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*The Price of Popularity: The Political Business Cycle Reexamined**

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This paper examines the validity of the political business cycle theory as a description of the macroeconomic policy process in the United States. It considers the ability of incumbent presidents to enhance their approval ratings by manipulating monetary and fiscal tools. The first section estimates the potential political gains from economic expansion and finds that the stimulus needed to produce even small popularity gains is substantial. The second section examines the extent to which government economic policy has been influenced by the political environment. Reaction functions for various policy instruments are estimated, and the results are shown to cast substantial doubt on the importance of the political business cycle hypothesis as an explanation of macroeconomic policy.

Recent empirical studies of the interaction between politics and economics have focused on two issues: the extent to which economic conditions affect voter behavior and the degree to which the political environment affects the government's economic policies. These two interactions may be formalized as a popularity function and a policy-reaction function. Frey and Schneider (1978) find that economic events significantly influence presidential popularity. Tufte (1978) provides evidence that both the British and American governments pursue expansionary policies in election years. These results confirm earlier theoretical work by Nordhaus (1975) and Fair (1978) which suggests that incumbents interested in maximizing their votes should manipulate macroeconomic policies to enchance the probability of their electoral success. The political business cycle hypothesis thus states that elected officials with fixed terms attempt to produce favorable economic conditions during election years, even at the expense of higher unemployment or inflation at midterm.

This paper explores the political business cycle's importance in macroeconomic policy determination. The first section reports estimates of a popularity function and analyzes the potential gains from policy manipulation. In the second section we examine monetary and fiscal policy reaction functions. Our results cast substantial doubt upon the importance of electoral timing in directing macroeconomic stabilization policy.

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The Price of Popularity

The first step in measuring the potential gains from policy manipulation is to estimate a popularity function. The basis of such an approach may be found in Downs' (1957) seminal work, in which he outlines an "evaluation function." Voters evaluate politicians on the basis of the programs which they pursue; officials who increase the voters' utility receive greater approval. Since Kramer's (1971) study, theorists have emphasized economic conditions, not government policies per se, in the voter-approval function. Since the actions of elected officials are one of the forces which affect economic conditions, and since voters react to the state of the economy, popularity is indirectly a function of government policy. It is, therefore, subject to some manipulation by elected officials.

The notion that economic conditions affect presidential popularity is far from novel. Previous studies have modeled popularity as a function of current and lagged economic conditions. Monroe's (1978) work used an Almon-lag structure to allow for slow reactions to changes in the economy, because the public does not perceive all economic events immediately. This paper extends the analysis by showing how to compute the effective "price" which a president must pay for a point of popularity. We begin by estimating a simple popularity function:

$$\mathrm{POP}_t = \alpha + \sum_{i=1}^{6} \beta_i \mathrm{INFL}_{t-i} + \sum_{i=0}^{3} \gamma_i \mathrm{UR}_{t-i} + \sum_{i=0}^{3} \delta_i \mathrm{CHYD}_{t-i} + \psi_j \mathrm{PRES}_j + \phi_j \mathrm{DUR}_j + \Phi\ \mathrm{WATER} + \epsilon_t \qquad \textbf{(Eq. 1)}$$

where (from quarterly data from the first quarter of 1953 to the last quarter of 1978):

POP = average of within-quarter responses to the Gallup poll question, "Do you approve of the way in which Mr. _____ is handling his job as president?";
INFL = rate of change in the Urban Worker Consumer Price Index;[1]
UR = aggregate unemployment rate;
CHYD = percent change in real disposable income, adjusted to annual rates;

[1] In 1978 the Bureau of Labor Statistics changed the format used in computing the Consumer Price Index. The Urban Worker CPI series is now the most general index available; it supersedes the overall CPI data from previous years.

PRES = binary variable, 1 if j is currently president, 0 otherwise;
DUR = number of quarters since president j took office. 0 if j is not currently president;
WATER = binary variable for Watergate period, second quarter of 1973 to second quarter of 1974;
t, j = time and president subscripts; and
ϵ_t = random error term.

The voter-utility hypothesis predicts that the coefficients for inflation and unemployment should be negative, while income should have a positive sign. One would expect that duration-in-office variables would have negative signs.

We have included noneconomic variables in Equation 1 in order to capture the influence of the political environment. We used PRES on the grounds that popularity is affected by the individual characteristics of each president and by the noneconomic events which occur during his administration, as well as by economic conditions. Several different theories support the inclusion of DUR. The first, the "honeymoon theory," argues that voters do not hold the president liable for conditions over which he has little control. Events which would substantially affect his popularity at midterm may have little impact in the March after inauguration. The second view, the "coalition of minorities" theory, asserts that in a population with nonhomogeneous preferences any political action is bound to displease a sizable portion of the electorate (Mueller, 1973). The gradual expansion of this dissatisfied segment of the population, often harboring strong feelings, leads to a pronounced depreciation of the president's approval level. That popularity does decline during the term in office is substantiated by Stimson's (1978) examination of post-war popularity cycles.

The results of estimating Equation 1 are reported in Table 1. Three specifications are included. Equation 1a, in the first column, omits disposable income, and that in the third column, Equation 1b, omits unemployment from the independent variables. The results support the voter-utility hypothesis. Inflation affects popularity with statistically significant and predicted-sign coefficients in all equations. A one percentage point rise in the rate of inflation leads to about a one-point fall in popularity, assuming the inflation is maintained for six quarters. A one-point increase in unemployment reduces popularity by less than one point; it is never possible to reject the hypothesis that the effect is zero. Finally, a sustained one-percent increase in the rate of growth of disposable income increases popularity by about one point.[2]

[2] Multicollinearity does not appear to be a substantial problem in these data; the pairwise correlations among the independent variables were always less than .3.

The importance of income changes could deceive one into concluding that the president should depress the economy several quarters before the election in order to permit a rapid rise immediately before the voters register their preferences. There are two reasons for discounting this argument. First, given the uncertain lags in macroeconomic policy effects, it is difficult to envision a president controlling the change in income with sufficient precision to generate a rapid income expansion at the appropriate time. If he were to err in either direction by just one quarter, his gain would be quite small. The second problem is that it seems implausible that the observed relationships would continue to hold if presidents followed such a policy. Surely voters would recognize and penalize policy-induced recessions if they were large enough in scale to affect income growth appreciably.

One of the obvious criticisms of Equation 1 is that it omits numerous political factors which potentially affect popularity. These factors include international events and major domestic actions. Mueller (1973) and Kernell (1978) have explored the use of "rally" variables to capture these effects. Including such a variable in Equation 1, however, does not measurably change our primary results.[3] Moreover, while recognizing the effect of political events on popularity, we believe that our exclusion of a rally variable is justified on two grounds. First, any rally variable is by nature arbitrary: the effects of a prolonged international conflict and a friendly summit conference are not obviously comparable. Second, the relevant question for our purposes is the bias in the economic variables' coefficients induced by the omission of a rally variable. A straightforward application of the left-out variable formula (Maddala, 1977) reveals that to claim a bias in the estimated coefficients on income, unemployment, and inflation is tantamount to arguing for a correlation between unpredictable rally

[3] The RALLY variable we utilize derives from several sources. Data for 1953 to 1968 came from Mueller's (1973) list of rally events. From 1969 to 1972, we rely on Kernell's (1978) analysis of major newspaper stories. Data for the remaining period is from the Gallup Opinion Index's chronology of events. Each quarter was coded 0, 1, or 2 depending on the number of events. All data were kindly provided by Douglas Hibbs of Harvard University.

We tried including RALLY in the second specification reported in Table 1. Its inclusion did not appreciably affect the other variables, and it was not statistically significant. The relevant coefficients and standard errors are:

RALLY	INFL	UR	CHYD
1.24	−.86	−1.09	1.09
(.80)	(.22)	(.77)	(.29)

Each of the economic coefficients is the sum of coefficients in a polynomial lag.

TABLE 1

Popularity-Function Regressions
(first quarter 1953 to fourth quarter 1978)

Independent Variables	Equation 1a	Equation 1	Equation 1b
Constant			
	79.88	84.97	78.17
	(6.72)	(5.62)	(2.54)
Inflation			
1.	.08	.15	.21
	(.12)	(.11)	(.10)
2.	−.11	−.07	−.06
	(.07)	(.06)	(.06)
3.	−.23	−.22	−.23
	(.06)	(.05)	(.05)
4.	−.28	−.28	−.31
	(.07)	(.06)	(.05)
5.	−.26	−.27	−.30
	(.06)	(.05)	(.05)
6.	−.17	−.17	−.19
	(.04)	(.04)	(.03)
Sum	−.97	−.87	−.88
	(.27)	(.23)	(.22)
Unemployment Rate			
0.	−1.13	−.46	
	(.71)	(.68)	
1.	.02	−.31	
	(.28)	(.24)	
2.	.59	−.18	
	(.44)	(.42)	
3.	.58	−.08	
	(.38)	(.38)	
Sum	.06	−1.04	
	(.92)	(.80)	
Percent Change in Per-Capita Disposable Income			
0.		.42	.38
		(.11)	(.10)
1.		.31	.31
		(.09)	(.07)
2.		.20	.22
		(.10)	(.09)

TABLE 1 (continued)

Popularity-Function Regressions
(first quarter 1953 to fourth quarter 1978)

Independent Variables	Equation 1a	Equation 1	Equation 1b
3.		.10	.12
		(.08)	(.07)
Sum		1.03	1.03
		(.30)	(.26)
Ike Binary	–5.57	–9.46	–6.31
	(4.51)	(3.65)	(2.83)
LBJ Binary	–3.45	–7.74	–6.57
	(3.80)	(3.14)	(3.16)
Nixon Binary	–3.65	–8.91	–6.47
	(4.65)	(4.00)	(3.76)
Ford Binary	–9.60	–12.19	–11.67
	(7.51)	(6.33)	(6.48)
Carter Binary	–.63	–1.73	–2.55
	(5.44)	(4.52)	(4.43)
Watergate	–15.26	–15.86	–16.16
	(3.57)	(3.24)	(3.24)
Ike Duration	–.31	–.17	–.25
	(.13)	(.11)	(.09)
JFK Duration	–1.22	–1.38	–1.25
	(.48)	(.39)	(.40)
LBJ Duration	–1.53	–1.59	–1.48
	(.22)	(.18)	(.17)
RMN Duration	–.94	–.82	–.89
	(.17)	(.16)	(.15)
Ford Duration	–.52	–.14	–.38
	(.77)	(.64)	(.64)
Carter Duration	–2.98	–3.49	–3.27
	(.81)	(.67)	(.68)
Rho	.26	.07	.13
R^2	.90	.91	.91

[a] We have corrected for first-order autocorrelation.

[b] Values in parentheses are standard errors.

[c] Inflation is included as a second-order, six-period, far-constrained polynomial distributed lag.

[d] Unemployment and change in per-capita income are included as second-order, four-period, far-constrained polynomial distributed lags. See text for further explanation of variables.

events and the economy's performance. This seems an untenable position. An analysis of the actual historical correlations between rally and economic variables shows they are all less than .20.[4]

The results of our empirical analysis lead directly to a simple macroeconomic critique of the political business cycle hypothesis—a calculation, in terms of fiscal expansion, of the price of one point of popularity. We can use estimates of the effect of policy on the economy, and the coefficients in our popularity function, to compute the gain from policy action. We begin by assuming that the government-spending multiplier is two; a one-billion-dollar increase in the government deficit results in a two-billion-dollar increase in output. We also use Okun's (1973) finding that a three percent increase in real output corresponds to a one percent fall in unemployment. For example, a .1 percent rise in GNP translates into a .033 percent decrease in unemployment. Finally, Okun (1978) suggests that two billion dollars of foregone GNP is associated with a .01 percent fall in inflation. Therefore, increasing the GNP by .1 percent leads to a .01 percent increase in the rate of inflation. The share of disposable income in GNP is presumed constant in this calculation. These rough estimates allow computation of the popularity gain from a one-billion-dollar increase in deficit spending, since this leads to a two-billion-dollar, or .1 percent, change in the GNP.

The computation may be performed under three sets of assumptions, which we shall call Cases 1, 2, and 3. In Case 1, the president expands the economy and achieves a sustained four-quarter reduction in unemployment. His policies are targeted to produce desirable economic conditions for the full year preceding the election. We take the appropriate popularity-impact coefficients to be the sum of the lag coefficients in Table 1. In Case 2, the president directs his full stimulus effort at the quarter of the election. This policy affects unemployment and disposable income immediately, but the induced inflation develops only after the election. While this is an unrealistic case, given the lags and uncertainties of policy, it is the case most favorable to the political business cycle hypothesis. Finally, in Case 3 we

[4] We estimated an auxiliary regression equation in which RALLY, not POP, was the dependent variable, in order to test for the influence of economic events on RALLY. The sum of the lagged coefficients on the economic variables are:

INFL	−11.05	UR	−.0022	CHYD	−.0249
	(28.97)		(.1006)		(.0377)

Standard errors are in parentheses. These results suggests that RALLY does not depend on the economic variables analyzed in this paper.

omit the effect of unemployment on popularity, because the coefficient never differed significantly from zero in a statistical sense. In Case 2, the popularity effect is computed without taking account of the inflation-popularity interaction, since the populace does not observe the inflationary effects of expansionary policy until after they have supported the president.

We consider below the effect in each of the cases of a one-billion-dollar increase in the deficit. In Cases 1 and 3, the one billion is spent over the course of a year, while in Case 2 it is spent in the quarter preceding the election. In Case 1, for example, a one-billion-dollar increase in the deficit will result in a .033 point drop in the unemployment rate and in a rise of .01 point and of .10 point in the rates of inflation and real income growth, respectively. Each of these elements has its own independent effect on popularity. The drop in the unemployment rate increases presidential popularity by .034 points and the rise in income increases it by .103 points. In contrast, inflation drives down popularity by .009 points. This type of calculation for each case works as follows:

Case 1:		
(.033-point fall in UR) ×		
(1.04 points POP/point UR)	=	.034 points POP
(.01-point rise in INFL) ×		
(.87 points POP/point INFL)	=	−.009 points POP
(.10-point rise in CHYD) ×		
(1.03 points POP/point CHYD)	=	.103 points POP
Total Effect		.128 points POP
Case 2:		
(.133-point fall in UR) ×		
(.46 points POP/point UR)	=	.061 points POP
(.400-point rise in CHYD) ×		
(.42 points POP/point CHYD)	=	.168 points POP
Total Effect		.229 points POP
Case 3:		
(.01-point rise in INFL) ×		
(.87 points POP/point INFL)	=	−.009 points POP
(.10-point rise in CHYD) ×		
(1.03 points POP/point CHYD)	=	.103 points POP
Total Effect		.094 points POP

These "popularity prices" allow computation of how much a president must spend in order to raise his approval level by one point. In Case 1, for

example, a point of popularity costs: (1 point POP)/(.128 points POP/billion dollars of surplus) ≅ eight billion dollars. Even in Case 2, the president must spend nearly five billion dollars. Moreover, even one point of popularity is a small gain—the average quarterly change in presidential popularity since 1953 has been 4.9 points.

It is also possible to compute the gain in the percentage of the election-day vote which a president can purchase for a billion dollars of deficit. We have replicated the Case 1 calculation, this time using the vote coefficients reported in Fair (1978) instead of our popularity weights:

Vote-Share Calculation:		
(.033-point fall in UR) × (2.3 points VOTE/point UR)	=	.076 points VOTE
(.01-point rise in INFL) × (.55 points VOTE/point INFL)	=	−.006 points VOTE
(.10-point rise in CHYD) × (1.1 points VOTE/point CHYD)	=	.110 points VOTE
Total Vote Effect		.180 points VOTE

Thus, it appears that the president must increase the deficit by approximately five and one half billion dollars in order to increase his percentage of the vote by one percent.

While these calculations clearly show that popularity is expensive, it still seems possible for a president to use policy initiatives to affect electoral outcomes. If one assumes a receptive legislative environment, perfect policy timing, and the absence of voter expectations,[5] then in a very close election substantial policy manipulation, on the order of $20 billion today, *could* determine the outcome. The unlikely character of the assumptions which underlie this conclusion suggests that a reexamination of the political business cycle hypothesis is warranted. We attempt such an analysis in the next section.

The Reaction Function

The policy-reaction function is the second important component of any politico-economic model. It describes the extent to which government policy is affected by varying economic and political conditions. The formal political business cycle theory, developed by Nordhaus (1975) and ex-

[5] See McCallum (1978) for a discussion of "rational expectations," a theory which argues that anticipated economic policies have no real effects.

tended by MacRae (1977), describes economic policy as the outcome of a dynamic maximization process by political actors. It predicts a cycle in macroeconomic policy which will correspond to the electoral cycle. A modification of this approach, the "popularity maintenance model" suggested by Frey and Schneider (1978), claims that political actors manipulate the economy to improve electoral prospects only when faced with a popularity deficit, an indication of low reelection probability. This model differs from the strict political business cycle because politicians react to their environment's political and economic conditions.

The popularity-maintenance model is more appealing than the strict political business cycle theory, for two reasons. First, it recognizes that politicians who are consistently popular for noneconomic reasons (e.g., Eisenhower) will not be as concerned with economic manipulation as will those who have a substantial chance of losing the next election. Second, it is consistent with current political-science theories which claim that presidential popularity is important in determining a president's efficacy while he is in office. Neustadt (1976) argues that an unpopular president has to rely upon negative power tools (impoundment or the veto), and cannot become a positive leader. Stimson (1978) makes the strong claim that the power of a president is roughly proportional to his popularity, since those who approve of the president are his true constituency.

Two fundamental limitations have distorted previous work on reaction functions. First, most efforts have used inaccurate measures of macroeconomic stimulus. Frey and Schneider (1978) use as policy indicators the level of nondefense government expenditures, the level of nominal transfer payments, and the number of civilian government employees. Each of these measures is flawed. The first bears no clear relation to the level of actual expansion, since it does not account for taxes. Nominal transfers are not adjusted for the size of the economy or the rate of inflation, and hence give misleading results. Finally, the level of government employment is hard to interpret, since there is no clear reason for expenditures on salaries to be more expansionary than expenditures on durable goods. Nordhaus (1975) examines only the unemployment rate, a policy outcome, and neglects indicators of the actual policies being pursued by government officials. Similarly, McCallum's (1978) analysis uses only unemployment data, does not estimate policy reaction functions, and is largely devoted to expositing the theory of rational expectations. The second limitation of earlier efforts is their failure to distinguish among the political actors who control policy instruments. In the United States, for example, use of only a single policy

reaction function is clearly inappropriate, since fiscal policy is largely determined by the president and Congress while monetary policy is the province of the Federal Reserve Board.

In an attempt to analyze the validity of the political business cycle, we have defined measures of fiscal policy, monetary policy, and transfer policy, as follows:

SUR = full-employment federal surplus/full-employment GNP.
TAXES = full-employment federal taxes/full-employment GNP.
SPENDING = full-employment federal spending/full-employment GNP.
MONEY = percent change in money supply minus expected inflation rate.[6]
TRANSFERS = total transfer payments/full-employment GNP.

"Surplus" is the difference between taxes and spending; full-employment GNP is the level of output which would accrue if the economy were operating at between four and five percent unemployment. The full-employment federal surplus is a better measure of fiscal policy than the actual level of government expenditures, because it is not distorted by the economy's position in the business cycle. Blinder and Solow (1974, p. 14) explain:

> . . . economists have long realized that even an appropriately weighted deficit is woefully inadequate as a measure of fiscal policy since it is endogenous to all but the simplest models of income determination. As soon as the dependence of tax receipts on the level of activity is acknowledged, it is clear that increases in GNP will automatically reduce the deficit (or raise the surplus) unless the government takes countervailing action. Thus depressed levels of national income will *cause* large deficits even when the government is "really" being very contractionary, and vice versa. . . . The most obvious, and by now the most popular, way to separate discretionary from automatic fiscal actions is to focus on the full employment budget. If the budget would be in surplus at full employment, fiscal policy is termed restrictive; if the budget would be in deficit, it is termed expansionary.

A first approach to testing the cyclical component of macroeconomic policy involves a simple analysis of policy instruments and macroeconomic indicators over the electoral cycle. To perform this examination, we estimated simple equations of the form:

[6] There are many approaches to measuring expected inflation. Our approach relies on estimation of the stochastic process which inflation has followed in the past decade. This technique is explicitly used in the DRI Econometric Model; our series is DRI's PCEXP79 data.

$$\text{INSTRUMENT} = \alpha + \beta_1 D1 + \beta_2 D2 + \beta_3 D3 + \epsilon_t \quad \textbf{(Eq. 2)}$$

D1, D2, and D3 are indicator variables for the first, second, and third years of the presidential term. Results of this procedure are reported in Table 2.

TABLE 2

Averages of Macroeconomic Variables over the Electoral Cycle[a]

Variable	Constant	Election Year + 1	Election Year + 2	Election Year + 3
Unemployment Rate	5.27 (.27)	−.45 (.37)	.21 (.37)	.35 (.39)
Change in Unemployment Rate	−.07 (.08)	.04 (.12)	.26 (.12)	.08 (.13)
Inflation Rate per quarter	.76 (.16)	.19 (.21)	.38 (.21)	−.07 (.22)
Change in Inflation Rate per quarter	.04 (.09)	−.01 (.12)	−.01 (.12)	−.08 (.12)
Full-Employment Surplus[c]	.56 (2.88)	−1.42 (3.92)	−.78 (3.92)	−1.03 (4.07)
Full-Employment Taxes[c]	193.16 (1.69)	2.41 (2.32)	1.93 (2.32)	−1.28 (2.40)
Full-Employment Spending[c]	192.60 (3.16)	3.84 (4.30)	2.71 (4.30)	−.22 (4.47)
Change in Real-Money Supply	1.47 (.53)	−.86 (.73)	−.94 (.73)	−.29 (.76)
Transfer Payments[c]	6.71 (1.30)	−.07 (1.85)	.98 (1.85)	−.62 (1.92)
Change in Real Income	2.91 (.80)	−.15 (1.09)	−1.88 (1.09)	.09 (1.13)

[a] Estimated from the equation:

$$\text{VAR} = \alpha + \beta_1 EY1 + \beta_2 EY2 + \beta_3 EY3$$

where EY1, EY2, and EY3 are binary variables. EY1, for example, is defined as 1 in a year which immediately follows an election year and 0 otherwise; EY2, two years after an election year, etc. Table includes quarterly data from the first quarter in 1953 to the last in 1978.

[b] Standard errors in parentheses.

[c] Measured in proportion to full employment GNP.

We cannot reject the null hypotheses that policy or economic conditions are similar in both election and nonelection years. The unemployment rate is lower in election years than in the preceding two years, but it is still lower in the year following election. Inflation is lowest in the year preceding election, and tends to accelerate during the election years. While real income appears to exhibit a cyclical pattern, changing the least during the second years of the term and the most in the last two years, the difference is not statistically significant. In looking at policy instruments, one finds that the surplus, which should exhibit strongly cyclical properties if the political business cycle theory is correct, is least expansionary in election years and is most expansionary in the year after an election. Taxes and spending exhibit no obvious cyclical behavior. While transfers follow the expected cyclical patterns, the inter-year differences are of small magnitude and are statistically insignificant. Finally, for monetary policy, there is some evidence of cyclical movement. However, this result is weakened by: (1) the statistical insignificance of the differences; and (2) the absence of any clear mechanism by which the president or other elected officials could in fact control monetary policy.

Equations of the form 3a and 3b offer a more complete model of political-economic interaction, including a measure of economic conditions as well as indicators of political or electoral conditions. We have estimated reaction functions for fiscal policy (SUR, TAXES, and SPENDING), monetary policy (MONEY), and transfer policy (TRANSFERS) using both Equations 3a and 3b. The specifications are:

$$\text{INSTRUMENT} = \alpha + \beta_1\text{CHYD} + \beta_2\text{INFL} + \beta_3\text{UR} + \beta_4{}^*(\text{YEAR})_i + \beta_6\text{REPUB} + \beta_7\text{POP} + \epsilon \quad \textbf{(Eq. 3a)}$$

$$\text{INSTRUMENT} = \alpha + \beta_1\text{CHYD} + \beta_2\text{INFL} + \beta_3\text{UR} + \beta_5{}^*(\text{TSI}_j) + \beta_6\text{REPUB} + \beta_7\text{POP} + \epsilon \quad \textbf{(Eq. 3b)}$$

Where: YEAR is the set of variables D1, D2, and D3; TSI is the time since inauguration for each president; and REPUB is a binary variable to indicate Republican administrations. TSI differs from DUR, used in the popularity-function regressions. In the first quarter of 1957, for example, TSI takes a value of 1, since Eisenhower had just been re-inaugurated, while DUR would assume a value of 17 since that would be the total number of quarters he had been in office. This distinction is important if economic policy is geared toward imminent elections.

For each instrument, one would predict that an increase in real income or inflation would reduce expansionary tendencies, while higher unemployment rates would lead to greater expansion. Thus, for surplus policy, we

predict CHYD and INFL would have positive coefficients, while unemployment's coefficient should have a negative value. These predictions are reversed for monetary policy and transfers, which become larger positive numbers as they become more expansionary.

Table 3 reports the results of estimating equations 3a and 3b for each policy measure. For SUR, each coefficient is of the predicted sign, although only inflation is statistically significant. A one percentage point rise in the inflation rate leads to a .02 percent of full-employment GNP increase in the surplus. A one-point rise in the unemployment rate reduces the surplus by about .2 percent of full-employment GNP. If the growth rate of real disposable income rises by one point, then the surplus increases by about .01 percent of full-employment GNP.

The key finding which emerges from the fiscal-policy regressions is that neither the president's popularity nor the electoral cycle appear to be important or significant determinants of the surplus. Popularity enters with the correct sign, but it is not significantly different from zero. Moreover, its effects are quite small. One finds that a one-point drop in the president's approval rate results in a .01 percent of full-employment GNP, or an approximate 200-million-dollar increase in the deficit.[7] One might argue that this finding is of questionable importance, since what really matters is whether incumbents with low election-year popularities manipulate policy. This has led earlier authors (Frey and Schneider, 1978) to use a "popularity deficit" variable which purports to capture the differences between popular and unpopular presidents. A popular president, in this framework, chooses not to engage in manipulation because it would be unnecessary for his victory. Such an approach seems flawed on two grounds. First, presidents are probably vote-maximizers; a landslide victory brings substantial political benefits to both the incumbent and his party. Second, presidents are risk-averse. Since an unforeseen event could dramatically cut even the most popular president's victory margin, the use of expansionary policy can, in theory, provide insurance to the incumbent. Thus, we believe that the insignificance of the popularity coefficient is in fact a meaningful test of the political business cycle hypothesis.

A second indictment of the political business cycle hypothesis is found in the coefficients of the election-year dummies and the TSI series. None of the coefficients for years in the electoral cycle is significantly different

[7] We have also tested a model which used both lagged and current popularity values to explain the surplus. The sum of the coefficients in the polynomial distributed lag was found to be improperly signed and insignificantly different from zero.

TABLE 3

Policy-Reaction Functions[a]
(first quarter 1953 to fourth quarter 1978)

	Specification Number/Equation Form/Policy Instrument				
	1/3a/ Sur	2/3b/ Sur	3/3a/ Taxes	4/3b/ Taxes	5/3a/ Spending
Constant	−3.26	5.07	200.37	202.21	207.11
	(11.49)*	(12.37)	(7.53)	(8.51)	(12.89)
Independent Variables					
PI/1[b]	.19	.19	.17	.17	−.05
	(.15)	(.15)	(.11)	(.11)	(.11)
RU/1[b]	−2.44	−2.40	−2.69	−2.66	−.39
	(1.31)	(1.33)	(.91)	(.95)	(1.00)
POP/1[b]	.14	.13	.10	.09	−.03
	(.08)	(.08)	(.06)	(.06)	(.06)
CHYD/1[b]	.13	.11	.18	.16	.04
	(.12)	(.12)	(.08)	(.08)	(.09)
REPUB	2.09	−4.87	.04	−.24	−2.02
	(3.43)	(7.04)	(2.38)	(4.95)	(2.60)
D1[c]	1.01		.86		−.21
	(2.14)		(1.51)		(1.59)
D2[c]	2.37		1.32		−1.06
	(2.41)		(1.70)		(1.79)
D3[c]	.71		.42		−.26
	(2.11)		(1.49)		(1.56)
ETSI[d]		.44		−.19	
		(.35)		(.25)	
KTSI[d]		.26		.15	
		(.56)		(.40)	
JTSI[d]		−.66		−.16	
		(.45)		(.32)	
NTSI[d]		−.60		−.35	
		(.35)		(.25)	
FTSI[d]		.02		.05	
		(1.05)		(.75)	
CTSI[d]		−.90		.61	
		(1.82)		(1.21)	
Rho	.92	.90	.90	.89	.97
R^2	.83	.83	.76	.77	.92

[a] For purposes of clarity, we multiplied the coefficients in specifications 1, 2, 7, 8, 9, and 10 by 1,000, and those in specifications 5 and 6 by 10,000. We have corrected for first-order autocorrelation.

[b] "/1" denotes period lags.

TABLE 3 (continued)
Policy-Reaction Functions[a]
(first quarter 1953 to fourth quarter 1978)

	Specification Number/Equation Form/Policy Instrument				
	6/3b/ Spending	7/3a/ Money	8/3b/ Money	9/3a/ Transfers	10/3b/ Transfers
Constant	201.38	5.17	1.13	630.04	642.14
	(12.67)	(2.44)	(2.99)	(227.0)	(288.4)
Independent Variables					
PI/1[b]	−.04	−.05	−.07	.01	−.02
	(.11)	(.05)	(.04)	(.48)	(.49)
RU/1[b]	−.39	.00[e]	.25	18.74	17.73
	(1.02)	(.29)	(.28)	(4.27)	(4.50)
POP/1[b]	−.02	−.04	−.02	−.12	−.12
	(.06)	(.03)	(.02)	(.26)	(.26)
CHYD/1[b]	.05	.15	.16	.11	.07
	(.09)	(.04)	(.05)	(.37)	(.37)
REPUB	3.39	−1.80	−.91	−1.37	−6.29
	(5.50)	(.76)	(1.22)	(11.07)	(24.57)
D1[c]		−1.26		−.87	
		(.72)		(6.74)	
D2[c]		−1.22		−.65	
		(.79)		(7.58)	
D3[c]		−.36		5.53	
		(.73)		(6.63)	
ETSI[d]	−.51		−.02		−.57
	(.27)		(.08)		(1.17)
KTSI[d]	−.09		.01		−.58
	(.41)		(.16)		(1.81)
JTSI[d]	.44		.18		−.34
	(.34)		(.10)		(1.49)
NTSI[d]	.24		.23		.83
	(.26)		(.10)		(1.13)
FTSI[d]	.10		−.25		2.14
	(.80)		(.25)		(3.56)
CTSI[d]	.61		−.03		−1.56
	(1.57)		(.29)		(7.27)
Rho	.96	.59	.37	.99	.99
R^2	.92	.51	.52	.99	.99

[c] D1, D2, and D3 refer to the three years following a presidential election year.
[d] Letters preceding TSI denote presidents (i.e., ETSI refers to the Time Since Inauguration for Eisenhower; KTSI to Kennedy; etc.).
[e] Actual value is .0001728.
* Standard errors in parentheses.

from the year of the presidential election. While all are appropriately signed —indicating that fiscal policy is most expansionary during election years— the differences are not statistically significant. It is, therefore, impossible to reject the null hypothesis that fiscal policy is unaffected by the electoral cycle. The second measure of the cycle, TSI, should be negative if presidents attempt to expand the economy as they approach the election. Instead, we find that the signs of the coefficients are mixed, and none is significantly different from zero. It is impossible to reject the hypothesis that presidential behavior does not change over the electoral cycle.

One obvious criticism of our full-employment surplus equations is that, by combining taxes and spending, the cyclical behavior of one or the other may be lost. To avoid this difficulty, we decomposed the surplus into its two components, taxes and spending. The findings, reported as Specifications 3 through 6 of Table 3, provide further evidence against the manipulation hypothesis. The coefficients on popularity, yearly variables, and the set of time-since-election variables are all insignificantly different from zero. The signs of the popularity coefficients are correct, but once again the magnitude of the effect is trivial.

In our two-actor model, the political business cycle should be most evident in fiscal policy, since it is most directly controlled by elected officials. We have also tested for similar electoral effects on monetary policy. The results, reported in the seventh and eighth columns of Table 3, show that the change in real income enters significantly and in the predicted direction; both inflation and the rate of unemployment are of the expected sign but insignificant. Popularity is clearly unimportant in the monetary-reaction function; none of the indicator variables for the electoral cycle is statistically significant.

The final measure of government policy that we use is transfers. This is an important variable for two reasons. First, Tufte (1978) has claimed that transfer payments are deliberately increased in the months preceding general elections. Second, one may argue that presidential manipulations escape detection in larger macroeconomic aggregates. Eckstein (1978) supports this position. Results for the transfer reaction functions are reported as Specifications 9 and 10 in Table 3. We find that unemployment is the most important determinant of the level of transfers, as one would expect. Presidential popularity has virtually no effect. More importantly, none of the election-cycle variables enters the equation with a significant coefficient. Transfers are found to be largest in the year prior to the election year. This result directly contradicts the political business

cycle theory, since presumably transfers are easily manipulated by the president and are not subject to long policy lags. We also find that TSI has an insignificant coefficient; there is no strong tendency for presidents to increase the level of transfer payments late in their terms.

Conclusion

Our results question the validity of the political business cycle hypothesis as an explanation of macroeconomic policy. In the first part of our paper we analyzed the potential gains, in points of popularity, from presidential manipulation of the economy. Using the coefficients of a popularity function, we found that the president must use more than five billion dollars of increased spending to "purchase" a point of popularity. The second section of our paper examined the importance of electoral cycles and presidential popularity in explaining macroeconomic policy. We considered measures of fiscal policy, monetary policy, and transfers policy, and found no important or statistically significant effects of the electoral cycle. Our findings call into question the importance of political factors in understanding the business cycle.

Previous work on the political business cycle has failed to consider the extent to which politicians can actually determine their popularity by manipulating economic policy. Our findings suggest that their power is quite limited. Perhaps this is not surprising. The long and uncertain lags in the use of macroeconomic policy, coupled with the political risks and liabilities of miscalculation, weaken the underlying logic of the political business cycle hypothesis. Moreover, when we examine macroeconomic aggregates, we find no evidence of political manipulation. Several explanations are possible. First, political actors may not be exercising control over policy instruments in the manner suggested by earlier models. It seems clear, especially given Tufte's (1978) institutional examination of economic policy, that politicians may *try* to exert discretionary control over monetary and fiscal policy. Whether their efforts meet with success in either implementation or in result is another question completely, and a question which merits substantial attention and further work in the future. A second explanation is that the extent of this economic manipulation is inconsequential in the overall scheme of economic policy. Indeed, this explanation gains additional weight when the economic costs involved in raising popularity levels are considered. In short, while we do not claim that fiscal and monetary policy could not be the object of political manipulation, our re-

sults indicate that political objectives have been, at best, a minor determinant of post-war economic policy.

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