

Economics and Politics in France: Economic Performance and Mass Political Support for Presidents Pompidou and Giscard d'Estaing*

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ABSTRACT

During recent years the state of the economy has been a very salient issue for the mass publics of the industrial democracies, and the French electorate is no exception. In this article the influence of inflation, unemployment and real income growth performance on popular 'satisfaction' with Presidents Pompidou and Giscard d'Estaing is analysed. The empirical analyses are based on a model of qualitative political responses. The most important features of the model are that people evaluate a President's economic performance relatively rather than absolutely, and that the weights placed upon current and past performance in the formation of contemporaneous political judgments decline geometrically. The empirical results indicate clearly that a President's standing with the mass public depends primarily on the performance of the real economy (in particular, the real income growth rate), rather than on nominal economic conditions (the inflation rate). This suggests that deflationary macroeconomic policies sacrificing employment and real output and income growth in order to achieve price deceleration are not likely to enhance a President's support in the French electorate.

During recent years the state of the economy has been a very salient issue for the mass publics of the industrial democracies.¹ France is no exception, as the public opinion data in Figure 1 indicate. Once the Algerian question was finally resolved in 1962, public concern about the economy moved upward. By the late 1960s, as the long postwar economic expansion was coming to an end, about four out of every ten French

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voters considered one or more economic issues to be the 'most important problem' facing the country. Although the income tax scandal involving Premier Chaban-Delmas diverted public attention from the economy in 1972, economic performance soon recaptured popular attention: following the OPEC supply shock of late 1973, which simultaneously produced inflation and stagnation, more than two-thirds of the French electorate designated an economic issue as the most important national problem.

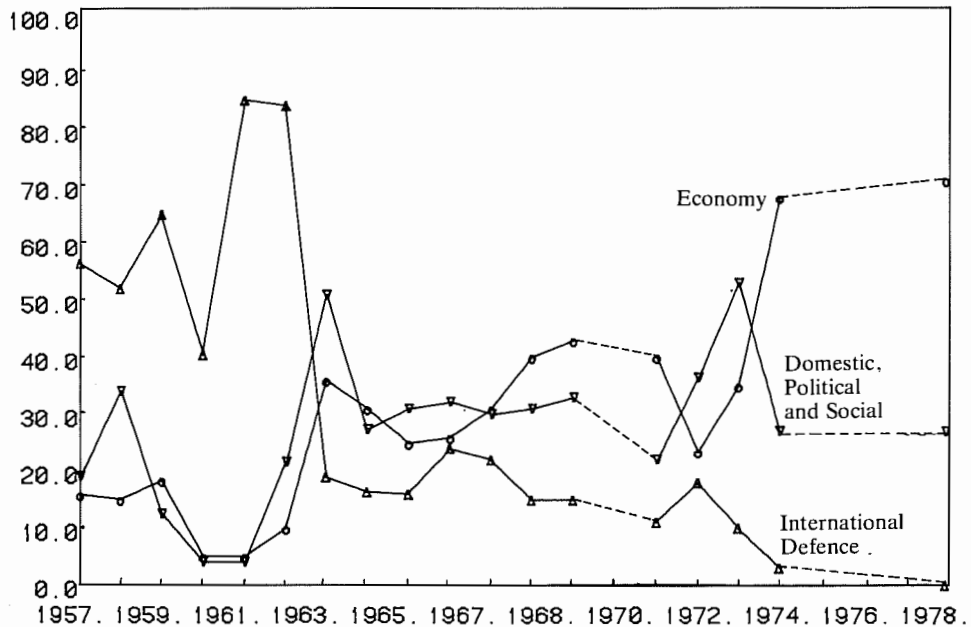


Fig. 1 Aggregate Responses to the Question: 'What is the most important problem for France at the present time?' (wording varies)
Sources G. H. Gallup, *The Gallup International Public Opinion Polls: France 1939, 1944-1975* (New York, 1976); Lafay 1981.

In view of the importance of economic conditions to the public, it is not surprising that many empirical studies have concluded that mass political support for incumbent political parties and chief executives systematically responds to macroeconomic performance.² However, aside from the pathbreaking work of Rosa and Amson (1976) on parliamentary and constituent electoral outcomes, Lafay's important papers (1977, 1981), and Lewis-Beck's (1980) recent article on political support for French executives, we have comparatively little evidence about the impact of economic outcomes on mass support for political officials in France.³

In this article I analyse how popular 'satisfaction' with Presidents Pompidou and Giscard d'Estaing was influenced by economic performance. The empirical analyses are based on a model of qualitative political responses, which is described in the following section and, more technically, in the appendix. The most important features of the model are that people evaluate economic conditions relatively rather

than absolutely in judging a president's performance, and that the weights people place on current and past economic outcomes decline geometrically, so that current performance contributes more heavily than past performance to the formation of contemporaneous political judgments.

The next section presents empirical results for variations of the model that include as measures of economic performance the rate of inflation, the rate of unemployment, and the growth rate of *per capita* real personal disposable income. The results indicate that the real income growth rate was the most systematic economic determinant of Pompidou's and Giscard d'Estaing's standing with the French public. Estimates of the response of the presidents' poll rating to typical movements in the real income growth rate are presented. The final section of the paper reviews the conclusions and political implications of the study.

1. THE POLITICAL SUPPORT MODEL

Opinion surveys typically force people to make discrete, qualitative responses. In the present case, the survey measure of popular satisfaction with Presidents Pompidou and Giscard d'Estaing is based on the IFOP poll question: 'Are you satisfied or dissatisfied with _____ as President of the Republic?' ('Etes-vous satisfait ou mécontent de comme Président de la République?'). However, in principle a person's satisfaction with the President is not a purely qualitative phenomenon, but rather a matter of degree falling on an underlying continuum ranging from strongly positive to strongly negative. As the appendix shows, a reasonable approximation to such a continuously valued satisfaction index is the natural logarithm of the proportion of the survey sample at each time period expressing satisfaction with the President (P_t') divided by one minus this proportion ($1 - P_t'$); that is: $\ln(P_t'/1 - P_t')$. $P_t'/1 - P_t'$ gives the satisfaction odds ratio, and the natural logarithm of this odds ratio, known as the 'logit', ranges from $-\infty$ to $+\infty$.⁴ The logits comprise the continuously valued satisfaction index used in the regression analyses discussed in the next section. The analyses are based on quarterly observations over the period 1969:4 to 1978:4. The weighted averages of all poll results available in each quarter were used to form the quarterly proportions, P_t' .

Earlier analyses of economic conditions and popular support for French political officials have assumed that people evaluate economic performance absolutely, and that current political support is influenced only by very recent conditions. These assumptions are overly restrictive. It is unlikely that a president's past record is discounted completely by the electorate, or that conditions during a particular presidential administration are judged by voters absolutely, that is, without regard to the situation existing when the president assumed office. For example, a president coming to power during the trough of a recession who achieves a modest economic growth rate is likely to be evaluated more favourably than a President with the same economic record who assumed office during a sustained economic boom.

Therefore, the analyses reported ahead are based on equations in which a president's satisfaction rating at each time period is influenced by the *difference between* the cumulated economic performance record of his administration and the economic performance record of previous administrations. However, since the present relevance of the information conveyed by past experiences decays over time,

the weights people place on current *versus* past performance outcomes decline geometrically at the rate g^k : g is a decay rate parameter lying between zero and one. If Z_{t-k} is a performance outcome experienced k periods ago ($k = 0, 1, 2, 3, \dots$), current and past experiences with respect to Z are weighted $Z_t, gZ_{t-1}, g^2Z_{t-2}, g^3Z_{t-3}$, and so on.

For example, if the current president has been in office for two periods, then his political satisfaction rating depends (in part) on the cumulated, discounted performance difference

$$Z_t + gZ_{t-1} - g^2Z_{t-2} - g^3Z_{t-3} - \dots$$

Of course, voters need not discount past performance outcomes (Z_{t-k}) in exactly this way. As long as people weight past outcomes less heavily than more recent outcomes in making current political evaluations, the geometric weight sequence g^k will yield a close approximation. Large values of g (approaching 1.0) imply that past outcomes play an important role in current political judgments. Small values of g (approaching 0) imply that voters discount (disregard) the past heavily; only a president's own recent performance matters. If in the regression analyses reported later g was estimated to be actually zero, this would mean that, on average, voters have no effective memory of a president's past performance, and that only the current situation, Z_t , viewed absolutely, has any influence on a president's standing with the public. Clearly, then, g is an interesting political quantity. It defines whether performance outcomes are typically judged relatively or absolutely, and whether past experiences contribute to current political support.

The political support equations include four measures of economic performance. The first is the percentage rate of *unemployment* (U), that is, the number of unemployed (as adjusted from French sources by the U.S. Department of Labor, 1979) divided by the size of the labour force.⁵ The second is the rate of *inflation* (I), that is, the annualized, quarter-on-quarter percentage rate of change of retail prices. The third is the rate of change of the inflation rate ($I_t - I_{t-1}$), that is, the rate of acceleration or deceleration of retail prices. The fourth is the percentage rate of change of *real* household disposable *income per capita* (R). This variable is formed by taking the annualized, quarter-on-quarter percentage rate of change of nominal household disposable income *per capita* deflated by the retail price index.

The regression analyses also include two binary variables representing discrete political events that were expected to influence (negatively) presidential support in the mass public. The first binary variable, '*Scandal*' (=1 1972:2 and 1972:3), is designed to estimate the loss of support suffered by President Pompidou when it was revealed in early 1972 that his appointee as premier, Jacques Chaban-Delmas, had exploited tax loopholes to personal advantage. The ensuing scandal over Chaban-Delmas' manipulation of income tax regulations was a source of considerable embarrassment to Pompidou's administration and led to Chaban-Delmas' resignation and replacement by Pierre Messmer in July.

The second binary variable, '*Disorganization*' (=1 1976:3 and 1976:4), is designed to pick up the loss of public support for Giscard d'Estaing associated with the split between the President and his Gaullist political ally and appointee as premier, Jacques Chirac. During mid-1976 Chirac became seriously disaffected by President Giscard d'Estaing's efforts to restrict his scope for independent action, which was prompted by Giscard's attempt to create a more 'presidential' style of government. Although Chirac had played an important role in Giscard's election in 1974, by the summer of

1976 the feud became public and Chirac resigned, complaining that he was unable to confront effectively the nation's problems. Giscard replied in a national broadcast that he ruled out 'transferring more power from the presidency to the premier's office, because . . . this is against the institutions of the Fifth Republic'.⁶ The open feud between the head of state and his prime minister antagonized Gaullist partisans in the electorate and made it obvious to the public that Giscard's administration was severely disorganized. The President's standing in the polls declined during this period as a result.

2. EMPIRICAL RESULTS

Empirical results from the regression analyses of the models described above (and, more technically, in the appendix) are reported in Table I. The regression models are of course nonlinear by virtue of the lag weight decay parameter g . The models were estimated, therefore, by searching the parameter space manually and choosing the least-squares estimate of the nonlinear parameter g that minimized the sum of squared residuals. (A 0.01 grid search for g was used.) Model (1) of Table I includes all the performance variables described previously. However, since the rate of unemployment is highly correlated with president-specific intercept constants (the correlation of the Giscard constant and the unemployment rate is +0.88), model (1) is specified with a general intercept constant. As anticipated, the Chaban-Delmas tax 'scandal' and the Chirac affair ('disorganization') appear to have produced transitory, downward movements in the satisfaction ratings of Pompidou and Giscard respectively. More important for our purposes are the estimates for the economic performance variables. The signs of the coefficients of R and U are consistent with prior expectations: increases in the *per capita* real income growth rate yield upward movements in the public's satisfaction with the President and increases in the rate of unemployment are associated with downward movements in the President's political support.

The rate of inflation enters regression model (1) with a positive coefficient, which of course is a perverse result. However, the parameter estimate for the inflation rate is negligible in magnitude; for practical purposes it may be taken to be zero.⁷ This implies that the French public is not averse to rising prices *per se*. As long as money incomes keep pace with the rate of growth of retail prices, there is no political penalty associated with inflation.⁸

Regression model (2) in Table I drops the unemployment term and is specified with individual intercept constants for the Giscard and Pompidou periods. This model clearly outperforms model (1),⁹ which implies that the negative impact of unemployment on public satisfaction with the President is embodied in the difference between the Giscard and Pompidou constants (approximately $0.031 - 0.215 = -0.18$). This result is not surprising. We know that unemployment rose sharply in France between the Giscard and Pompidou administrations, but the methods used to estimate movements in unemployment by the French Ministry of Labour and the French National Institute of Statistics and Economic Studies (INSEE) were modified several times during the late 1960s and 1970s, and construction of an accurate unemployment time-series is therefore problematic.¹⁰ Consequently, a model with president-specific constants, which permits the satisfaction index to shift (downward) between the

TABLE I. Least-squares coefficient estimates, weighted logit regression models (1969:4–1978:4 (standard errors in parentheses)).

	REGRESSION MODEL				Means (unweighted) of independent variables
	(1)	(2)	(3)	(4)	
CONSTANTS (a_q)					
Pompidou		0.216 (0.0105)	0.219 (0.0105)]	0.219 (0.0105)	0.514
Giscard		0.031 (0.109)	0.043 (0.0111)	0.043 (0.0097)	0.486
General	0.130 (0.008)				1.000
LAG WEIGHT DECAY RATE					
g	0.8	0.8	0.8	0.8	
ECONOMY					
Unemployment Rate (U)	-0.010 (0.0029)				3.630
Inflation Rate (I)	0.004 (0.0010)	0.0013 (0.0004)			8.689
Change of Inflation Rate ($I_t - I_{t-1}$)			-0.0001 (0.0015)		0.311
Real Personal Disposable Income Growth Rate (R)	0.017 (0.0008)	0.014 (0.0007)	0.015 (0.0006)	0.015 (0.0006)	3.261
NONECONOMIC					
Scandal (Chaban-Delmas tax scandal)	-0.134 (0.0129)	-0.195 (0.0515)	-0.184 (0.013)	-0.184 (0.013)	0.054
Disorganization (Chirac affair)	-0.365 (0.014)	-0.331 (0.013)	-0.310 (0.012)	-0.310 (0.0115)	0.054
x^2/df	21.4	15.1	15.5	15.0	

Notes: (a) Data on the dependent variable were unavailable for 1970:3, and 1974:2 and, therefore, the regressions are based on 35 observations. Data for the lag functions for the independent, performance variables extend back to 1951:2. Variable means are for the regression estimation range.

(b) The dependent variable is $\ln(P_t'/1 - P_t')$; the natural logarithm of the odds ratio.

Pompidou and Giscard periods, more satisfactorily picks up the political consequences of increased unemployment.

The parameter estimate for the inflation rate remains incorrectly signed (positive) and of negligible magnitude in regression model (2) and, therefore, it is replaced by the rate of acceleration of retail prices, $(I_t - I_{t-1})$, in model (3). Since the inflation rate in the recent past is among the best predictors of the inflation rate today, $(I_t - I_{t-1})$ is a sensible measure of *unanticipated* movements in prices, which economic theory suggests are the main cause of arbitrary redistributions of income and wealth. However, the results for model (3) show that although $(I_t - I_{t-1})$ enters with a negative coefficient, it is indistinguishable from zero. In other words, neither the rate of acceleration nor the rate of change of retail prices appears to have led to significant decreases in the satisfaction rating enjoyed by French Presidents. The domestic political consequences of inflation appear, therefore, to be transmitted entirely

through the impact of rising prices on the *per capita* real personal income growth stream.

Since I and $(I_t - I_{t-1})$ have little or no impact on presidential support net of movements in R , and because the decline in support attributable to rising unemployment is best captured by specifying president-specific intercepts, the most satisfactory equation in Table I is regression model (4), which includes only the growth rate of *per capita* real personal income as an explicit measure of politically relevant economic conditions. The success of model (4) in fitting the data is illustrated by Figure 2.

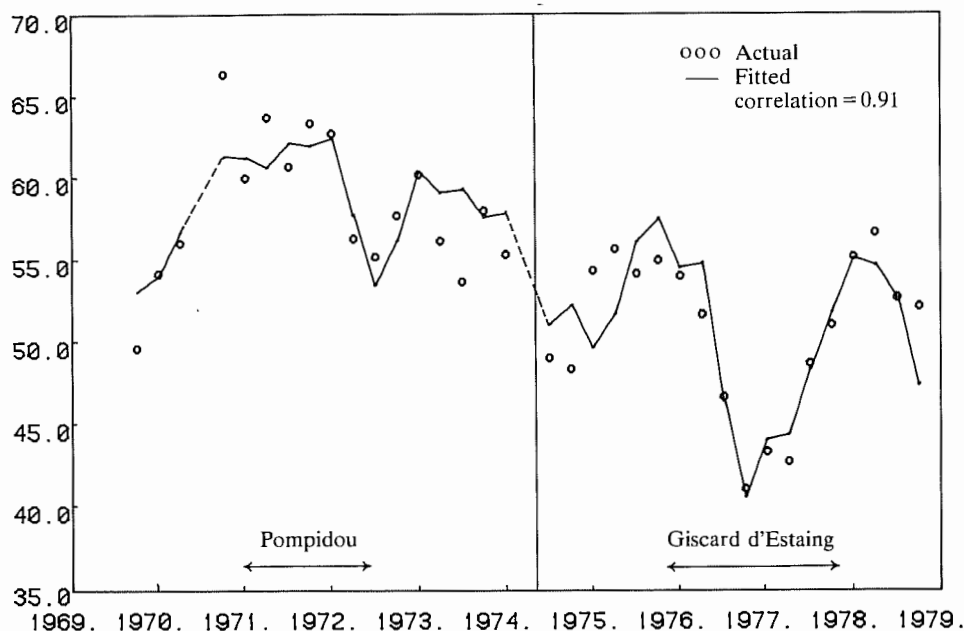


Fig. 2 Actual and Fitted Percentages of the Publicsatisfied with the President (fitted values are derived from Model 4, Table I).

Practical interest centres on the survey percentages rather than on the logits $[\ln(P_t' / (1 - P_t'))]$ and, therefore, Figure 2 shows the actual and fitted *percentages* of the French public satisfied with Pompidou and Giscard at each period. The fitted values track the actuals quite well (the correlation is 0.91) and no serious autocorrelation or other obvious errors in the functional form are revealed by the data.¹¹

Notice in Table I that the optimal estimate of the lag weight-rate of decay parameter g is about 0.8 in all models. This means that the performance outcomes of many past periods influence voters' current political evaluations of the President. The impact of current and past real income-growth rates (R_{t-k}) on the President's popular satisfaction rating in the current quarter is therefore given by the geometric lag sequence

$$\begin{aligned}
 & 0.015 \sum_k 0.8^k R_{t-k} \cdot D_{q,t-k} \\
 & = 0.015 (1.0 R_t \cdot D_{q,t} + 0.8 R_{t-1} \cdot D_{q,t-1} \\
 & + 0.64 R_{t-2} \cdot D_{q,t-2} + 0.51 R_{t-3} \cdot D_{q,t-3} + \dots),
 \end{aligned}$$

where 0.15 is the contemporaneous impact of R estimated by the regression coefficient in Table I, Model (4), and $D_{q,t}$ is a 'switching' variable described in the appendix. If the *per capita* real income growth rate were held at some equilibrium value R^* indefinitely, the above implies that the ultimate impact on political support would be

$$0.015/(1 - 0.8)R^* = 0.075R^* .^{12}$$

The percentage of the ultimate impact felt by the k th lag is given by $1 - 0.8^{k+1}$.¹³ Therefore, about 20% of the total political effect of a sustained change in the real income growth rate is felt immediately, about 60% is felt after one year (four quarters), 84% is felt after two years (eight quarters), and about 97% is felt after four years (16 quarters). Politically, this means that after three to four years in office the systematic part of a President's popular satisfaction rating is based almost entirely on his own absolute performance record. Prior to that time his record in relation to that of his predecessor(s) is an important factor in determining his support in the mass public. This result contrasts sharply with the assumptions of earlier studies that only current performance, viewed absolutely, influences a President's contemporaneous political support.

The coefficients in Table I pertain to the impacts of movements in the independent variables on the dependent variable in the regression experiments, that is, on the logit $\ln(P_t'/1 - P_t')$. But of course practical interest again centres on the implications of changes in economic performance on the percentage of the electorate satisfied with the President. Since the survey proportions, P_t' , are a nonlinear function of the logits, $\ln(P_t'/1 - P_t')$, the effects of practical interest are difficult to judge by direct inspection of the regression coefficients, and they need not, in general, be homogeneous through time.¹⁴ Therefore, to give an idea of the practical political consequences of fluctuations in the *per capita* real income growth rate, I have computed the long-run change in the *percentage* of the French public reporting satisfaction with the President expected at each period from sustained changes in R of one-half and one standard deviation.¹⁵

Figure 3 displays the time series of these impact measures computed at each period in the regression range. Although, as I noted above, the expected changes in the support percentage associated with movements in the *per capita* real income growth rate may vary over time and across positive and negative changes in R, the data in Figure 3 show that such variations are small. Giscard's average satisfaction rating lies close to 0.50 ($\bar{P}' = 0.51$), and so the effects of positive and negative movements in R were, on average, symmetrical during his presidency. Pompidou's mean satisfaction rating was somewhat higher ($\bar{P}' = 0.585$), and therefore decreases in R during his presidency had slightly greater effects than positive movements in R, and, on average, these effects were somewhat smaller than the corresponding effects of changes in R during the Giscard years.¹⁶

However, these differences are on the whole negligible. The main message of Figure 3 is that a movement of plus or minus one-half standard deviation in the *per capita* real income growth rate sustained for four years or more yields changes in presidential satisfaction ratings of just under plus or minus five percentage points. A sustained change of plus or minus one full standard deviation in R produces in the long run a movement in the public's satisfaction with the President just less than twice the former magnitude – between nine and nine and one-half percentage points. If movements in the real income growth rate are accompanied by opposite changes in the rate of unemployment (we know from Okun's law in economics that declines in the real

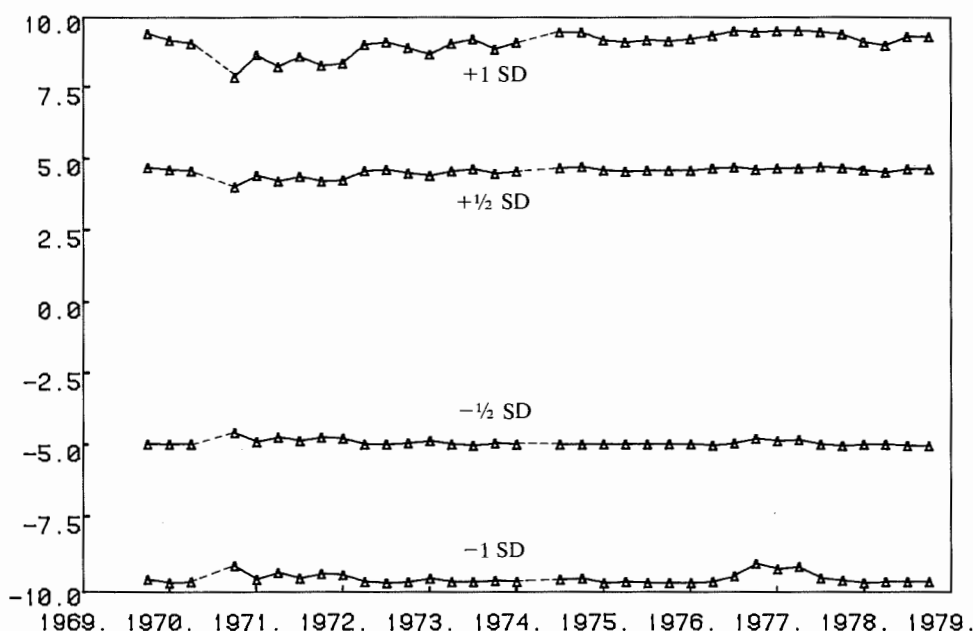


Fig. 3 Changes in the Percentage of the Public Satisfied with the President ($P_{1,100}$) expected from Changes in the Per Capita Real Income Growth Rate (R) of one and one-half Standard Deviation (SD).

growth rate are accompanied by increases in the unemployment rate), then the political consequences would of course be even more pronounced.

As I pointed out earlier, Giscard's average percentage satisfaction rating was about 7.5 points below Pompidou's (51 vs. 58.5%). Of course there were dramatic oscillations about these averages, but it is useful to identify the sources of change in the mean or equilibrium support levels experienced by these Presidents. Approximate calculations indicate that about 3 percentage points (or 4/10) of the decline in presidential support from Pompidou to Giscard was due to the decline in the real income growth rate, which averaged 4.3% per year during Pompidou's administration and only 2.2% per year during the first three years of Giscard's presidency. The effect of the rise in unemployment from the Pompidou to the Giscard years is embedded in the difference between the president-specific intercepts for the reasons discussed previously. Therefore, all we can estimate is the upper limit of the contribution of unemployment to the difference between the mean support levels: it is about 4 percentage points. The remaining one-half percentage point difference is attributable to the difference in the impact of the binary, noneconomic terms. The Chirac affair was slightly more costly for Giscard d'Estaing than the Chaban-Delmas tax scandal was for Pompidou.

The economic effects described above are sizeable, but not overwhelming. There obviously is a considerable stability or inertia in the presidential support data stemming from long-standing popular political loyalties anchoring classes of voters to political parties and blocs that is not based on comparative economic performance. A discussion of these factors, however, is beyond the scope of this article.

3. SUMMARY AND CONCLUSIONS

Since the late 1960s the state of the economy has been quite salient to the French mass public and therefore it is natural to expect that political support for Presidents Pompidou and Giscard d'Estaing was influenced significantly by macroeconomic conditions. The model presented in this article incorporates the idea that people evaluate economic performance in relative rather than absolute terms by implicitly comparing a President's cumulative record to that of his predecessors. However, the weights attached to current and past economic outcomes ($\sum_k Z_{t-k}$) were estimated to decline geometrically at rate 0.8^k , which as I noted earlier means that after three years (12 quarters), or so a President is judged largely on his own current and past performance record.

The empirical results in Table I showed that the *per capita* real income growth rate was the principal systematic economic influence on movements in Pompidou's and Giscard's popular satisfaction rating in the IFOP polls. Since the real income growth rate is simply the nominal income growth rate less the inflation rate, price rises lead to declines in political support only to the extent that money incomes lag behind, either relatively or absolutely. This of course has been a persistent tendency in France and elsewhere since the first great OPEC supply shock of late 1973 and 1974, which represented an enormous transfer of real resources from the petroleum-consuming nations to the petroleum producers. Prior to the OPEC shock (over the period 1969:4–1973:3) *per capita* real income in France increased on average at a rate of nearly 5% per annum; since then (over the period 1973:4–1978:4) the real growth rate declined to barely 2% per year.

The mechanism of the shift in the terms of trade induced by the cartel's actions was of course an inflation, but the economic pain was caused by the real loss, not the price rises it produced. This suggests that deflationary macroeconomic policies sacrificing employment, real output and real personal income in order to achieve price deceleration are not likely to enhance a President's support in the French mass public. Indeed, the estimates graphed in Figure 3 indicate that a sustained standard deviation reduction in the *per capita* real disposable income growth rate alone would, on average, yield a decline of 9–9.5 percentage points in the President's satisfaction rating in the polls. In a subsequent paper I hope to develop this point further by explicitly incorporating information about mass political reactions to macroeconomic outcomes in a model of the macroeconomic policy actions taken by French policy authorities.

NOTES

- 1 See, for example, the survey data assembled by Hibbs (1980) showing public concern about economic issues as opposed to international, and domestic political and social questions in the United States, Great Britain and Germany.
- 2 The literature is too voluminous to reference adequately here. See, however, the papers and citations in two recent volumes: Hibbs and Fassbender, eds., 1981, Whiteley, ed., 1980.
- 3 Lewis-Beck's (1980) paper is discussed further ahead.
- 4 For further discussion in an earlier issue of this journal, see Muller *et al.*, 1980.
- 5 A discussion of data sources and all data series are available from the author upon request. All percentage rates of change are annualized quarter-on-quarter changes formed as follows: $\ln(Z_t/Z_{t-1}) \cdot 400$.
- 6 *Keesing's Contemporary Archives*, October 1, 1976, p. 27965.
- 7 Since the dependent variable is the natural logarithm of $(P_t'/1 - P_t')$, the coefficient magnitudes are difficult to interpret by inspection. I pursue this further ahead.

- 8 This result contrasts with the findings of Lewis-Beck's (1980) analysis of economic conditions and popular satisfaction with French Presidents over the period 1960-80. Lewis-Beck concludes that inflation is the most important economic influence on support for the President in the French electorate. However, Lewis-Beck's model is dramatically different from that proposed here: among other things, it assumes that voters respond absolutely to recent economic conditions alone; it includes an arbitrary trend term; and it excludes the rate of growth of income. Also, Lewis-Beck's calculations of elasticities to compare the relative effects of inflation and unemployment are incorrect.
- 9 The appropriate goodness of fit test for the validity of the logit specification is the chi square statistic (adjusted for degrees of freedom) obtained from the differences between the observed relative frequencies and estimated probabilities. The smaller the adjusted chi square statistic, the better the fit of the model. In the present case adjusted chi square is simply the sum of the squared weighted residuals divided by the degrees of freedom (X^2/df).
- 10 See the discussion in U.S. Department of Labor, Bureau of Labor Statistics, 1979. This volume gives an excellent account of the methods used to compile unemployment estimates in France in comparison to the procedures employed elsewhere.
- 11 Lewis-Beck's equation applied to these data yields an inferior fit ($r=0.61$), and substantial residual autocorrelation, which indicates there are problems with his specification. The fitted proportions in Figure 2 were generated by $\exp f(Z_t)/1 + \exp f(Z_t)$. Since the equation estimated is of the form $\ln(P_t'/1 - P_t') = f(Z_t) + e_t$, the former expression gives the fitted proportions implied by the logit model estimates.
- 12 Recall that the sum of the geometric series
- $$b(1 + g + g^2 + g^3 + \dots) \text{ is } b/(1 - g), \text{ for } 0 < g < 1.$$
- 13 The partial sum of the series $\sum_{k=0}^{\infty} g^k$ is $1 - g^{k+1}/1 - g$. Therefore the partial sum as a proportion of the infinite sum is $(1 - g^{k+1}/1 - g)/(1/1 - g) = 1 - g^{k+1}$.
14. Note that the derivative of P_t' with respect to $f(Z)$ is
- $$P_t'(1 - P_t') \cdot d \ln(P_t'/1 - P_t') df(Z)$$
- which varies through time and takes its maximum value at $P_t' = 0.5$.
- 15 Given the model, the change in the proportion of the electorate satisfied with the President at time t , expected from a sustained increase of one standard deviation in the *per capita* real income growth rate, is
- $$(P_{t+1}' - P_t') = L^*[\ln(P_t'/1 - P_t') + 0.15/(1 - 0.8) \cdot 1SD] - P_t',$$
- where SD = the standard deviation of R ; and L^* = the logistic distribution function, $L^*(Z) = \exp(Z)/1 + \exp(Z)$. The expected long-run political impact of other sustained changes in R are computed in the same way.
- 16 Again, this simply follows from the fact that the impact of a change in R on P' is greatest at $P' = 0.50$. See notes 14 and 15.

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APPENDIX

The Formal Political Support Model

The political support model described in the main text is expressed theoretically in terms of an *unobserved*, continuously valued index of the President's popular satisfaction rating, Y^* . Y^* is determined by the cumulated, exponentially discounted performance of the current President's administration *in relation to* the cumulated, exponentially discounted performance of all previous presidential administrations, as well as by a sequence of constants, a_q , representing the unique popularity of the q th chief executive:

$$(1) Y^*_t = \sum_{q=1}^2 A_q \left(b \cdot \sum_{k=0}^{\infty} g^k Z_{t-k} D_{q,t-k} \right) + a_q + u_t$$

where: Z denotes a vector of performance variables with associated coefficients b ;
 g is the rate of decay of the lag function weights, $0 < g < 1$;
 a_q and $A_q = \begin{cases} +1 & \text{during the } q\text{th presidential administration} \\ 0 & \text{otherwise} \end{cases}$
 $D_{qt} = \begin{cases} +1 & \text{during the } q\text{th presidential administration} \\ -1 & \text{otherwise;} \end{cases}$
 $t = 41, 42, \dots, T$; and
 u_t is an independently distributed random disturbance.

As described in more detail in the main text, equation (1) says that the q th president's satisfaction rating at any time t depends upon the difference between the accumulated performance record of his administration with respect to Z and the performance record of previous administrations. The weights people give to performance outcomes decay exponentially at rate g^k ; in other words, it is assumed that in making contemporaneous political judgments people give more weight to current performance than to past performance.

The binary 'switching' variable D_{qt} insures that Y^*_t is indeed based on interadministration performance comparisons. For example, if the q th president has been in office for two periods, Equation (1) yields

$$(2) Y^*_t = b \cdot (Z_t + gZ_{t-1} - g^2Z_{t-2} - g^3Z_{t-3} - g^4Z_{t-4} - \dots) + a_q + u_t.$$

Although the lag functions and hence the performance comparisons represented by (1) and (2) imply that the Z s extend back to the infinite past, this is merely a convenient fiction that should be taken to mean that evaluations go back to the beginning of the relevant political era. It is implicitly assumed that knowledge of past performance is transmitted from generation to generation via political socialization.

The model may be expressed in a form suitable for estimation by noticing that (1) may be written

$$(3) Y^*_t = \sum_{q=1}^2 A_q \left[b \cdot \sum_{k=0}^{t-2} g^k Z_{t-k} D_{q,t-k} + g^{t-1} E(Y_1) \right] + a_q (1 - g^{t-1}) + u_t,$$

which involves a finite observable lag sequence in the Z_{t-k} . Moreover, because data on the performance variables are available for more than 40 periods (quarters) prior to the first observation on Y^* (i.e., prior to Pompidou's first satisfaction rating), g^{t-1} is never larger than g^{40} . Since $g < 1$, the terms $g^{t-1} E(Y_1)$ and $-g^{t-1} a_q$ are negligible quantities and therefore may be dropped safely from equation (3) for estimation purposes.

Remember, however, that the continuously valued satisfaction index, y^* , is unobserved; the survey data reveal only whether respondents are satisfied or dissatisfied with the President of the French Republic. Hence, we need a model that maps the observed individual binary choices in the surveys onto the unobserved satisfaction index.

Let the observed survey responses in the IFOP surveys be designated by the binary variable Y_{it} :

$$(4) Y_{it} = \begin{cases} 1 & \text{for respondents satisfied with the President} \\ 0 & \text{for respondents dissatisfied with the President.} \end{cases}$$

Since this paper investigates movements through time in aggregated survey responses, it will be assumed here that individuals react homogeneously to presidential performance with respect to Z . Therefore, the Y_{it} are assumed to reflect crudely the underlying continuously valued popular satisfaction index y^* such that

$$(5) Y_{it} = \begin{cases} 1 & \text{if } Y^*_{it} > c \\ 0 & \text{if } Y^*_{it} \leq c \end{cases}$$

where c is a 'critical threshold'.

Letting $f(Z)$ denote the substantive terms on the right-hand side of equation (3), it follows that the probability (P) of observing a 'satisfied' response for individuals at time t is

$$(6) P_t = P(Y_{it} = 1) = P[f(Z) + u_t > c] \\ = P[u_t > c - f(Z)]$$

and $(1 - P_t)$ gives the probability of a 'dissatisfied' response.

In other words people are satisfied with the President ($Y = 1$) when Y^* exceeds some critical threshold c . The probability of being satisfied therefore hinges on the value of $c - f(Z)$ and the distribution of the random variable u .

The above implies that P_t may be regarded as a cumulative distribution function. Any appropriate distribution for u will yield a well-behaved probability function. It is convenient, however, to assume u logistic (which differs trivially from the normal distribution) with mean zero and scale parameters, which implies the probability function:

$$(7) P_t = P[u_t > c - f(Z)] \\ = 1 - \frac{\exp[(c - f(Z))/s]}{1 + \exp[(c - f(Z))/s]} \\ = \frac{\exp[(f(Z) - c)/s]}{1 + \exp[(f(Z) - c)/s]} \\ = L^* [(f(Z) - c)/s],$$

where L^* is the logistic operator, $L^*(Z) = \exp Z / (1 + \exp Z)$.

Equation (7) means that the response probabilities monotonically approach 1 as $f(Z)$ goes to $+\infty$ (gets large) and monotonically approach 0 as $f(Z)$ goes to $-\infty$ (gets small).

Finally, notice that equation (7) may be manipulated to yield

$$(8) L^{*-1} P_t = \ln(P_t / (1 - P_t)) = [f(Z) - c] / s,$$

which expresses the natural logarithm of the probability odds ratio (the 'logit') as a linear function of the logistic model parameters. Replacing the notation simplification introduced in equation (6) with the terms of the original political support model in equations (1) - (3) yields the model used in the regression experiments

$$(9) \ln(P'_t / (1 - P'_t)) = \sum_{q=1}^2 A_q [(1/s)b \\ + \sum_{k=0}^{t-2} g^k Z_{t-k} D_{q,t-k}] + a_q + e_t,$$

where: P'_t = the observed survey proportion expressing 'satisfaction' with the President (P_t being the unobserved population proportion); and

$$e_t = \ln(P'_t / (1 - P'_t)) - \ln(P_t / (1 - P_t)).$$

It can be shown that the error term e has mean zero and variance $1/N_t P_t (1 - P_t)$, where N_t is the number of survey observations used to form P'_t . This means that efficient least-squares estimates are obtained by weighting each term in equation (10) by $N_t P'_t (1 - P'_t)^{1/2}$. These weights were applied in the regressions reported in the main text.