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Popularity Functions for the French President and Prime Minister (1995-2007)

ANTOINE AUBERGER*

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In this article, we study popularity functions for the French President and Prime Minister. We show that the responsibility hypothesis is validated for the unemployment rate but not for the inflation rate. We also show that voters have not a behavior compatible with the rational expectations hypothesis for the Prime Minister's popularity, and that voters have an asymmetric behavior for the unemployment rate. We show the influence of political variables which can depend on Prime Minister changes, the domestic political situation and international political events.

Keywords: Popularity Functions • Voters' Behavior • Economy • Politics • Econometric Models

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Introduction

Since the beginning of the 1970s and the first articles of Mueller (1970) for the United States (popularity of the American president) and of Goodhart and Bhansali (1970) for Great Britain (popularity of the British political parties), numerous studies showed the significant influence of the economic situation on the popularity of the President and the political parties. It is a subject of research for the public choice school.¹

The popularity functions allow us to explain the popularity of those in power (President, Prime Minister) and the political parties. They have an economic part and a political part. The most used economic variables are the rates of inflation and unemployment.² The GNP or GDP real growth and the gross disposable household income are also used. Generally, economic variables depend on the economic situation (objective measure), but they can possibly depend on the perception of the economic situation by voters (subjective measure). Political variables can depend on election cycles: honeymoon effect or depreciation of the popularity (the popularity of those in power is high after an election or an appointment, and then regularly decreases), the personality of those in power (personal factors). Frey and Schneider (1978), notably, used a variable taking into account the depreciation of popularity for each American President. International events³, wars (as the Vietnam war for the United States) or domestic events (as the Watergate scandal for the United States) can have an influence on the popularity of those in power. The political context can also have an influence on the popularity of those in power. Finally, political variables can depend on economic policy decisions. Generally speaking, as highlighted by Nannestad and Paldam (1994), the economic part of the popularity functions is better studied than the political one; furthermore, the popularity functions are rather unstable over time.⁴

There were also for France some studies showing the significant influence of the economic situation on the French President's and Prime Minister's popularity. In many studies about the French President's or Prime Minister's popularity, unemployment (unemployment rate or unemployment level) was a significant economic variable. For example, Lewis-Beck (1980) showed the significant influence of the monthly unemployment level with a lag of two months on the President's and Prime Minister's popularity (over the period 1960-1978). In the studies over the period 1960-1983⁵, inflation (inflation rate or its change) was a significant economic variable. For example, Lafay (1984) showed the significant influence of the semestrial inflation rate on the President's popularity. Other economic variables are used as the real disposable household income by Lafay (1984), and real wages by Lecaillon (1984) because voters are sensitive to change in their purchasing power. Political variables can depend on the election cycles: honeymoon effect and/or depreciation in the popularity as in Courbis (1995). Political variables can also depend on international or domestic events: notably the scandals as in Lafay and Servais (2000) or the strikes as in Dubois (2005), the political context: relations between the President and the Prime Minister as in Hibbs (1981), decisions of economic policy as the Barre plan in Lafay (1984).

¹ Mueller (2003) made a complete and updated presentation of public choice; we shall notably find in this book a synthesis of the influence of the various economic variables on the popularity of those in power and of the political parties for several countries.

² We mostly use their lagged variables, that is the previous data to the surveys' poll institutes.

³ Mueller (1970) used a "rally round the flag" variable.

⁴ According to Lafay (1981), the bad specification of these functions and, in particular, political variables is a cause of this instability.

⁵ Since the middle of the 1980s, the inflation was curbed in France.

In this article, we build, and estimate popularity functions for the French President and Prime Minister over the period 1995:6-2007:4 with the SUR (model of seemingly unrelated regressions) technique.⁶ We show that the change in the unemployment rate has a significant influence on the popularity of the French President and Prime Minister (responsibility hypothesis) but not the change in the inflation rate. For the popularity of the President, we also study the hypothesis of a partial responsibility of the President for the economic situation (change in the unemployment rate) during the period of cohabitation (1997:6-2002:4). For the President's and Prime Minister's popularity, we show the influence of political variables, which are dependent on the popularity cycles as Prime Minister changes (popularity of Prime Minister), the domestic political situation: strikes, the crisis of the FCE (first contract employment), scandals, international events (conflict in Kosovo, terrorist attempts of 11 September 2001), the 1998 football world cup. We show that the unexpected change in the unemployment rate has a significant influence on the President's popularity, but that it has not a significant influence on the Prime Minister's popularity, and that voters have an asymmetric behavior for the change of the unemployment rate, but that they have not partisan behavior.

After presenting the various analyses concerning the voters' behavior (section 2), we present the data used in this study over the period 1995:5-2007:4 (section 3); and then the empirical analysis with the study of the influence of the objective and subjective economic situation, the expected and unexpected objective economic situation, the hypothesis of asymmetric behavior, and partisan behavior of voters (section 4). Finally, we make a conclusion (section 5).

The microeconomic foundations of the popularity functions and the voters' behavior

The construction and the estimate of popularity functions are implicitly made with some hypotheses for the voters' behavior. Downs (1957) supposed that voters are rational, that is every voter votes for the candidate or the party which will give him the highest utility. Voters should thus have forward-looking behavior, that is to support the government according to their future personal situation ("egotropic" behavior). In fact, in many economic popularity models, voters are supposed to have retrospective behavior. Furthermore, they are often supposed to be myopic (they only take into account the recent economic situation).⁷ They behave according to the responsibility hypothesis of Paldam (1981), that is they support the government if they are satisfied with the economic situation, and punish it in the opposite case; it corresponds to the "reward-punishment" behavior of Key (1966).⁸ Moreover, voters are often supposed to evaluate the economic performances with the objective general economic situation ("sociotropic" behavior). Both types of behavior ("sociotropic" and "egotropic") can however be difficult to be distinguished because good (resp. bad) economic performances often have some positive (resp. negative) consequences on every voter. Lewis-Beck and Paldam (2000) noticed that, usually, voters have "sociotropic" behavior.

Numerous authors as Frey and Schneider (1978), Hibbs (1982) and Haynes (1995) used a retrospective model to estimate a popularity function. According to Lewis-Beck and Paldam (2000), voters have more retrospective behavior than forward-looking behavior but the difference between these two models is weak.

⁶ Veiga and Veiga (2004) used this econometric technique in their study of the popularity functions in Portugal.

⁷ On the other hand, Hibbs (1981,1982) supposed that voters take into account the economic situation on the whole presidential term of office; he however supposed that voters attach more importance to the recent economic results.

⁸ On the other hand, Hibbs (1981,1982) found that voters take into account the economic performances of those in power in a relative way by comparing them with the previous in power.

Swank (1990, 1993, 1995) developed for the United States a model where voters have partisan preferences as in the theory of the partisan political cycle of Hibbs (1987): in periods of high inflation, a right-wing party in power may see its popularity increase if voters think that the priority of economic policy is the fight against inflation; in periods of increasing unemployment, a left-wing party in power may see its popularity increase if voters think that the priority of the economic policy is the fight against unemployment. Swank found favorable results for this model with the popularity of the American President. Carlsen (2000) also found favorable results for the partisan behavior (unemployment) with the right-wing governments (the United States, Great Britain, Canada and Australia). Letterie and Swank (1997), and Swank (1998), developed a more complete model in which are competency (responsibility) economic variables and partisan economic variables included. Empirical results are favorable to their model for the popularity of the American President.

The model of asymmetric behavior was originally developed for the vote function in the elections of the American Congress by Bloom and Price (1975). Voters are supposed to have asymmetric behavior: they reward a government for good economic performances less than they punish it for bad economic results. Headrick and Lanoue (1991) found unfavorable results for the asymmetric behavior for Great Britain (government popularity).

Several authors studied if the voters' behavior was compatible with the rational expectations hypothesis (voters are rational and efficiently use the information). According to this hypothesis, only unexpected changes in economic variables have an influence on the popularity of the President, government and political parties. A model of voters' behavior with rational expectations was developed by Holden and Peel (1985), inspired by the article of Hall (1978) for the consumption function. The rational expectations hypothesis was accepted by Holden and Peel (1985) for Great Britain and confirmed by Chrystal and Peel (1986) for several countries; but rejected (at least partially) by Kirchgässner (1985⁹, 1991) for Germany, Price and Sanders (1994) for Great Britain and Neck and Karbus (1997) for Austria.

Cho and Young (1992) showed that voters do not consider the American President responsible for the expected inflation, and that they have asymmetric behavior for the unexpected inflation: the American President is more punished for an increase in the unexpected inflation than he is rewarded for a decline in the unexpected inflation.

The data

We begin by making a quick presentation of the French political system.¹⁰ The President of the Republic is the head of State, he appoints the Prime Minister and mainly is in charge of Foreign Policy and Defence. The government, led by the Prime Minister, decides on the policy of France. Traditionally, the President of the Republic and the Prime Minister belong to the same political side. When the opposite occurs, we speak about periods of cohabitation. Except in periods of cohabitation, the President of the Republic determines the nation's policy, while during the periods of cohabitation, the Prime Minister is fully at the head of the government.

During the studied period (1995:5-2007:4), Jacques Chirac was the President of the Republic (May 7, 1995- May 6, 2007). He was elected on May 7, 1995 and reelected on May 5, 2002. During the seven-year term of office of Jacques Chirac (1995-2002), Alain Juppé was the Prime Minister (May 17, 1995- June 2, 1997) and then, Lionel Jospin was the Prime Minister

⁹ Kirchgässner (1985) showed the influence of the unexpected unemployment and inflation rates for the German political parties' popularity.

¹⁰ We partially use again the presentation of the French political system of Auberger and Dubois (2005).

(June 2, 1997- May 6, 2002). Thus, there was during five years (1997-2002) a period of cohabitation with a right-wing President of the Republic and a left-wing Prime Minister. During the five-year term of office of Jacques Chirac (2002-2007), Jean-Pierre Raffarin was the Prime Minister (May 6, 2002- May 31, 2005) and then, Dominique de Villepin was the Prime Minister (May 31, 2005- May 15, 2007).

We studied the French President’s and Prime Minister’s popularity: the percentage of people satisfied with the performance of the President of the Republic (graph 1), and the percentage of people satisfied with the performance of the Prime Minister (graph 2) over the period 1995:5-2007:4 (data of the poll institute *IFOP*).¹¹ We notice that the swings in the President’s and Prime Minister’s popularity are high.

Figure 1:

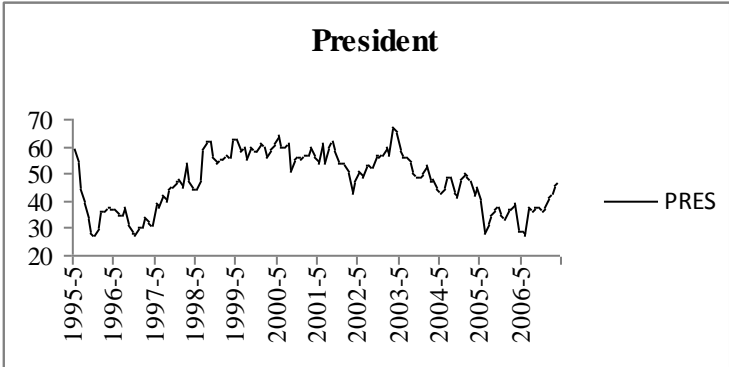
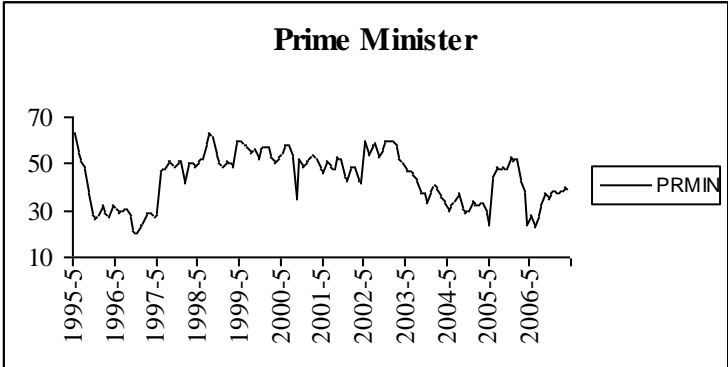


Figure 2:



We also used the unemployment rate (ILO, sa), and the inflation rate (INSEE, basis 100 in 1998) over the period 1995:5-2007:4. The inflation rate is annual and calculated from the consumer price index.

¹¹ These data are published every month by the weekly French newspaper *Le journal du dimanche*.

Figure 3:

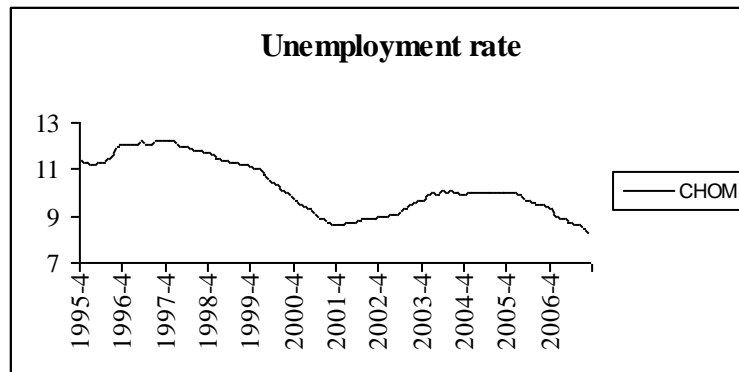
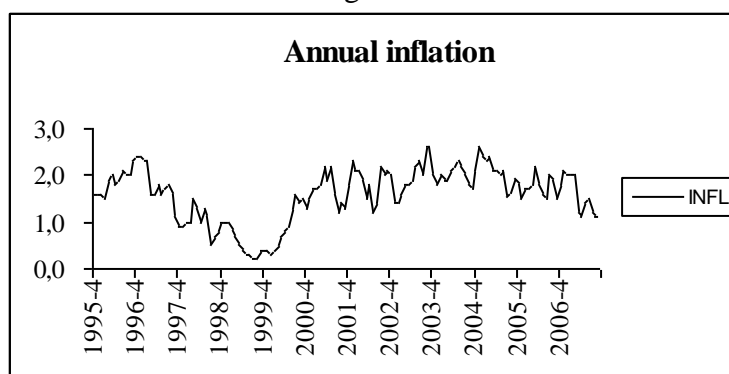


Figure 4:



Empirical analysis

The French President's and Prime Minister's popularity and the objective economic situation

We suppose that voters have retrospective behavior according to the responsibility hypothesis of Paldam (1981), that is they reward the government if they are satisfied with the economic situation, and punish him in the opposite case; it corresponds to the behavior “reward-punishment” of Key (1966). Moreover, we suppose that voters judge the economic situation with the unemployment and inflation rates (“sociotropic” behavior).¹² Furthermore, voters are supposed to take into account more the recent economic situation (autoregressive model of order 1).

The ADF test of Dickey-Fuller¹³ and the Phillips-Perron test showed that the President's popularity was not stationary (integrated of order 1) and that the Prime Minister's popularity was stationary. As these tests conclude too easily in favour of the hypothesis of non stationarity (low power tests), we also made the Perron (1989) test with one exogenous change in level and/or in slope and that of Perron and Vogelsang (1992) with one endogenous change in level and/or in slope. For the President's popularity, the test Perron and the Perron

¹² Since January 1, 1994, the Bank of France was independent and has for objective an inflation rate lower than 2%; and since, January 1, 1999, the European Central Bank, independent, has been responsible for the monetary policy and has for objective an inflation rate lower than 2%. The government is not responsible any more for the general stability of prices. We suppose that voters are not informed about the economy.

¹³ These tests are made with the AIC and modified AIC, BIC and modified BIC criteria to select the number of lags.

and Vogelsang test with one exogeneous or endogeneous change in level and/or in slope showed that this series was stationary. For the Prime Minister's popularity, the test of Perron with one exogeneous changing in level and/or in slope confirmed its stationarity. The ADF test of Dickey-Fuller and the Phillips-Perron test also showed that the unemployment rate and the inflation rate were not stationary (integrated of order 1). The tests of Perron and Perron and Vogelsang confirmed the non stationarity of these two series (integrated of order 1).¹⁴

We used over the period 1995:5-2007:4 an autoregressive model of order 1. Its use was theoretically justified by Kirchgässner (1985) and was used in numerous studies as for example: Kirchgässner (1985, 1991) for Germany, Neck and Karbuz (1997) for Austria, and Veiga and Veiga (2004) for Portugal.

We estimated these following models for the French President's and Prime Minister's popularity:

$$POP_t = a_0 + a_1 POP_{t-1} + a_2 \Delta UNEM_{t-2} + a_3 \Delta INFL_{t-2} + a_i POL_t + \varepsilon_{1t} \text{ (or } \varepsilon_{2t}, \varepsilon_{3t}, \varepsilon_{4t})$$

With POP_t (dependent variable): the President's popularity (PRES_t) or the Prime Minister's popularity (PRMIN_t), POP_{t-1} : the President's popularity lagged by one month (PRES_{t-1}) or Prime Minister's popularity lagged by one month (PRMIN_{t-1}), $UNEM_{t-2}$: change of the unemployment rate (lagged by two months), $\Delta INFL_{t-2}$: change of the inflation rate of (lagged by two months),¹⁵ POL_t : vector of political variables ($i \geq 4$).

The estimated coefficient a_1 measures the voters' memory of the past in comparison to the present (that is the voters' nearsightedness).

At first, we supposed that during the period of cohabitation 1997:6-2002:4, the President is responsible as is the Prime Minister for the economic situation, while it is the government which is responsible for the economic policy, but voters are supposed not to be aware of that. We are thus expecting for the following signs: $a_2 < 0$ and $a_3 < 0$.

For the political variables, we took various dummy variables: ELE2002, DEPP, APPM, RALLY¹⁶, REF, SCA, FWC¹⁷, SEP-OCT2000, STR-DEM¹⁸ and FCE (estimate of table 1a) or events variables: EVPP and EVPPM with ELE2002, APPM, DEPP (estimate of table 2a).¹⁹

We used the SUR (model of seemingly unrelated regressions) technique as Veiga (1998) and Veiga and Veiga (2004)²⁰ for Portugal because the French President's and Prime Minister's popularity are influenced by common variables, and because the residuals of the estimates are correlated. To test the independence of the estimates (absence of correlation between the terms of errors), we made a Breush-Pagan test.²¹ We calculated the statistic: $\lambda_{LM} =$

¹⁴ The results of these unit root tests are available on request.

¹⁵ We also tested the annual change (in %) of price indexes in foodstuffs and soft drinks, tobacco and gasoline (INSEE data) but these three series have no significant influence on the French President and Prime Minister's popularity.

¹⁶ In its estimate of the French Prime Minister's popularity (1972:1-2005:1, quarterly data), Dubois (2005) also used a rally around the flag variable (dummy variable, taking the value 1 in 1991:1 during the Gulf war, 1999:2, 2001:3, 2003:1 and 0 otherwise).

¹⁷ Auberger (2001) also used a variable football world cup (dummy variable, taking the value 1 in 1998:3 and 0 otherwise) for his study of the French President and Prime Minister's popularity functions (1970:1-1998:4, quarterly data).

¹⁸ Dubois (2005) also used a variable for the strikes of 1995 (dummy variable, taking the value 1 in 1995:4 and 0 otherwise).

¹⁹ Precise definition of the political variables are shown in appendix.

²⁰ In these two articles, the Assembly, the government, the Prime Minister and the President's popularity were studied.

²¹ This test is presented in Greene (2000: 350).

$N \sum_{i=2}^M \sum_{j=1}^{i-1} r_{ij}^2$, N is the number of observations (N = 143), M is the number of equations (M = 2) and r_{ij} is the correlation calculated with the obtained residuals by estimating the models separately. This statistic follows a chi-square distribution with $\frac{M(M-1)}{2}$ degrees of freedom, and the critical value at the 5% level is: $\chi_{0.05}(1) = 3.84$.

The adjusted R-squared of the estimates of tables 1a and 2a are approximately equal to 0.90 what shows that it accounts for 90% of the variance of variables (PRES and PRMIN). The coefficient of the UNEM_{t-2} economic variable has the expected sign, and is significantly different from 0 at the 5% level for the President's popularity, and at the 10% level for the Prime Minister's popularity: it shows that an increase in the unemployment rate by 0.1% leads to a decrease in the President's popularity by about 0.8%, and to a decrease in the Prime Minister's popularity by about 0.6% or 0.8%. The coefficient of the UNEM_{t-2} variable is higher in absolute value for the President's popularity than for that of the Prime Minister (estimates P1b and PM1b, table 1a) or close (estimates P2b and PM2b, table 2a): it is a little surprising but it can be explained because the Prime Ministers Lionel Jospin, Jean-Pierre Raffarin and Dominique de Villepin had a honeymoon effect after their appointment, while Jacques Chirac's weak popularity had completely benefited from the decrease of unemployment during the cohabitation period (1997:6-2002:4). The coefficient of the INFL_{t-2} economic variable is not significantly different from 0 at the 10% level, which shows that the change of the inflation rate has no significant influence on the President's and Prime Minister's popularity.

The AIC and BIC criteria show that for the President's popularity, the estimate P2b (with the EVEP variable) is better than the estimate P1b (with the RALLY, REF, SCA variables) while they show that for the Prime Minister's popularity, the estimate PM1b (with the RALLY, REF, SCA variables) is better than the estimate PM2b (with the EVEPM variable). We notice that the results of the AIC and BIC criteria are rather close.

The estimates of tables 1a and 2a show that after the Prime Minister's appointment, the Prime Minister's popularity increases from 17.6% or 18.6% (honeymoon effect during the first month of government with the APPM variable).^{22,23} We notice that, with the estimates of tables 1a and 2a, the coefficients of the ELE2002 and DEPP variables are not significantly different from 0 at the 10% level: it shows that the re-election of the President (Jacques Chirac) had no significant positive influence on his popularity (no honeymoon effect after its re-election in May 2002) and that the President (Jacques Chirac) did not have any depreciation of popularity during his second term of office in comparison with his first term of office.^{24,25} These estimates also show the significant positive influence of some international events (RALLY or EVEP, EVEPM variables: Kosovo war, attempts on September 11, 2001, the beginning of the military intervention in Afghanistan in October 2001, the French decision against the Iraq war), the football world cup (FWC or EVEP,

²² It means that Alain Juppé did not have a honeymoon effect after his appointment in May 1995 (very fast decrease in his popularity).

²³ We also made estimates with a honeymoon variable for the Prime Minister taking the value 6 during the first month after its appointment, 5 during the second month, ..., 1 during the sixth month and 0 otherwise. The honeymoon variable for the Prime Minister is significant, but the statistical indicators are a little less satisfactory than with the APPPM variable.

²⁴ It means that Jacques Chirac did not have a honeymoon effect after his election in May 1995 (very fast decline of his popularity).

²⁵ We also made estimates with a honeymoon variable for the President taking the value 6 during the first month after its election, 5 during the second month, ..., 1 during the sixth month and 0 otherwise. The honeymoon variable for the President is not significant.

EVEPM variables) and the significant negative influence of the rejection of the European Constitution only on the President's popularity (variables REF or EVEP) because just after this rejection, a new Prime Minister was appointed (Dominique de Villepin), and he benefited then from a honeymoon effect; scandals (variables SCA or EVEP, EVEPM): scandal of the Prime Minister's apartment (Alain Juppé) and the Clearstream affair, the gasoline crisis in September 2000 (SEP-OCT2000 or EVEP, EVEPM variables), the general strikes and the demonstrations of October and December 1995 against the Juppé plan for the Social Security and those of May and June 2003 against the pension reform (STR-DEM or EVEP, EVEPM variables), the FCE ("first contract employment") crisis in March and April 2006 (FCE or EVEP, EVEPM variables). The estimates P1b and PM1b allow us to calculate the influence for the first month of these events individually: about -13.3 % (referendum in 2005 on the European Constitution), +10.5 % for the football world cup (President's popularity) and -16.6 % for the gasoline crisis of September 2000 and +16.6 % for the rise which followed in October 2000 (Prime Minister's popularity) while the estimates P2b and PM2b give these events a moderate influence: approximately +6% or -6% for the first month (President's and Prime Minister's popularity).

TABLE 1a²⁶

Variable	PRESS _t P1a	PRMIN _t PM1a	PRESS _t P1b	PRMIN _t PM1b
Constant	5.64 (4.39) ^{***}	3.81 (3.36) ^{***}	5.86 (4.64) ^{***}	3.76 (3.33) ^{***}
POP _{t-1}	0.87 (33.84) ^{***}	0.90 (35.70) ^{***}	0.87 (33.35) ^{***}	0.90 (35.64) ^{***}
ΔUNEM _{t-2}	-8.14 (-2.42) ^{**}	-5.70 (-1.63)	-7.99 (-2.35) ^{**}	-6.08 (-1.74) [*]
ΔINFL _{t-2}	1.09 (1.05)	0.31 (0.29)		
ELE2002	3.67 (1.22)			
APPM		18.24 (9.65) ^{***}		17.60 (9.76) ^{***}
DEPP	0.60 (1.20)			
RALLY	5.26 (3.36) ^{***}	3.73 (2.34) ^{**}	5.07 (3.19) ^{***}	3.84 (2.41) ^{**}
REF	-13.20 (-4.39) ^{***}		-13.28 (-4.37) ^{***}	
SCA	-5.65 (-3.29) ^{***}	-3.55 (-2.02) ^{**}	-5.65 (-3.22)	-3.51 (-1.99) ^{**}
FWC	10.77 (3.24) ^{***}	7.79 (2.28) ^{**}	10.47 (3.09) ^{***}	7.85 (2.29) ^{**}
SEP-OCT2000	-6.31 (-2.70) ^{***}	-16.62 (-6.91) ^{***}	-6.36 (-2.67) ^{***}	-16.60 (-6.87) ^{***}
STR-DEM	-2.63 (-1.56)	-2.17 (-1.26)		
FCE	-5.56 (-2.33) ^{**}	-9.26 (-3.83) ^{**}	-5.01 (-2.07) ^{**}	-9.25 (-3.81) ^{***}

Common notes to tables 1a to 8a: N = 143. Numbers between brackets are *t*-values. *** significant at 1%; ** at 5% and * at 10%.

TABLE 1b

Adj. R ²	0.89	0.90	0.89	0.90
RCM				
President	1	0.52	1	0.52
Prime Minister	0.52	1	0.52	1
λ _{LM}	37.84	37.84	37.78	37.78
AIC			2.54	2.56
BIC			2.71	2.73

Common note to tables 1b to 8b:
RCM: residual correlation matrix

²⁶ The OLS estimates give very close results.

TABLE 2a²⁷

Variable	PRESS _t P2a	PRMIN _t PM2a	PRESS _t P2b	PRMIN _t PM2b
Constant	5.78 (4.35) ^{***}	4.80 (3.86) ^{***}	6.07 (4.70) ^{***}	4.87 (3.92) ^{***}
POP _{t-1}	0.87 (32.98) ^{***}	0.88 (31.88) ^{***}	0.87 (32.78) ^{***}	0.88 (31.88) ^{***}
ΔUNEM _{t-2}	-8.20 (-2.44) ^{**}	-7.62 (-2.05) ^{**}	-7.65 (-2.27) ^{**}	-7.62 (-2.05) ^{**}
ΔINFL _{t-2}	1.11 (1.04)	-0.25 (-0.21)		
ELE2002	4.24 (1.35)			
APPM		19.42 (9.64) ^{***}		18.64 (9.62) ^{**}
DPP	0.49 (0.94)			
EVE	5.71 (7.07) ^{***}	6.02 (6.77) ^{***}	5.62 (6.94) ^{***}	6.03 (6.80) ^{***}

TABLE 2b

Adj. R ²	0.89	0.88	0.89	0.88
RCM				
President	1	0.50	1	0.49
Prime Minister	0.50	1	0.49	1
λ _{LM}	31.57	31.57	30.45	30.45
AIC			2.52	2.69
BIC			2.59	2.78

*The French President's and Prime Minister's popularity and the subjective economic situation*²⁸

We studied the influence of several subjective economic variables (Eurostat data): FSF (financial situation of the next 12 months), GESF (general economic situation in the future 12 months), DGESP (change of the general economic situation in the last 12 months), DFSP (change of the financial situation of the last 12 months), DCIC (change of the confidence indicator of the consumer), DTRUNEMF (change of the unemployment's trends in the next 12 months).²⁹

We estimated these following models for the French President and Prime Minister's popularity:

$$POP_t = b_0 + b_1 POP_{t-1} + b_2 GESF_{t-1} \text{ (or } FSF_{t-1}, DGESP_{t-1}, DFSP_{t-1}, DCIC_{t-1}, DTRUNEMF_{t-1}) + b_3 POL_t + \varepsilon_{5t} \text{ (or } \varepsilon_{6t})$$

²⁷ The OLS estimates give very close results.

²⁸ The results are available on request. The OLS estimates give very close results.

²⁹ We also tested the balance of the opinion of the households on the cost of living of the last 12 months and that on the cost of living of the next 12 months (Eurostat data), but these two series have no significant influence on the French President and Prime Minister's popularity.

We are expecting for the following signs: $b_2 > 0$ for the GESF, FSF, DGESP, DFSP, DCIC variables and $b_2 < 0$ for the DTRUNEMF variable.

The best results were obtained with the GESF variable because the coefficient of the economic variable $GESF_{t-1}$ has the expected sign and is significantly different from 0 at the 10% level for the President's popularity, and is significantly different from 0 at the 5% level for the Prime Minister's popularity: an increase in the GESF variable by 1% leads to an increase in the President's popularity by about 0.4%, and an increase in the Prime Minister's popularity by about 0.5%. With this variable, the statistical indicators of the estimates are as satisfactory as those obtained in tables 1a and 2a, thus the GESF variable is an interesting subjective economic variable.

The coefficients of the FSF_{t-1} and $DFSP_{t-1}$ economic variables have the expected sign, and are significantly different from 0 at the 10% level for the President's popularity, but are not significantly different from 0 at the 10% level for the Prime Minister's popularity. The coefficients of the $DGESP_{t-1}$, $DCIC_{t-1}$ and $DTRUNEMF_{t-1}$ economic variables are not significantly different from 0 at the 10% level for the President and Prime Minister's popularity. These variables are thus less satisfactory economic indicators than the GESF variable for the study of the President and Prime Minister's popularity over the period 1995:6-2007:4.

TABLE 3a³⁰

Variable	PRESS _t	PRMIN _t	PRESS _t	PRMIN _t
	P3a	PM3a	P3b	PM3b
Constant	8.76 (4.70) ^{***}	6.59 (3.64) ^{***}	8.40 (4.49) ^{***}	7.97 (4.11) ^{***}
POP _{t-1}	0.84 (26.86) ^{***}	0.87 (27.71) ^{***}	0.85 (26.94) ^{***}	0.84 (25.15) ^{***}
GESF _{t-1}	0.09 (2.30) ^{**}	0.09 (2.22) ^{**}	0.07 (1.86) [*]	0.10 (2.27) ^{**}
APPM		17.56 (9.44) ^{***}		18.79 (9.55) ^{***}
RALLY	5.05 (3.02) ^{***}	3.85 (2.28) ^{**}		
REF	-12.99 (-4.18) ^{***}			
SCA	-5.52 (-3.03) ^{***}	-3.52 (-1.90) [*]		
FWC	11.14 (3.13) ^{***}	8.57 (2.35) ^{**}		
SEP-OCT2000	-6.41 (-2.56) ^{**}	-16.53 (-6.43) ^{***}		
FCE	-4.85 (-1.91) [*]	-8.90 (-3.43) ^{***}		
EVE			5.53 (6.54) ^{***}	5.95 (6.41) ^{***}

³⁰ The OLS estimates give very close results.

TABLE 3b

Adj. R ²	0.89	0.90	0.89	0.87
RCM				
President	1	0.57	1	0.55
Prime Minister	0.57	1	0.55	1
λ_{LM}	37.64	37.64	31.54	31.54
AIC	2.54	2.54	2.54	2.69
BIC	2.70	2.71	2.60	2.77

The French President's and Prime Minister's popularity and the period of cohabitation

We also estimated these following models for the French President's and Prime Minister's popularity:

$$POP_t = c_0 + c_1 POP_{t-1} + c_2 \Delta UNEM_{t-2} + c_3 COHAB \times \Delta UNEM_{t-2} + c_i POL_t + \varepsilon_{7t} \text{ (or } \varepsilon_{8t})$$

With COHAB×UNEM: variable equal to UNEM during the period of cohabitation 1997:6-2002:4 and to 0 otherwise.

We are expecting for the following signs: $c_2 < 0$ and $c_3 > 0$ with $|c_3| < |c_2|$, which would show that during the period of cohabitation (1997:6-2002:4), the President (Jacques Chirac) is only partially responsible for the economic situation.

The estimates of table 4a show that the coefficients of the $UNEM_{t-2}$ and $COHAB \times UNEM_{t-2}$ variables are negative and that of the $COHAB \times UNEM_{t-2}$ variable is higher in absolute value, which contradicts the partial responsibility hypothesis of the President for the economic situation during the period of cohabitation. We thus rejected this hypothesis; and we held the President's responsibility hypothesis for the economic situation during the period of cohabitation.

TABLE 4a³¹

Variable	PRESS _t P4a	PRMIN _t PM4a	PRESS _t P4b	PRMIN _t PM4b
Constant	6.05 (5.04) ^{***}	3.78 (3.34) ^{***}	6.74 (5.11) ^{***}	4.89 (3.94) ^{***}
POP _{t-1}	0.85 (30.83) ^{***}	0.90 (35.64) ^{***}	0.85 (30.74) ^{***}	0.88 (31.87) ^{***}
ΔUNEM _{t-2}	-3.25 (-0.78)	-6.09 (-1.74) [*]	-2.82 (-0.68)	-7.63 (-2.05) ^{**}
COHAB×ΔUNEM _{t-2}	-12.12 (-1.90) [*]		-12.48 (-1.97) ^{**}	
APPM		17.54 (9.73) ^{***}		18.62 (9.62) ^{**}
RALLY	5.55 (3.49) ^{***}	3.84 (2.41) ^{**}		
REF	-13.24 (-4.41) ^{***}			
SCA	-4.94 (-2.79) ^{***}	-3.51 (-1.99) ^{**}		
FWC	9.94 (2.96) ^{***}	7.85 (2.29) ^{**}		
SEP-OCT2000	-6.27 (-2.66) ^{***}	-16.60 (-6.87) ^{***}		
FCE	-4.98 (-2.09) ^{**}	-9.25 (-3.81) ^{***}		
EVE			5.54 (6.93) ^{***}	6.04 (6.80) ^{***}

TABLE 4b

Adj. R ²	0.89	0.90	0.89	0.87
RCM				
President	1	0.51	1	0.49
Prime Minister	0.51	1	0.49	1
λ _{LM}	37.87	37.87	30.55	30.55

The French President and Prime Minister's popularity and the expected and unexpected objective economic situation

We also studied the influence of the expected change of the unemployment and inflation rates, and the unexpected change of the unemployment and inflation rates.³² To calculate these components, we studied the autocorrelation and partial autocorrelation functions of the change of the unemployment and inflation rates series. We selected a ARIMA(2,1,0) model for the UNEM series and a ARIMA(12,1,12) model for the INFL series.

We held the following estimates over the period 1995:4-2007:4 (constants were not significantly different from 0 at the 10% level):

³¹ The OLS estimates give very close results.

³² Michaels (1986) studied the influence of the expected and unexpected inflation on the popularity of the American President; and Kirchgässner (1985) showed the influence of the unexpected unemployment and inflation rates on the popularity of the German political parties.

$$\Delta\text{UNEM}_t = 0.2919\Delta\text{UNEM}_{t-1} + 0.3968\Delta\text{UNEM}_{t-2}$$

$$(3.79)^{***} \quad (5.13)^{***}$$

$$R^2 = 0.9964, \text{DW} = 2.11, \text{Q}(34) = 30.81$$

$$\Delta\text{INFL}_t = 0.1402\Delta\text{INFL}_{t-10} + 0.1535\Delta\text{INFL}_{t-11} - 0.2884\Delta\text{INFL}_{t-12} - 0.8523\varepsilon_{t-12}$$

$$(1.71)^* \quad (1.88)^* \quad (-3.25)^{***} \quad (-16.16)^{***}$$

$$R^2 = 0.9059, \text{DW} = 2.00, \text{Q}(32) = 32.25$$

These estimates allowed us to calculate ΔUNEME_t (the expected change of the unemployment rate), and ΔINFLE_t (the expected change of the inflation rate) which represent the forecast change for the unemployment and inflation rates and ΔUNEMUE_t (the unexpected change of the unemployment rate) and ΔINFLUE_t (the unexpected of the inflation rate) which are the residuals of these estimates.

We thus estimated these following models for the French President's and Prime Minister's popularity:

$$\text{POP}_t = d_1 + d_2\text{POP}_{t-1} + d_3\Delta\text{UNEME}_{t-2} + d_4\Delta\text{UNEMUE}_{t-2} + d_5\Delta\text{INFLE}_{t-2} + d_6\Delta\text{INFLUE}_{t-2} + d_i\text{POL}_t + \varepsilon_{9t} \text{ (or } \varepsilon_{10t}\text{)}$$

We are expecting for the following signs: $d_3 < 0$, $d_4 < 0$, $d_5 < 0$, $d_6 < 0$.

The estimates P5a and P5b show that the change in the unexpected unemployment rate has a significant influence on the President's popularity: an increase in the unexpected unemployment rate by 0.1% leads to a decrease in the President's popularity by about 0.8% or 0.9%, while the change in the expected unemployment rate has no significant influence on the President's popularity. They also show that the change in the unexpected unemployment rate has no significant influence on the Prime Minister's popularity, while in the estimate PM5a, the change in the expected unemployment rate has a significant influence on the Prime Minister's popularity: an increase in the expected unemployment rate by 0.1% leads to a decrease in the Prime Minister's popularity by about 1.2%. We can thus conclude that voters have no compatible behavior with the rational expectations hypothesis for the Prime Minister's popularity.

TABLE 5a³³

Variable	PRESS _t P5a	PRMIN _t PM5a	PRESS _t P5b	PRMIN _t PM5b
Constant	6.00 (4.77) ^{***}	4.10 (3.68) ^{***}	6.19 (4.81) ^{***}	5.11 (4.14) ^{***}
POP _{t-1}	0.87 (33.25) ^{***}	0.89 (35.51) ^{***}	0.87 (32.79) ^{***}	0.87 (31.63) ^{***}
ΔUNEME _{t-2}	-7.10 (-1.23)	-12.26 (-2.09) ^{**}	-4.96 (-0.85)	-10.53 (-1.64)
ΔUNEMUE _{t-2}	-8.34 (-2.06) ^{**}	-2.22 (-0.55)	-8.85 (-2.20) ^{**}	-5.25 (-1.21)
ΔINFLE _{t-2}	1.36 (0.99)	1.31 (0.96)	1.38 (0.99)	1.23 (0.82)
ΔINFLUE _{t-2}	0.67 (0.42)	-2.62 (-1.64)	0.75 (0.46)	-2.45 (-1.39)
APPM		17.14 (9.71) ^{***}		18.21 (9.49) ^{***}
RALLY	5.29 (3.30) ^{***}	4.30 (2.72) ^{***}		
REF	-13.24 (-4.40) ^{***}			
SCA	-5.58 (-3.18) ^{***}	-3.25 (-1.86) [*]		
FWC	10.51 (3.11) ^{***}	7.52 (2.23) ^{**}		
SEP-OCT2000	-6.33 (-2.66) ^{***}	-16.73 (-7.05) ^{***}		
FCE	-5.16 (-2.12) ^{**}	-9.87 (-4.10) ^{***}		
EVE			5.70 (7.03) ^{***}	6.12 (6.94) ^{***}

TABLE 5b

Adj. R ²	0.89	0.90	0.89	0.87
RCM				
President	1	0.53	1	0.50
Prime Minister	0.53	1	0.50	1
λ _{LM}	39.97	39.97	34.90	34.90

The French President's and Prime Minister's popularity and the voters' asymmetric behavior

To test the voters' asymmetric behavior, we split up the variables: ΔUNEM_t et ΔINFL_t in a positive component (ΔUNEMP_t et ΔINFLP_t), and in a negative component (ΔUNEMN_t et ΔINFLN_t) with: ΔUNEMP_t = $\frac{1}{2}(|UNEM_t| + UNEM_t)$, ΔUNEMN_t = $-\frac{1}{2}(|UNEM_t| - UNEM_t)$, ΔINFLP_t = $\frac{1}{2}(|INFL_t| + INFL_t)$, ΔINFLN_t = $-\frac{1}{2}(|INFL_t| - INFL_t)$.

³³ The OLS estimates give very close results.

We thus estimated the following models for the French President's and Prime Minister's popularity:

$$POP_t = f_1 + f_2 POP_{t-1} + f_3 \Delta UNEMP_{t-2} + f_4 \Delta UNEMN_{t-2} + f_5 \Delta INFLP_{t-2} + f_6 \Delta INFLN_{t-2} + f_7 POL_t + \varepsilon_{11t} \text{ (or } \varepsilon_{12t})$$

We are expecting for the following signs: $f_3 < 0$, $f_4 < 0$, $f_5 < 0$, $f_6 < 0$.

The estimates P6a to PM6b show that a decrease in unemployment rate by 0.1% leads to an increase in the President's and Prime Minister's popularity by about 1.5% or 1.4% and 0.9% or 1.1%, while an increase in the unemployment rate has no significant negative influence on the President's and Prime Minister's popularity. Voters have asymmetric behavior for the change of the unemployment rate.

TABLE 6a³⁴

Variable	PRESS _t	PRMIN _t	PRESS _t	PRMIN _t
	P6a	PM6a	P6b	PM6b
Constant	5.34 (4.08) ^{***}	3.64 (2.99) ^{***}	5.38 (4.01) ^{***}	4.56 (3.39) ^{***}
POP _{t-1}	0.87 (33.38) ^{***}	0.90 (35.57) ^{***}	0.87 (32.99) ^{***}	0.88 (31.85) ^{***}
$\Delta UNEMP_{t-2}$	1.38 (0.22)	-2.32 (-0.36)	1.56 (0.24)	-2.41 (-0.34)
$\Delta UNEMN_{t-2}$	-14.75 (-2.85) ^{***}	-8.84 (-1.65) [*]	-13.82 (-2.73) ^{***}	-11.12 (-1.98) ^{**}
$\Delta INFLP_{t-2}$	2.56 (1.31)	-0.49 (-0.24)	3.13 (1.59)	0.13 (0.06)
$\Delta INFLN_{t-2}$	-0.86 (-0.43)	-0.29 (-0.14)	-1.41 (-0.69)	-0.87 (-0.39)
APPM		17.40 (9.53) ^{***}		18.50 (9.42) ^{***}
RALLY	5.53 (3.50) ^{***}	3.84 (2.39) ^{**}		
REF	-12.72 (-4.25) ^{***}			
SCA	-5.94 (-3.41) ^{***}	-3.71 (-2.08) ^{**}		
FWC	10.55 (3.15) ^{***}	7.72 (2.25) ^{**}		
SEP-OCT2000	-6.20 (-2.64) ^{***}	-16.61 (-6.88) ^{***}		
FCE	-5.13 (-2.11) ^{**}	-8.98 (-3.62) ^{***}		
EVE			5.76 (7.19) ^{***}	6.04 (6.75) ^{***}

³⁴ The OLS estimates give very close results.

TABLE 6b

Adj. R ²	0.89	0.88	0.89	0.87
RCM				
President	1	0.52	1	0.49
Prime Minister	0.52	1	0.49	1
λ_{LM}	35.89	35.89	33.88	33.88

We also studied the voters' asymmetric behavior for the change in the unexpected unemployment and inflation rates.

We split up the variables: $\Delta UNEMUE_t$ and $\Delta INFLUE_t$ in a positive component ($\Delta UNEMUEP_t$ and $\Delta INFLUEP_t$), and in a negative component ($\Delta UNEMUEN_t$ and $\Delta INFLUEN_t$) as Cho and Young (2002) made it for the unexpected inflation rate by using the method of Cover (1992) with: $\Delta UNEMUEP_t = \frac{1}{2}(|UNEMUE_t| + UNEMUE_t)$, $\Delta UNEMUEN_t = -\frac{1}{2}(|UNEMUE_t| - UNEMUE_t)$, $\Delta INFLUEP_t = \frac{1}{2}(|INFLUE_t| + INFLUE_t)$, $\Delta INFLUEN_t = -\frac{1}{2}(|INFLUE_t| - INFLUE_t)$.

We thus estimated these following models for the French President's and Prime Minister's popularity:

$$POP_t = g_1 + g_2 POP_{t-1} + g_3 \Delta UNEME_{t-2} + g_4 \Delta UNEMUEP_{t-2} + g_5 \Delta UNEMUEN_{t-2} + g_6 \Delta INFLUE_{t-2} + g_7 \Delta INFLUEP_{t-2} + g_8 \Delta INFLUEN_{t-2} + g_i POL_t + \varepsilon_{13t} \text{ (or } \varepsilon_{14t})$$

We are expecting for the following signs: $g_3 < 0$, $g_4 < 0$, $g_5 < 0$, $g_6 < 0$, $g_7 < 0$, $g_8 < 0$.

The estimates P7a to PM7b show that a decrease in the unexpected unemployment rate has a positive significant influence on the President's popularity; but not on the Prime Minister's popularity: a decrease in the unexpected unemployment rate by 0.1% leads to an increase in the President's popularity by about 1.25%, while an increase of the unexpected unemployment rate has no significant negative influence on the President's and Prime Minister's popularity. Voters have asymmetric behavior in the change in the unexpected unemployment rate for the President's popularity.

TABLE 7a³⁵

Variable	PRESS _t P7a	PRMIN _t PM7a	PRESS _t P7b	PRMIN _t PM7b
Constant	6.10 (4.56) ^{***}	4.27 (3.54) ^{***}	6.17 (4.51) ^{***}	4.98 (3.71) ^{***}
POP _{t-1}	0.87 (33.32) ^{***}	0.89 (35.73) ^{***}	0.87 (32.83) ^{***}	0.87 (31.68) ^{***}
ΔUNEME _{t-2}	-7.13 (-1.23)	-12.27 (-2.08) ^{**}	-5.01 (-0.85)	-10.93 (-1.68) [*]
ΔUNEMUEN _{t-2}	-3.78 (-0.47)	2.90 (0.36)	-5.38 (-0.53)	0.87 (0.10)
ΔUNEMUEN _{t-2}	-12.48 (-1.74) [*]	-6.88 (-0.96)	-12.66 (-1.78) [*]	-10.40 (-1.34)
ΔINFLE _{t-2}	1.33 (0.97)	1.28 (0.94)	1.33 (0.95)	1.13 (0.75)
ΔINFLUEP _{t-2}	-2.29 (-0.77)	-6.15 (-2.07) ^{**}	-1.33 (-0.43)	-4.00 (-1.22)
ΔINFLUEN _{t-2}	3.56 (1.21)	0.84 (0.29)	2.77 (0.93)	-0.89 (-0.28)
APPM		17.33 (9.69) ^{***}		18.41 (9.43) ^{***}
RALLY	5.34 (3.36) ^{***}	4.38 (2.79) ^{***}		
REF	-13.02 (-4.31) ^{***}			
SCA	-5.91 (-3.34) ^{***}	-3.63 (-2.07) ^{**}		
FWC	10.55 (3.14) ^{***}	7.56 (2.27) ^{**}		
SEP-OCT2000	-6.53 (-2.76) ^{***}	-16.97 (-7.20) ^{***}		
FCE	-5.48 (-2.25) ^{**}	-10.25 (-4.27) ^{***}		
EVE			5.74 (7.10) ^{***}	6.17 (6.99) ^{***}

TABLE 7b

Adj. R ²	0.89	0.90	0.89	0.87
RCM				
President	1	0.52	1	0.50
Prime Minister	0.52	1	0.50	1
λ _{LM}	38.69	38.69	34.54	34.54

³⁵ The OLS estimates give very close results.

The French President's and Prime Minister's popularity and the voters' partisan behavior

We used the partisan model of Swank (1990, 1993, 1995) and we also introduced economic variables with the responsibility hypothesis as made by Letterie and Swank (1997) and Swank (1998).

We thus estimated these following models for the French President's and Prime Minister's popularity:

$$PRES_t = h_1 + h_2PRES_{t-1} + h_3\Delta UNEM_{t-2} + h_5\Delta INFL_{t-2} + h_iPOL_t + \varepsilon_{15t}$$

$$PRMIN_t = k_1 + k_2PRMIN_{t-1} + k_3\Delta UNEM_{t-2} + k_4(LEFT-(1-LEFT))\times\Delta UNEM_{t-2} + k_5\Delta INFL_{t-2} + k_6(LEFT-(1-LEFT))\times\Delta INFL_{t-2} + k_iPOL_t + \varepsilon_{16t}$$

We are expecting for the following signs: $k_3 < 0$, $k_4 > 0$ (an increase in the unemployment rate when the Left is the parliamentary majority leads to an increase in the Prime Minister's popularity), $k_5 < 0$, $k_6 < 0$ (an increase in the inflation rate when the Right has the parliamentary majority leads to an increase in the Prime Minister's popularity).

The estimates PM8a and PM8b³⁶ show that voters have no partisan behavior for the change in the unemployment rate because the sign of the variable's coefficient $(LEFT-(1-LEFT))\times\Delta UNEM$ is positive, but it is not significantly different from 0 at the 10% level. We also notice that the sign of the variable's coefficient $(LEFT-(1-LEFT))\times\Delta INFL$ is negative, but it is significantly different from 0 at the 10% level; thus, voters have no partisan behavior for the change in the inflation rate.

We also studied the voters' partisan behavior for the unexpected change in the unemployment and inflation rates.

We thus estimated the following models for the French President and Prime Minister's popularity:

$$PRES_t = l_1 + l_2PRES_{t-1} + l_3\Delta UNEME_{t-2} + l_4\Delta UNEMUE_{t-2} + l_5\Delta INFLE_{t-2} + l_6\Delta INFLUE_{t-2} + l_iPOL_t + \varepsilon_{17t}$$

$$PRMIN_t = m_1 + m_2PRMIN_{t-1} + m_3\Delta UNEME_{t-2} + m_4\Delta UNEMUE_{t-2} + m_5(LEFT-(1-LEFT))\Delta UNEMUE_{t-2} + m_6\Delta INFLE_{t-2} + m_7\Delta INFLUE_{t-2} + m_8(LEFT-(1-LEFT))\Delta INFLUE_{t-2} + m_iPOL_t + \varepsilon_{18t}$$

We are expecting for the following signs: $m_3 < 0$, $m_4 < 0$, $m_5 < 0$, $m_6 < 0$, $m_7 < 0$, $m_8 > 0$.

The estimates PM9a and PM9b³⁷ show that voters have no partisan behavior for the change of the unexpected unemployment rate because the variable's coefficient $(LEFT-(1-LEFT))\Delta UNEMUE$ is positive, but it is not significantly different from 0 at the 10% level. Voters have no partisan behavior for the change in the unexpected inflation rate because the variable's coefficient $(LEFT-(1-LEFT))\Delta INFLUE$ is negative but it is not significantly different from 0 at the 10% level.

Conclusion

We show that, the change of the unemployment rate has a significant influence (responsibility hypothesis) for the popularity functions of the French President and Prime Minister over the period 1995:6-2007:4. On the other hand, the change in the inflation rate has no significant influence on the French President and Prime Minister's popularity. The President is responsible for the economic situation as is the Prime Minister during the period

³⁶ Estimates are available on request.

³⁷ Estimates are available on request.

of cohabitation (1997:6-2002:5), and during a usual period of government. We also show that the future general economic situation has a significant positive influence on the President's and Prime Minister's popularity. Political variables are also studied: we notably show that every Prime Minister's change has a significant positive influence on the Prime Minister's popularity (honeymoon effect), while the re-election of the President (Jacques Chirac) in 2002 had no significant positive influence on the President's popularity (no honeymoon effect after his re-election). We also show the significant positive influence of some international events (Kosovo war, attempts in 11 September 2001, the beginning of the military intervention in Afghanistan, the French position against the war in Iraq), the football world cup; and the significant negative influence of the rejection of the European Constitution only on the President's popularity, the scandals (apartment of the Prime Minister Alain Juppé and Clearstream's affair), the gasoline crisis in September 2000, the general strikes and the national demonstrations of October and December 1995: Juppé's Plan for Social Security) and those of May and June 2003 (pension reform), the crisis for the FCE ("first contract employment") of March and April 2006. We show that the change of the unexpected unemployment rate has a significant influence on the President's popularity, but that it has no significant influence on the Prime Minister's popularity; and that voters have asymmetric behavior for the change in the unemployment rate, but that they have no partisan behavior.

For future research, we shall also make estimates over a more recent period (since 2007) to try to explain the President's low popularity (Nicolas Sarkozy) and the Prime Minister's higher popularity (François Fillon): the President is very active and present on the domestic political scene, and also plays the role of the Prime Minister.

APPENDIX: POLITICAL VARIABLES

ELECHI02: variable for the President's re-election of 2002 (Jacques Chirac), taking the value 1 in 2002:5 and 0 otherwise

DPP: variable for the depreciation of the President's popularity during the Jacques Chirac's second term of office, taking the value 1 during the period 2002:5-2007:4 and 0 otherwise

APPM: variable for the appointment of the Prime Minister, taking the value 1 in 1997:6, 2002:5, 2005:6 and 0 otherwise

RALLY: variable around the flag, taking the value 1 in 1999:4 and 1999:5 (Kosovo war), 1 in 2001:9 (attempts on September 11, 2001) and 2001:10 (the beginning of the American intervention in Afghanistan supported notably by France), 1 in 2003:3 (decision of France against the American military intervention in Iraq) and 0 otherwise

REF: variable for the referendum on the European Constitution, taking the value 1 in 2005:6 and 0 otherwise

SCA: variable for scandals, taking the value 1 in 1995:6 and 1995:7 (affair of the Prime Minister's apartment, Alain Juppé), taking the value 1 in 2006:5 and 2006:6 (Clearstream's affair) and 0 otherwise

FWC: variable for the football world cup organized in France and won by the French national team, taking the value 1 in 1998:7 and 0 otherwise

SEPOCT2000: variable for gasoline crisis in September 2000, taking the value 1 in 1999:9, -1 in 1999:10 and 0 otherwise

STR-DEM: variable for the general strikes and national demonstrations, taking the value 1 in 1995:10 and 1995:12, 1 in 2003:5 and 2003:6 and 0 otherwise

FCE (first contract employment): variable for the FCE ("first contract employment") crisis, taking the value 1 in 2006:3, 2006:4 and 0 otherwise

EVE: variable events for the President of the Republic (EVEP) and the Prime Minister (EVEPM). These two variables are almost identical: taking the value -1 in 1995:6 and 1995:7, -1 in 1995:10 and 1995:12, 1 in 1998:7, 1 in 1999:5 and 1999:6, 1 in 2000:9 and -1 in 2000:10, 1 in 2001:9 and 2001:10, 1 in 2003:3, -1 in 2003:5 and 2003:6, -1 in 2006:3 and 2006:4, -1 in 2006:5 and 2006:6; moreover, EVEP, taking the value -1 in 2005:6 and 0 otherwise

LEFT, taking the value 1 during the period 1997:6-2002:4 and 0 otherwise

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