16]

$$TURN_{i,t} = c_i + \alpha_1 UNEM_{i,t} + \alpha_2 LOC_{i,t} + \alpha_3 CAND_t + \alpha_4 PREC_{i,t} + \alpha_5 TEMP_{i,t} + \alpha_6 HOL_{i,t} + \varepsilon_{i,t}$$

Let us turn to the description of the sample and to the presentation of the estimation results.

Sample and Estimation Results

All the data for the variables mentioned above are readily available for all the French departments except with regard to the climatic variables. Indeed, the climatic standards are not available for several departments[17] and the temperature is missing for one department in 1988.[18] We thus removed these departments from our sample. Furthermore, the departments Corse-du-Sud and Haute-Corse have been moved apart since, as mentioned before, they do not belong to the area A, B or C but to a specific one for which we were not able to gather the dates of holidays. Finally, our unemployment variable cannot be defined for the 1981 election since the departmental unemployment rates are not available before the fourth quarter of 1981. Our sample then includes 67 departments on three elections, which is a total of 201 observations.[19]

Table 2 shows some descriptive statistics.[20]

To check that our sample is unbiased and representative of the whole French departments, we have performed a Chi-squared test to investigate the equality between the variance in the turnout for our sample (17.39) and for all French departments (18.83).[21] The null hypothesis is that the two variances are equal. The empirical statistics is 60.95 and the statistics given by the table is 85.97 (at 5%). Then we cannot reject the null. Our sample is then representative of the French departments in the whole.

Table 3 presents the correlations between explanatory variables.

The estimation leads to Table 4.[22]

Table 2 Descriptive statistics

Variable	*Minimum*	*Maximum*	*Mean*	*Median*	*Standard deviation*
TURN	67.62	85.70	78.68	79.95	4.17
UNEM	−1.90	1.80	−0.40	−0.50	0.63
LOC	0.00	1.00	0.03	0.00	0.18
CAND	9.00	16.00	11.33	9.00	3.31
PREC	−3.72	48.74	0.70	−1.67	7.44
TEMP	−8.20	8.20	0.34	0.50	2.06
HOL	0.00	1.00	0.52	1.00	0.50

Table 3 Correlations between explicative variables

	UNEM	*LOC*	*CAND*	*PREC*	*TEMP*	*HOL*
UNEM	1.00	0.02	0.76	−0.14	0.44	0.00
LOC		1.00	−0.02	−0.05	0.03	0.02
CAND			1.00	−0.26	0.66	0.05
PREC				1.00	−0.33	0.20
TEMP					1.00	−0.04
HOL						1.00

Table 4 Estimates

Variables	*(1)*	*(2)*	*(3)*
$UNEM_{i,t}$	−0.46* (1.96)	−0.43* (1.88)	−0.48** (2.37)
$LOC_{i,t}$	0.78 (0.71)	—	—
		—	—
$CAND_t$	−0.99*** (17.84)	−1.02*** (25.24)	−1.04*** (26.55)
$PREC_{i,t}$	−0.05*** (4.21)	−0.04*** (4.68)	−0.04*** (4.35)
$TEMP_{i,t}$	−0.06 (0.71)	—	—
		—	—
$HOL_{i,t}$	−1.67*** (10.17)	−1.66*** (10.51)	—
			—
$WE1_{i,t}$	—	—	−1.58*** (7.93)
	—	—	
$WE2_{i,t}$	—	—	−2.07*** (10.58)
	—	—	
$WE3_{i,t}$	—	—	−1.14*** (3.96)
	—	—	
Adj. R^2	0.91	0.91	0.92
N	201	201	201

Student *t* are in brackets.
***Significant at 0.01 level.
**Significant at 0.05 level.
*Significant at 0.10 level.

As one can see from column 1, all the explanatory variables have the expected sign and are significant at 10% or less except for *LOC* and *TEMP*. For the localism variable, this means that one does not participate more in a department from which an important candidate originates. For *TEMP*, it is a little bit more complicated. A possible explanation, as mentioned earlier, lies in the non-linear character of this variable. One can think that the sign of the coefficient is positive on one part of the sample and negative on the other part

so that, on the entire sample, the coefficient is not significant. After having dropped these irrelevant variables, we obtain the results shown in column 2. They confirm an impact of the climate on the turnout with a strong negative influence of precipitation: 11 mm of more precipitation (compared to a normal day) leads to a decrease of the turnout of about 0.5 points. Our discontent variable, *UNEM*, indicates that when the departmental unemployment rate increases by 1 point in the year preceding the presidential election, the turnout decreases by about 0.5 points.[23] The candidate variable has a negative sign attesting to a 'confusion effect' due to the multiplication of the candidates: 1 candidate more leads to a higher abstention rate of 1 point. It confirms the result obtained by Fauvelle-Aymar and François (2005) for the 1997 legislative election. Finally, our holiday variable is strongly significant: in departments where people are on holidays, the turnout rate is lower by about 1.7 points.

Column 3 exhibits the estimation output when *HOL* is split according to the presence of the ballot on the first, second or third weekend of the holidays. All these variables are significant and have the expected (negative) sign. This confirms that departments on holidays participate less in the election. More interestingly, the coefficient of *WE2* is larger than that of *WE1* and *WE3*. The turnout is affected by about, respectively, 1.6, 2.1 and 1.1 points in departments where the ballot is held on the first, second, and third weekend of the holidays. People seem to postpone their departure or bring forward their return of holidays to vote, while if the election date is during the second weekend, people give up the idea of voting (i.e. it costs more to cut the holidays in the middle).

Further results: did holidays cost the final to the main left-wing candidate in 2002?

According to the literature, in France, abstention penalizes left-wing parties (see, among others, Fauvelle-Aymar *et al.*, 2000; Ben Lakhdar and Dubois, 2006). The explanation may lie in the similarities between abstainers and left-wing voters. Indeed, these two groups present several common features, for example, youth, weak attachment to the Catholicism and low level of education (see Mossuz-Lavau, 1997). If this link between abstention and the left-wing vote is correct, while having a depressive effect on the turnout, holidays would also disadvantage the Left.

In 2002, the main left-wing candidate, Lionel Jospin, missed the second round by 372,311 votes. Indeed, he was third at the first round with 4,398,824 votes, behind the incumbent President Jacques Chirac (5,386,471 votes) and the extreme-right candidate Jean-Marie Le Pen (4,771,134 votes).[24] Since we have demonstrated a strong negative effect of holidays on turnout, it is interesting to

assess this influence in terms of votes and to see if holidays cost the participation at the second round to Lionel Jospin.

To do this, we simply considered that the turnout rate was higher by 1.66 points in departments on holidays. We then multiplied these new turnout rates by the figures of the registered voters.[25] The new total obtained for voters is 29,000,785 as against a previous value of 28,610,561. Holidays have then captured 390,224 voters.[26] The Louis-Harris poll mentioned in the introduction of the present paper tells a quite different story. If 16% of abstainers did not vote because they were on holidays, the holidays cost 1,700,504 votes in terms of turnout (the number of abstainers was 10,628,147), which is about four times more than our estimate. This gap can be explained by the fact that our figure is *Ceteris paribus*, not the poll's one. Indeed, in the poll, people could answer by citing *several* reasons as to why they did not vote (the percentages for the various answers did not sum up to 100). In our study, the effect of holidays takes into account the effect of other determinants.

It is important to note that the figure of 390,224 does not include only left-wing voters and *a fortiori* Jospin voters. If the structure of the abstainers was the same as for the actual electorate, 15.8% would have voted for him, which represents 61,655 voters. We are then far from the 372,311 missing votes. But, as we have mentioned earlier, the literature stresses that the structures of abstainers and voters are not identical and that potential left-wing voters prevail among the abstainers. Unfortunately, we have no information about the proportion of abstainers who would have voted for Lionel Jospin if they had chosen to participate in the ballot. What is for sure is that this proportion has to be 95.4% to change the second round (372,311 of 390,224) and the true proportion is surely lower. Holidays then cannot explain in themselves the defeat of the left-wing candidate in 2002.

Conclusion

Holidays are often invoked by both scholars and journalists to explain a low turnout. By examining the literature, it is striking to note that formal tests are scarce and even non-existent in the French case. To fill this gap, we have built and estimated an econometric model of turnout at the first round of presidential elections. To control for the possible effect of holidays, we used proxies for political supply, popular discontent, socio-demographic context and other seasonal factors as climatic conditions. The main result of our study is that holidays have a strong depressive effect on turnout. In departments concerned with holidays, the turnout rate is *Ceteris paribus* lower by about 1.7 points.

Since there exists a positive link between turnout and the left's vote, it is tempting to see whether holidays have had an influence on the outcome of the

first round in the past. To investigate this possibility, we examined the case of the 2002 election for which the main left-wing candidate missed the second round by fewer than 400,000 votes. What emerges from this case study is that holidays explain only a part, but a significant part, of these missing votes.

A normative prescription of this result is quite obvious: a right-wing incumbent has to set the ballot during the holiday time to gather more votes.[27] What is the situation in 2007? Owing to constitutional provisions, the French Home Office (held by the main right-wing candidate) had to choose between two sets of dates: 15 April/29 April and 22 April/6 May. This last option was finally retained. Therefore, the first round will fall right in spring holidays for the areas B and C.[28] As in 2002, holidays will then have an impact on the turnout and on the results of the election.

Further research could be conducted on the seasonal determinants of turnout. From a technical point of view, as thresholds on climatic variables may exist, non-linear econometrics could be mobilized to highlight these effects. Using infra-day climatic data, if available, would also be profitable. From a socio-demographical perspective, it would be interesting to know who is more affected by seasonal determinants (urban *vs* rural, young *vs* old, male *vs* female, etc.). In particular, who goes on holidays? Are potential left-wing voters really over-represented among abstainers? Finally, it would be of great interest to study the vote by proxy in order to determine the efficiency of policy measures that aim to decrease the voting costs.

Table 5 The 96 metropolitan French departments: their number and area

No.	*Department*	*Area*	*No.*	*Department*	*Area*	*No.*	*Department*	*Area*
1	Ain	A	32	Gers	A	64	Pyrénées-Atlantiques	C
2	Aisne	B	33	Gironde	C	65	Hautes-Pyrénées	A
3	Allier	A	34	Hérault	A	66	Pyrénées-Orientales	A
4	Alpes-de-Haute-Prov.	B	35	Ille-et-Vilaine	A	67	Bas-Rhin	B
5	Hautes-Alpes	B	36	Indre	B	68	Haut-Rhin	B
6	Alpes-Maritimes	B	37	Indre-et-Loire	B	69	Rhône	A
7	Ardèche	A	38	Isère	A	70	Haute-Saône	B
8	Ardennes	B	39	Jura	B	71	Saône-et-Loire	B
9	Ariège	A	40	Landes	C	72	Sarthe	A
10	Aube	B	41	Loir-et-Cher	B	73	Savoie	A
11	Aude	A	42	Loire	A	74	Haute-Savoie	A
12	Aveyron	A	43	Haute-Loire	A	75	Paris	C
13	Bouches-du-Rhône	B	44	Loire-Atlantique	A	76	Seine-Maritime	B
14	Calvados	A	45	Loiret	B	77	Seine-et-Marne	C
15	Cantal	A	46	Lot	A	78	Yvelines	C
16	Charente	B	47	Lot-et-Garonne	C	79	Deux-Sèvres	B
17	Charente-Maritime	B	48	Lozère	A	80	Somme	B

Table 5 Continued

No.	*Department*	*Area*	*No.*	*Department*	*Area*	*No.*	*Department*	*Area*
18	Cher	B	49	Maine-et-Loire	A	81	Tarn	A
19	Corrèze	B	50	Manche	A	82	Tarn-et-Garonne	A
2A	Corse-du-Sud	—	51	Marne	B	83	Var	B
2B	Haute-Corse	—	52	Haute-Marne	B	84	Vaucluse	B
21	Côte-d'Or	B	53	Mayenne	A	85	Vendée	A
22	Côtes-d'Armor	A	54	Meurthe-et-Moselle	A	86	Vienne	B
23	Creuse	B	55	Meuse	A	87	Haute-Vienne	B
24	Dordogne	C	56	Morbihan	A	88	Vosges	A
25	Doubs	B	57	Moselle	A	89	Yonne	B
26	Drôme	A	58	Nièvre	B	90	Territoire de Belfort	B
27	Eure	B	59	Nord	B	91	Essonne	C
28	Eure-et-Loir	B	60	Oise	B	92	Hauts-de-Seine	C
29	Finistère	A	61	Orne	A	93	Seine-Saint-Denis	C
30	Gard	A	62	Pas-de-Calais	B	94	Val-de-Marne	C
31	Haute-Garonne	A	63	Puy-de-Dôme	A	95	Val-d'Oise	C

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Notes

1 This slogan of a tour operator appeared in the newspaper *Libération* the day after the first round of the presidential election of 2002. It can be understood as a joke towards the candidates knocked out at the first round since the original sentence in French ('on peut rater le premier tour, pas ses vacances') can be translated 'one can fail in the first round, not in its holidays'.

2 Here and hereafter, we mean by 'holidays', holidays given by the administration to children who frequent primary school or high school. Holidays are then imposed and not chosen and, as a rule, parents with children provided with schooling go on holidays in accordance with the school calendar.

3 Being at work is not a reason since in France all ballots are held on Sunday.

4 *Source*: *Les Échos*, 22 April 2002, p. 3.

5 *Source*: Louis-Harris.

6 We have not tested the impact of holidays in our previous paper on turnout since no legislative ballot fell during holiday time.

7 The Rhône-Alpes and Provence-Alpes-Côte d'Azur regions are divided into two school districts and the Île-de-France region is divided into three school districts.

8 This problem of data availability explains why a pooled-data model by district has not existed in the French case yet (for the vote as for the turnout).

9 Since the climatic standard for precipitation is the total amount of precipitation during the month, we have divided this total by 30 to obtain a daily climatic standard. We note a possible endogeneity bias since the turnout at the 1988 election for example is explained in our model by a precipitation variable defined in relation to a climatic standard computed on a period that covers the year 1988. Nevertheless, we think that the variability of the climatic standard over time is negligible and finally the period on which they are computed does not matter. The endogeneity bias should then be non-existent. The same remark applies to the temperature variable.

10 See Ben Lakhdar and Dubois (2006) for a discussion on non-linearity in the temperature variable.

11 But not those on holiday only for the weekend.

12 The vote by proxy may have a specific influence on turnout and not only in regard to holidays. Intuitively, one can think that more votes by proxy lead to a higher turnout. It would be interesting to investigate this possibility in our study. Unfortunately, we have not been able to gather departmental data for the vote by proxy on the 1988 presidential election. To give some hints, correlations between proxy vote (in percent of registered voters) and turnout were −0.22 in 1995 and −0.36 in 2002 (the source for the departmental vote by proxy is the French Home Office/ministère de l'Intérieur). These low correlations are negative and may indicate that in departments where the participation is low, people resort more to the proxy vote (even though this does not compensate for this lack of citizenship).

13 For an econometric study that assesses the impact of these variables on turnout in the French case, see Fauvelle-Aymar and François (2005).

14 Using the fixed effect model is equivalent to introduce one dummy variable by department. This departmental dummy is defined as 1 in a particular department for all the elections and 0 otherwise. Fixed effects are then palliative for socio-demographic variables that are not yearly available in France (they exist only for census years, that is, in our sample, 1990 and 1999). Outside this theoretical argument that leads us to assume that the fixed effects are better for our model, the Hausman test does not recommend the alternative specification (i.e. the random effects model).

15 The source is www.insee.fr for both population and area data.

16 In our previous paper, we introduced a trend that captured the political weariness that has been characterizing the French voter for more than 30 years. In this paper, the downward trend appears to be lightened. Indeed, the turnout rate decreased from 83.2% in 1978 to 65.1% in 2002 for the legislative elections while it has decreased from 84.9% in 1974 to 72.8% in 2002 for the presidential ones. One can also note that the trend is not uniform with an inflexion in 1988 (the turnout rate was 81.5% in 1981 and 82.0% in 1988). Moreover, preliminary investigations indicated that the trend variable highly correlated with the candidate variable (0.87). For all these reasons, we have chosen to exclude the trend from our analysis.

17 The following departments are concerned: 07, 08, 10, 15, 19, 22, 23, 24, 27, 32, 39, 41, 43, 48, 49, 50, 53, 55, 74, 79, 81, 82, 85, 88, 92, 93, 94. For practical reasons, here and hereafter, we indicate only the number of departments. The full list is displayed in Table 5.

18 For department 62.

19 In our previous paper, we had an additional climatic variable, namely sunshine. The use of this variable reduced our sample since the climatic norm was available in few departments. This loss of observations was offset by a greater number of election dates (5) and we had a final sample of 215 observations. Here, as we are constrained by the number of elections (3), we have deleted the sunshine variable in order to gather more departments to ensure a comparable sample size.

20 We note that climatic variables are expressed as the difference with the climatic standard. The sources are the website http://climatheque.meteo.fr for the climatic variables, Météo France (1996) for the climatic standards, French Home Office/ministère de l'Intérieur for the turnout rates, INSEE for the unemployment rates, and the website http://www.education.gouv.fr for the

holiday agenda. All the necessary information to build CAND and LOC can be easily found on the Internet.

21 See Kanji (1993, 36) for details on this test.

22 Intercepts values (fixed effects) are not shown here for space consideration but are available upon request from the authors. We have systematically applied the White correction to make all our estimations robust to heteroskedasticity.

23 We note that although we report a 10% significance level for the coefficient of this variable, the actual *P*-value is 0.052.

24 These figures refer to Metropolitan France. The source is the French Home Office/ministère de l'Intérieur.

25 We have removed the two Corsican departments since, as mentioned earlier, we do not know if they were on holidays or not.

26 We obtain broadly the same result if we discriminate the holiday effect according to the weekend on which the ballot takes place (the figure is 343.749).

27 The left-wing opposition cannot influence the holiday calendar but can promise, in turn, more holidays in order to enhance 'holiday fanatics' to stay at home to vote and then to abstain when on holidays thereafter!

28 With the other set of dates, all three areas should have been on holidays. The French Home Office has chosen the more disadvantageous option for him from the point of view of our normative prescription. We note however that this is second best since another possibility more unfavourable for him would be a change in the constitutional law to enlarge the window during which the election must hold and thus to be sure to have a Sunday out of the holidays period.

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