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

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Abstract: 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 single factor.

Keywords: seasonal factors; climate; weather; holidays; vote; presidential election; turnout; France

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"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 source up to the theoretical assertion that the choice to vote or not is rational. According to this theory, individuals decide to vote or not according to the expected utility got from their vote defined as the difference between the expected benefits derived, for example, from the political program and the costs to vote. These costs include, among others, opportunity costs to collect information about the political programs and transport costs, as the time spent on the way to the polls. Our works go 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 to not go to vote. Regarding the holidays, they value their holidays, which take them far from home, more than the ballot day, which requires their presence at home[3]. Holidays has been invoked to explain the large abstention at the first round of the French presidential election of 2002 (see, for example, the newspapers *Le Figaro* and *Libération* in the days following the ballot or INSEE Aquitaine, 2002). In 2002, about 20 million French were concerned by holidays and one estimated that about 4 to 5 million of them left their home[4]. In a poll lead 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].

The holidays, as a determinant of turnout, have been identified long time ago by scholars. 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 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 close problematic, 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 holiday has been proposed to decrease abstention (e.g. Squire et al., 1987; Green and Shachar, 2000; Freeman, 2003; Just, 2005; Hill, 2006). But Gray and Caul (2000) show that to set elections on a weekend or holiday when it was previously on a nonholiday 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 public holiday to facilitate the vote that 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 can wonder 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…). Most empirical studies then privilege theses "heavy variables" and others variables are seen as marginal. Secondly, one can think that the impact of seasonal factors on turnout is recent. Indeed, until the 80's, the turnout rates were quite high; to vote was the rule and to abstain was the exception. The apparition of a dramatic decreasing trend in turnout (lassitude due to political scandals, repetition of ballots, similarities in political platforms, poor performances of the incumbent…) 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 of 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 author 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 of 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 Day holidays (two weeks). French schoolboys and schoolgirls have two holiday weeks in February, called "winter holidays", and two holiday weeks during April or May called "spring holidays". The end of the school year is in the early of July and eight weeks of holidays follow.

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

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

It must be underlined that the holiday agenda has changed several times since the 60's in both the date and the geographical division of the areas. It is only since the 1964-1965 school year that metropolitan France was divided in 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 for which the holiday agenda was set up by each school district.

The Model

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

France is subdivided in "regions", each of them, subdivided in several "departments". Each department is composed by several electoral districts. There are in metropolitan France 22 regions, 96 departments, and 555 electoral districts. The district level has been moved apart because too few data were available to define our independent variables[8]. We have

chosen department because we think it is a more homogeneous electoral territory than the region. Our argument is here of a theoretical nature. Departments have been created in 1790 on sociological criteria by respecting the religious warding of the dioceses whereas the division into regions dates back to 1960 and has been 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 permits to avoid the occurrence of particular cases that entails a more complicated modeling as triangular contests (left/right/extreme-right), fratricidal duels (left/left or right/right), single candidate at the second round or even absence of 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 more important in the French citizens' eyes. 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: April, 24 1988, April, 23 1995, April, 21 2002.

We retained 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 performances, 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 on one year). This measure is frequently retained in the French vote-functions literature (see for example Jérôme and Jérôme-Speziari, 2004). We expect a negative sign for the coefficient of *UNEM* since this variable traduces a discontent. Two remarks can be made. First, when macroeconomic records are poor, turnout could be higher since some voters that usually abstain go to polls to sanction the ruling majority. Second, *UNEM* expresses one particular form of discontent, namely an economic one. Others forms of discontent can be envisaged as for example a 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 the electoral territory of which she is a native. 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 an additional support. This effect that is traditionally applied to the vote may be transposed to the turnout. People that usually abstain can vote for a candidate with the same geographical origins. We define then a variable, noted *LOC*, that takes 1 in the department from which a candidate is originating, 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 of minor candidates do not have any mandate. Positive sign is expected for the coefficient of this variable.

Each first round of a presidential election generally presents, quantitatively speaking, a different political supply; the number of candidates varies. It was 9 in 1988 and 1995, and 16 in 2002. This can have two opposite effects on the turnout (Fauvelle-Aymar and François, 2005). On one hand, turnout can be higher since, for a potential voter, the probability to have her political sensibility represented increases. On the other hand, people can be embarrassed by this abundance of choice and may abstain in order to wait for the selection operated at the first 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. Due 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 Celsius degrees 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 some precipitations, temperatures or sunshine, we withdrew the "climatic standard" that is the monthly average on a thirty-years-period. We then use the following variables: *PREC* is the height in millimeters of precipitation fallen 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 difference with the long term tendency observed on 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 sole holidays that may affect turnout are the spring holidays. The Table 1 brings their dates for each area.

[TABLE 1 ABOUT HERE]

By crossing this information with the one displayed above, one 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 construction, this variable implicitly supposes that the behaviour 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, the absence of the city of residence was not a case eligible for a vote by proxy. After the law of July, 6 1993, people on holidays[11] and not present on the Electoral Day can ask for a vote by proxy providing they bring some justifications fixed by the decree of April, 18 1997. Finally, an edict of December, 8 2003 suppressed the obligation to produce written proof and replaced it by a declaration on one's honour. In 2002, aware of the difficulties entailed by the procedure and of the possible negative impact of holidays on turnout, the government has advocated in a circular letter (in date of March, 8) more a respect of the spirit of the legal clauses than the strict application of these 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 with our holiday variable is to examine if the turnout is affected by the fact that the ballot holds on the first, the second or the third week-end of the holidays. Indeed, spring holidays last two weeks and include three week-ends. Intuitively, since holidays begin on Saturday in France, people may postpone their departure on holidays if the ballot is held on the first week-end and bring forward their return from holidays if the ballot is held on the third week-end. The abstention then should be higher on the second week-end. To assess such an impact, we have split our *HOL* variable into three week-end variables noted *WE1*, *WE2*, *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 week-end, and 0 otherwise. By construction, we

have then *WE1 + WE2 + WE3 = HOL*. We expect a negative sign for all these 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 explicative variables, this list being not exhaustive. The first one 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, does not exist for all the elections of our sample. The second eligible variable is the density of population. When areas are lightly populated, some people are far from the polls and they can choose to abstain. The figures for the population by department are known yearly since the Census of 1990 only what prevents us to use the density variable in our study. We can compute the density for 1995 and 2002 only[15]. The correlations with the turnout are respectively of -0.38 and -0.28 and then go in the sense of the aforementioned depressive effect. Finally, in regard with our holiday variable, we can think that if people go on holidays near their place of residence, they can just go there and back 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 matter 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 have then 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 3 elections, that is a total of 201 observations[19].

The table 2 shows some descriptive statistics[20].

[TABLE 2 ABOUT HERE]

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 the 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.

The table 3 presents the correlations between explanatory variables

[TABLE 3 ABOUT HERE]

The estimation leads to[22]:

[TABLE 4 ABOUT HERE]

As one can see from column 1, all the explicative variables have the expected sign and are significant at 10 % or less except *LOC* and *TEMP*. For the localism variable, that means that one does not participate more in department from which an important candidate is originating. 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 non significant. After having dropping 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 millimeters of precipitation more (compared to a normal day) lead to a decrease of the turnout of about 0.5 point. Our discontent variable, *UNEM*, indicates that when the departmental unemployment rate increases of 1 point in the year preceding the presidential election, the turnout decreases of about 0.5 point[23]. The candidate variable has a negative sign and then attests of 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 holidays variable is strongly significant: in departments where people are on holidays, the turnout rate is lower of 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 week-end 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 interesting, the coefficient of *WE2* is larger than the one of *WE1* and *WE3*. The turnout is affected by about, respectively, 1.6 points, 2.1 points, and 1.1 points in departments where the ballot is held on the first, second, and third week-end 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 week-end, people give up the idea to make an effort to vote (*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, and Ben Lakhdar and Dubois, 2006). The explanation may reside in the similarities between abstainers and left-wing voters. Indeed, these two groups present several common features as for example youth, weak attachment to the Catholic religion, or low level of education (see Mossuz-Lavau, 1997). If this link between abstention and left-wing vote is correct, while having a depressive effect on the turnout, holidays would disadvantage the Left.

In 2002, the main left-wing candidate, Lionel Jospin, missed the second round for 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 have simply considered that the turnout rate was higher by 1.66 points in departments on holidays. We have then multiplied these new turnout rates by the figures of the registered voters[25]. The new total obtained for voters is 29.000.785 against a previous value of 28.610.561. Holidays has 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 the 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), that 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 for which 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 than the actual electorate, 15.8 % would vote 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 that would vote 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 lesser. 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 skimming through 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 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 Left vote, it is tempting to see if holidays have had an influence on the outcome of the first round in the past. To investigate this possibility, we have examined the case of the 2002 election for which the main left-wing candidate missed the second round by less of 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 has been decided for the presidential election of 2007? Due to constitutional provisions, the French Home Office (held by the main right-wing candidate) had to choose between two sets of dates: April 15 / April 29 and April 22 / May 6. This last option was finally retained. Then, 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 researches could be driven on 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, should also be profitable. In a socio-demographical perspective, it would be interesting to know who is more affected by seasonal determinants (urban *versus* rural, young *versus* old, male *versus* female…). In particular, who go on holidays? Are potential left-wing voters really over-represented among abstainers? Finally, it would be of a great interest to study the vote by proxy in order to determine the efficiency of policy measures that aim to decrease the voting costs.

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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 boys and girls 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] They cannot advance the work as an excuse since in France all the ballots are held on Sunday.

[4] Source: newspaper *Les Échos*, April, 22 2002, page 3.

[5] Source: polls institute Louis-Harris.

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

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

[8] This problem of data availability explains why a pooled-data model by district hasn't existed in the French case yet (for the vote as for the turnout).

[9] Since the climatic standard for precipitation is the total of precipitation fallen during the month, we have divided this total by 30 to obtain a daily climatic standard. We can also 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 cover 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. Same remark applies to the temperature variable.

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

[11] The case of a simple weekend is not eligible.

[12] The vote by proxy may have a specific influence on turnout and not only in regard with 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 are -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 characterizes the French voter since more than thirty years. In the present case, this downward trend appears to be lightened. Indeed, the turnout rate has decreased from 83.2 % in 1978 to 65.1 % in 2002 for the legislative elections while it has diminished 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 was 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 appendix (table 5).

[18] For the department 62.

[19] In our previous paper, we had an additional climatic variable, namely the sunshine. The use of this variable reduced our sample since the climatic normal 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 insure a comparable sample size.

[20] We just remind that climatic variables are expressed in 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 built CAND and LOC can be easily found on the Internet.

[21] See Kanji (1997, page 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 we report a 10 % significativity level for the coefficient of this variable but that 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 holidays effect according to the week-end 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, in her platform, more holidays in order to enhance "holiday fanatics" to stay at home to vote and then to abstain to go on holidays…

[28] With the other set of dates, all the three areas should have been on holidays. The French Home Office has then chosen the more disadvantageous option for him from the point of view of our normative prescription. We can notice however that this is a 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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Appendix

[TABLE 5 ABOUT HERE]

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

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*	-0.43*	-0.48**
	(1.96)	(1.88)	(2,37)
$LOC_{i,t}$	0.78	-	-
	(0.71)	-	-
$CAND_t$	-0.99***	-1.02***	-1.04***
	(17.84)	(25.24)	(26.55)
$PREC_{i,t}$	-0.05***	-0.04***	-0.04***
	(4.21)	(4.68)	(4.35)
$TEMP_{i,t}$	-0.06	-	-
	(0.71)	-	-
$HOL_{i,t}$	-1.67***	-1.66***	-
	(10.17)	(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

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
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