THE PRESIDENTIAL BUSINESS CYCLE IN THE U.S.:

A THEORETICAL AND EMPIRICAL EXAMINATION

RANJIT S. DIGHE
HONORS SEMINAR
2/23/87

The idea of a politically-motivated business cycle is basically a conspiracy theory: "office-motivated"[1] politicians, seeking to exploit the well-documented[2] relationship between favorable economic news and votes for the incumbent president and his party, manipulate the timing of business cycles for their own electoral gain. This manipulation, theorists maintain, is effected through the use of any of several policy instruments including discretionary federal spending, government transfer payments, and the average tax rate, as well as pressure on the central bank to pursue a more accommodating monetary policy.

Theories of such a cycle seem to fall in and out of favor with each passing presidential election. William Nordhaus's pioneering paper, "The Political Business Cycle" (1975), emerged in the aftermath of Richard Nixon's 1972 re-election campaign, which even a former Nixon speechwriter described as a case of "open[ing] the sluices and let[ting] the dollars flow."[3] Edward Tufte, author of Political Control of the Economy, an in-depth analysis of the interdependence of economics and elections, has acknowledged that Nixon's re-election was the inspiration for his book as well.[4] Currently, after the supply shocks of the mid- and late-1970s, which in 1980 resulted in a (presidential) election-year recession[5] for the first time since 1960, "there has been relatively little theoretical work on the political business cycle' for several years."[6] With the re-election of Ronald Reagan in 1984, however, after which some observers claimed they detected a political cycle behind the economic growth patterns of the 1981-84 period[7], the next few years may well see a resurgence of political

business cycle (PBC) literature.

In keeping with the present lull in new PBC theories, many economists, in reviews of PBC literature and elsewhere, have been sharply critical of the previous empirical work in this area. James Alt and K. Alec Crystal, in their 1983 book Political Economics, conclude a chapter on PBC's by noting, "No one could read the political business cycle literature without being struck by the lack of supporting evidence."[8] Several other studies, including those of McCallum (1978), Hibbs (1977 and 1978), Golden-Poterba (1980) and Beck (1982 and 1984), reject the notion of a PBC.[9] Joseph Sulock recently conducted replications of several PBC models, all of whose original authors found evidence of a PBC, and reported that most of these models, when updated into the 1970s or even when truncated into a timeframe when political manipulation appeared most likely, performed poorly. Sulock admits, however, that the poor performance of these models may have been due to flaws in the models themselves rather than in the idea behind them.

Although much of the criticism of past empirical work on the PBC is well deserved -- indeed, some of these models are shockingly inept -- a review of both the theoretical and empirical literature on this subject will be necessary before moving on.

Review of the Literature

The traditional Keynesian conception of government as a benevolent institution that pursues a stabilizing countercyclical policy has long come under fire, perhaps most notably by conservatives such as Milton Friedman and James Buchanan; but the first well-known dissent that mentioned the possibility of a "political business cycle" was an

overtly Marxist article by Michael Kalecki in 1943. In his article Kalecki describes a cycle, which he said would be inevitable in a capitalist democracy, such that in a slump, the government undertakes new public investment financed by borrowing so as to prevent massive unemployment. "But if attempts are made to apply this method in order to maintain the high level of employment reached in the subsequent boom, a strong opposition of 'business leaders'" -- who do not want a full-employment regime because workers with secure jobs would become too demanding and disruptive, rather than being the docile labor force they would prefer -- "is likely to be encountered." Since big business and the rentier interests have the government in their collective back pocket, Kalecki asserts, their resistance to a full-employment policy would force the government to cut the budget deficit, thereby causing another slump, which would touch off yet another cycle.[10]

Clearly, Kalecki's theory of a PBC bears little resemblance to the "office-motivated" PBC described on page one, but a paper that appeared four years later by Johann Akerman did indeed suggest that presidential elections were a causal factor in the timing of economic cycles. The heart of Akerman's paper is an empirical test using as its economic indicator a quarterly index of industrial stock values covering the timeframe 1830-1945 in the U.S. As with Kalecki, Akerman's conclusion differs sharply from present-day PBC theory, as he finds:

> The election year spells hesitancy and a shortening of perspectives affecting investment and employment; when the political question is settled through the outcome of the election, enterprise will grow cumulatively until the next election is foreshadowed, causing less optimistic anticipations, and hence crisis and depression.[11]

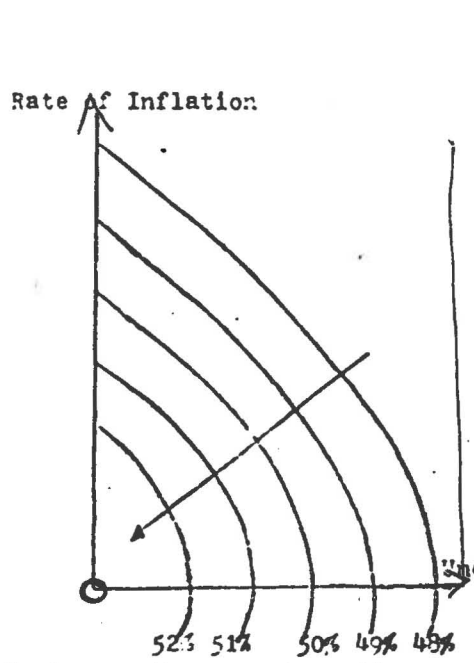
In Akerman's view, then, PBC's have nothing to do with government policy and everything to do with investor confidence. Whether or not his conclusion is a valid one, it should not be too surprising that his

findings are so directly in contradiction with modern PBC theory, since the latter generally covers the post-World War II, post-Keynes era.

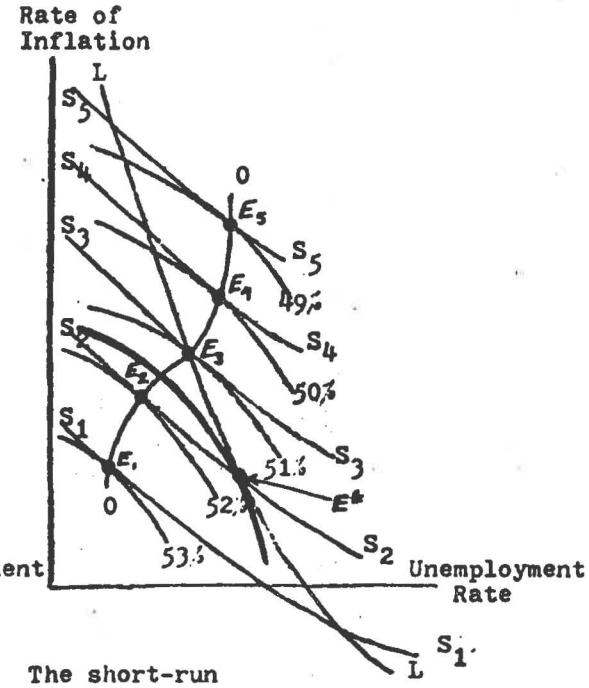
Although Kalecki and Akerman studied political-economic cycles from perspectives vastly different from those of recent PBC theorists, their work is relevant in that it established political business cycles as a subject of political-economic interest, thus laying the groundwork for Nordhaus, Tufte, et al.

As mentioned earlier, Nordhaus's 1975 article is commonly cited as the watershed paper for present-day PBC theory. Taking his cue from Anthony Downs (1957), who theorized that Adam Smith's self-interest axiom applies equally well to politics as it does to economics[12], Nordhaus begins by making the assumption that political parties are solely interested in election outcomes, and that "[t]he government therefore chooses economic policies during its incumbency which maximize its plurality in the next election."[13] In addition he assumes that: 1) voters base their electoral decision on the rates of unemployment and inflation at election time, preferring both to be as low as possible; 2) governments are aware of this fact; and 3) governments are able to manipulate movements along (and, to a lesser extent, shifts in) short-run Phillips (SP) curves. Moreover, an implicit assumption behind his model is that the "government" as a whole is dominated by the wishes of the incumbent president's party.

Having made these assumptions, Nordhaus graphically constructs a long-run "aggregate voting function," on which he then superimposes modified short- and long-run Phillips curve constraints.
The exact slopes of the voting function and Phillips curves are arbitrary. Nordhaus's voting function is essentially a series of iso-



Contours of aggregate voting function (Nordhaus, p. 176)



The short-run election outcome (Nordhaus, p. 179)

cost curves -- or "iso-vote lines," as he calls them -- all of which are concave from the origin because the "goods" represented by the x- and y-axes are undesirable rather than desirable. That is to say, the government maximizes its utility by being on as low an iso-vote line as possible: hence the government manipulates shifts in and movements along the SP curves in such a manner that the lowest possible iso-vote line -- or rather, the highest possible vote share -- is attained. The The SP curve at a given point in time, which the incumbent cannot shift substantially, provides a constraint similar to that of a budget line in a normal iso-cost curve model. As in micro theory, the incumbent, whom Nordhaus assumes to be a vote-maximizer and also to be aware of the relative inflation-unemployment preferences of voters, will always choose the point on the SP curve tangent to the iso-vote line. Furthermore, by joining all the possible outcomes, we get the election outcome line OO (which corresponds to the long-run production path for a firm), pictured in the second of the above figures.

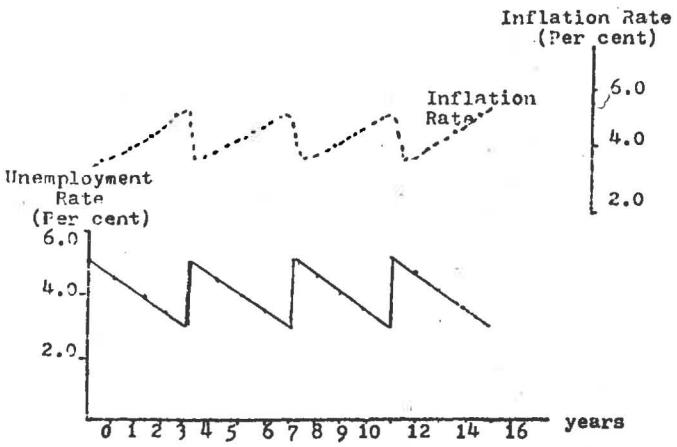
Since macro theory tells us that a system of Phillips curves is only stable when the economy is at a point on the long-run Phillips (LP) curve, then the only stable equilibrium in the second of the above figures is at point E_3, where the election outcome line intersects the LP curve. The optimal equilibrium would be E^* (inked in), where the iso-vote line is tangent to the LP curve and the vote share roughly 51.5%, but the government never reaches this point because it is not on the election outcome line. (Nordhaus does not adequately explain why the government would choose to follow the election outcome line in the first place rather than move to E^* and stay there[14]; this is one of the major shortcomings of his paper.) Since inflation is considerably higher at E_3 than at E^* and unemployment slightly lower at E_3 than at E^*, Nordhaus draws the conclusion that "the democratic outcome has lower unemployment and higher inflation than the optimum."[15]

After outlining this long-run theory of a political economy, all of which he assumes to take place during a homogenous electoral regime, Nordhaus turns to the possibility of politically-motivated cycles in the short run. As in the long-run model, he assumes that voters are solely concerned with two economic variables, inflation and unemployment; but here he makes the additional assumption that they consider the values of these two variables over the entire electoral period, rather than merely at election time. He further postulates a vote function in which voters "have a decaying 'memory' of past events. On election day, memory of recent events is probably more poignant than that of ancient ills."[16] In other words, voters are both backward-looking and "myopic." Nordhaus describes a PBC as follows:

> ... immediately after the election the victor will raise unemployment to some relatively high level in order to combat inflation. As elections approach, the unemployment rate will be

lowered until, on election eve, the unemployment rate will be lowered to the purely myopic point.[17]

He illustrates this cycle with the following figure, one which appears frequently in PBC literature:



The political business cycle (Nordhaus, p. 185)

Since his long-run theoretical prediction, "that the politically determined policy choice will have lower unemployment and higher inflation than is optimal," would be too difficult to test, Nordhaus opts instead to conduct a crude test of whether the short-run cycle described above actually exists. For this empirical test, he uses data for unemployment rates and elections in nine democratic countries -- Australia, Canada, France, Germany, Japan, New Zealand, Sweden, the U.K. and the U.S. -- over the postwar time span 1947-1972. His test's hypothesis, which he states rather vaguely, is that "during an electoral period of length O, the unemployment rate should rise in the first O/2 years and fall in the second O/2 years,"[18] as well as the assumptions that the probability of the unemployment rate rising or falling in any period is one-half and that successive occurences are statistically independent of one another.

Calculating a binomial probability of the observed unemployment trends happening due to chance, he finds a strong coincidence of

unemployment and political cycles for three countries -- Germany, New Zealand and the U.S. For the U.S., he reports nine observations that conform with his hypothesis and only one that does not. The cumulative binomial probability of this pattern occuring by chance is 0.011 (out of 1).

Of all the nine countries studied, the U.S results appear to be the most convincing evidence of a PBC, and as such they are widely cited by other PBC theorists; but closer examination reveals them to be somewhat spurious. Nordhaus himself admits in a footnote that "the assumption of independence is probably not warranted," so long as any external business cycle exists at all.[19] Also, Nordhaus's assumption that the probability of a rise or fall in unemployment is exactly one-half creates another problem: What if the overall trend in unemployment in a a period was neither up nor down?

After attempting to replicate this test exactly, I found three periods (1959-60, 1961-62 and 1967-68) in which unemployment stayed basically the same. Rather than include these as observations not conforming with the theory, however, Nordhaus slyly discards them. Had he put forth a strict null hypothesis of the form

H_o: unemployment does not rise in the first 0/2 years;
unemployment does not fall in the second 0/2 years,

he would not have had that luxury. Moreover, the cumulative binomial probability of the resulting new pattern (9 conforming observations, 4 non-conforming observations) occuring by chance is 0.133 -- still low enough to encourage further research, but not low enough to be even semi-conclusive.

Updating the observations through 1984 and using the most current revisions of unemployment data available, I obtained the following

results:

Before elections	
Unemployment rate not falling	4
Unemployment rate falling*	6
After elections	
Unemployment rate rising*	6
Unemployment rate not rising	3
Total	
Conforms with theory*	12
Does not conform with theory	7
PROBABILITY OF THESE TOTALS OCCURING BY CHANCE	0.180

* - indicates the movement that conforms with the theory
The above table is adapted from Nordhaus.
Since Nordhaus does not specify exactly what he means by "rising" or "falling" over a two-year period, I used my own specifications in replicating his test. I used quarterly data, comparing the final quarters of successive two-year periods and taking any change in the unemployment rate of less than 0.2% to be so miniscule as to count as neither a rise nor fall.

Thus, after including all observations from 1947-72 and updating through 1984, the results become somewhat less promising. This is hardly surprising, given the supply shocks of the 1970s; but I strongly doubt that Nordhaus meant for his test to be conclusive. For one thing, his test is supposed to show coincidence (of political and economic cycles), not causality. Moreover, because of imprecise measurement techniques, the unemployment rate is often an unreliable indicator of economic activity. In short, Nordhaus seems to have intended for his test to invite further research rather than pre-empt it.

In his book Political Control of the Economy (1978), Edward Tufte looks for evidence of electoral-economic cycles on the supply side (the manipulation and timing of policy instruments and therefore of business cycles) and the demand side (the effect of macro aggregates on votes cast for the incumbent president and/or his party) and claims to find evidence of both. Since this paper focuses on the supply-side aspects of a PBC, I will ignore Tufte's work on the demand side for now. Tufte's

work on the supply side involves nothing more complicated than the computation of various totals and averages for annual economic data.

In one table, Tufte displays the variations in the inflation-unemployment tradeoff in relation to presidential election years in the 31 years from 1946 to 1976. Judging from his findings, the economy performs a good deal better during presidential election years than in all other years. Updating the data through 1985 and fitting the results into a table identical to Tufte's, we get:

Yearly change in unemployment rate and inflation (GNP deflator:	(Percentage of) Presidential election years	(Percentage of) All other years
less unemployment and less inflation	50% (5 years)	13% (4 years)
less unemployment, but more inflation	10% (1 year)	33% (10 years)
less inflation, but more unemployment	30% (3 years)	37% (11 years)
more inflation and more unemployment	10% (1 year)	17% (5 years)
	100%	100%

"It is apparent that the way to defeat the trade-off between inflation and unemployment is to hold a presidential election"
-Edward Tufte[20]

Unlike the Nordhaus test on page 9, Tufte's table is little changed by the addition of observations from 1977-85. And, excluding 1980 -- when the economy was beset by oil shocks, there has never been a presidential election year in which the rates of inflation and unemployment both increased relative to the previous year.

Tufte identifies the annual growth rate of real disposable income per capita as the economic variable that most affects the share of votes received by the president and his party, and he looks at annual data for this variable in analyzing patterns on the supply side as well. This is

a mistake, because even though public-policy actions may well influence changes in real disposable income (RDI), the government clearly has no precise knowledge of or control over the future population level. Nonetheless, Tufte shows that movements in per-capita RDI are indeed closely correlated with on-year and off-year (midterm) elections. Over the years 1946-1976, the median growth rate of RDI per capita has averaged 3.3% in years when an incumbent president sought re-election, as compared to just 1.7% in all other years.[21] Furthermore, over the same timespan, excluding the Eisenhower years (because, according to Tufte, Eisenhower's was the one postwar Administration that genuinely rejected stimulative interventionist policies), Tufte finds the following median growth rates for per-capita RDI:[22]

	Years with no election	On-year election, incumbent not running	Midterm election	On-year election, incumbent running
Median rate	1.5%	2.0%	2.8%	3.4%

Tufte's findings for unemployment data are similar. Plotting seasonally adjusted monthly unemployment rates for the terms of all presidents from Truman through Ford and again excluding the Eisenhower years, we see that unemployment was moving downward before five of the six remaining presidential elections. Including the Eisenhower years, unemployment was moving upward after seven of eight elections.

Given these fluctuations in per-capita RDI and the unemployment rate, Tufte writes, "The electoral cycle causes substantial macroeconomic fluctuations."[23] As Tufte should know, however, coincidence does not always imply causality, so we should take this statement with the grain of salt it deserves. Yet, despite this distinction, the coincidences Tufte reports are impressive:

-- A two-year cycle in the growth of real disposable income per

> capita, with accelerations in even-numbered years [election years] and deceleartions in odd-numbered years.
> -- A four-year presidential cycle in the unemployment rate, with downturns in unemployment [of about one percentage point] in the months before the presidential election and upturns in the unemployment rate [of nearly two percentage points] usually beginning from twelve to eighteen months after the election.[24]

According to Tufte, the two cycles involve different policy instruments. The two-year cycle "is especially the product of election-year increases in transfer payments, administrative messing around with the timing of beneficiary payments, and decreases or postponements of taxes... The successful maintenance of the two-year real income cycle ... is not much more subtle than getting a lot of checks in the mail before the first Tuesday in November."[25] Tufte displays some interesting circumstantial evidence of the "heaping" of transfer payments around October or November in four recent election years. He also finds that of the thirteen increases in Social Security benefits since 1950, nine of them have come in election years; moreover, eight of those nine benefit increases have been within-year increases rather than beginning-of-year increases, whereas three of the four benefit increases in odd-numbered years came at the beginning of the year in January.[26]

Tufte provides less evidence to support his contention that politicians engender a four-year presidential cycle as well. He reports that such a cycle is more unwieldy than the two-year congressional cycle because the unemployment rate "is affected by fiscal and monetary policies that act more slowly and with more uncertain time lags on unemployment than do taxes and transfers on real disposable income."[27] Aside from some political science/psychology theory to explain why government bureaucrats and opposition members of Congress would cooperate with a presidential-election-year economic stimulation, however, the only evidence Tufte provides of policy manipulation on this

front is a table of biennial changes in the growth rate of M1. He reports that the relatioship between these changes in the money supply and presidential elections is a strong one, as the table below (reproduced from Tufte) indicates:

CHANGES IN M1, TWO-YEAR PERIODS, 1948-1976[28]
(excluding the Eisenhower years)

	Biennial periods	
	Prior to the pres. election	After the pres. election
Rate of growth of M1 increased	4	1
Rate of growth of M1 decreased	1	4

As strong as this evidence appears, it may be somewhat spurious, principally because the government's ability to control accelerations and decelerations of the growth rate rate of M1 is in some doubt. Also, the money stock is a target of monetary policy, not an instrument of policy. (The aggregate level of bank reserves and the federal funds rate are examples of monetary policy instruments.[29]) Perhaps assessing the manipulations of, say, the level of non-borrowed reserves in the banking system in relation to presidential election cycles would be a more illuminating test of monetary policy.

The most comprehensive work on the subject of PBC's has been by Bruno Frey of Switzerland. Frey postulates two equations, a popularity function (by which popularity is influenced by the rates of unemployment, inflation and RDI growth, as well as personal factors) and a reaction function which takes into account the proximity of the next election and the popularity rating of the president in order to predict government behavior. I will concentrate on Frey's reaction function for

now.

In contrast to the vote-maximizing theory that Nordhaus assumes, Frey and Schneider (1978) hypothesize that presidents follow a more realistic vote-satisficing strategy. In addition they assume that a president derives his utility from pursuing his ideological goals. The need to be re-elected is seen as a constraint on the implementation of this ideology rather than as an end in itself. Frey and Schneider acknowledge, however, that the desire to remain in power is the most important constraint on politicians' behavior; and thus they hypothesize that if a president's approval rating[30] is below a certain threshold level, the president will undertake expansionary policies so as to raise his popularity level and thereby secure his re-election. Although the 22nd Amendment to the Constitution prevents any president from serving more than two terms, the authors maintain that even second term presidents "are under strong pressure from their party to pursue policies as if they were seeking another term. This is an attempt to ensure that their successor will be a member of their own party."[31]

Frey and Schneider arbitrarily set the target popularity rating (POP^*) sought by presidents at the constant level of 58% and talk of a "state of popularity deficit" equal to (actual popularity rating - POP^*) that occurs when actual popularity (POP) is less than the target level. Assuming further that the government will react more strongly to a large popularity deficit than to a small one, they use the squared popularity deficit as an explanatory variable in their reaction function. The entire reaction function is as follows:

$$GX(t) = p_0 GX(t-4) + (\text{constant}) + p_1(\text{government receipts}) + p_2(\text{popularity deficit})^2 + p_3(\text{time before elections})$$

$$+ p_4(\text{each president's ideology}) + u(t)$$

where GX = total nondefense federal expenditures (nominal, in billions of dollars); time before elections = dummy variable, TBE, which equals 0 in the first half and takes the values 1,2,3,...,8 starting with the beginning of the second half of each presidential term (TBE = 0 if $POP \geq POP^*$); ideology = $(POP - POP^*)^2$ if $(POP > POP^*)$ and equals 0 if $(POP \leq POP^*)$. Frey and Schneider estimate similar reaction functions for the level of transfer payments and the number of federal jobs as well.

Their estimation of the above reaction function for GX, using quarterly data from 1953/II to 1975/II, yields positive values for p_2 and p_3. The positive signs conform with Frey's and Schneider's theoretical expectations (of a government that reacts to a popularity deficit or an impending election by applying a fiscal stimulus), but the estimated values for both coefficients are so low as to be economically -- if not statistically -- insignificant.[32] The tiny value for p_2 presents no challenge to election-oriented PBC theory, however, because the popularity deficit variable includes observations from all sixteen quarters of each presidential term, rather than being restricted to observation points shortly before each election. Thus it implicitly tests for the existence of a "popularity maintenance function"[33], in which a president attempts a fiscal stimulus <u>whenever</u> his popularity rating is low, regardless of the relative proximity of the next election. This seems unlikely to begin with, not only because the costs of such an irresponsible policy would seem to outweigh the benefits if the next election were far off, but also because, as Sulock points out, a decrease in popularity "may weaken the <u>ability</u> of a president to alter

[this instrument] since presidential power is also a function of ... popularity."[34]

The low value for p_3, which predicts an increase of just $0.37 billion in domestic federal spending in response to a popularity deficit in the latter half of a presidential term, is more problematical. But the problem may well be with Frey's and Schneider's model rather than an absence of policy manipulation. The dependent variable GX seems misspecified, in particular because its failure to adjust either for inflation or the size of the economy. Moreover, they do not attempt a reaction function for federal tax collections (or the average tax rate), the other half of fiscal policy. Nor do they attempt to combine the two instruments. Thus it is possible that if some periodic electorally-inspired cycle does exist in the use of fiscal policy instruments, Frey's and Schneider's model would not pick it up.

Furthermore, Frey himself cautions that "[t]he approach of examining raw data over time is seriously deficient. A careful empirical study requires an <u>isolation</u> of the electoral cycle: all influences not connected with it must be excluded," or else the results either way may be spurious.[35] Indeed, failure to account for such exogenous factors as wars and supply shocks is likely to obscure one's results considerably.

In a 1983 article Kabir Ahmad makes several incisive criticisms of Frey's and Schneider's reaction functions and estimates two policy functions of his own, one for fiscal policy and one for monetary policy. The respective policy instruments he examines are the real high employment (or "structural") budget deficit divided by real GNP (RHEBD/GNP) and the rate of growth of M1. In addition, his model contains three explanatory variables for the state of the economy -- the

lagged values of real income, unemployment and inflation -- as well as the lagged values of the particular policy instruments themselves (P(t-1)). By including these economic variables, Ahmad seems to be heeding Frey's warning that one needs to isolate the electoral cycle from all exogenous factors in order to conduct a proper PBC test.

The two reaction functions that Ahmad does introduce are otherwise quite similar to Frey's and Schneider's. The explanatory variables he uses for each policy equation are: a constant term; the lagged (by one quarter) values of the rates of inflation, unemployment and real GNP growth; the lagged popularity deficit, PD; the lagged popularity surplus (separated from PD in order to focus on PD); and a disturbance term.

Unfortunately, Ahmad does not include a time-before-elections variable of any kind; thus the critical coefficient values in both tests are those of the popularity deficit, the theoretical improbability of which I have already discussed. He hypothesizes that the coefficient sign of PD in the fiscal policy equation will be positive and that the coefficient sign of PD in the monetary test will be interdeterminate, because the central bank might choose to assert its independence in the face of executive pressure or because the president might prefer a tight money policy so that inflation will be low at election time.

Performing regressions on his own model and Frey's and Schneider's 1978 model, and expanding the data series from to 1953-1975 to 1948-1978, Ahmad shows Frey's and Schneider's model to be extremely sensitive to the sample period selected. After expanding the timeframe in this manner, the R^2 of their GX model drops from 0.99 to 0.50. Ahmad reports that his own model of fiscal policy gives much better results,

since he gets a higher R^2 (0.80, or 0.83 when the ideological dummy variables are included in the regression) and statistically significant coefficient estimates for income growth, popularity deficit and the lagged endogenous variable P(i)(t-1). He reports satisfactory results for his monetary reaction function, when presidential dummies are included -- an R^2 of 0.60 and significant coefficient values for inflation, unemployment, popularity deficit and the lagged endogenous variable P(ii)(t-1). The coefficient estimate for PD in the money supply equation is negative, however. Taken together, Ahmad's two reaction functions imply that a president with a popularity shortfall will pursue an expansionary fiscal policy and a contractionary monetary policy.

Not only does it seem unlikely that a president would choose to undertake two policies that cancel each other out, but Ahmad does not make any attempt to explain why this might be the case. In addition, like Frey and Schneider, he does not discuss the economic significance of his respective estimates for PD -- 0.00002 and -0.063 -- aside from noting that they are statistically significant at the 5% level. The PD estimate for the fiscal equation seems slight: assuming that GNP is roughly $1.5 trillion (its 1983 value in 1972 dollars), then a president with a ten-point popularity deficit will react by increasing the structural deficit by $300 million, a trifling amount when one considers that the structural deficit is measured in billions. The PD estimate for monetary policy appears a good deal more significant, but Ahmad's explanations for why it could be negative are not convincing. If "office-motivated" presidents pursue contractionary policies in order to improve their immediate popularity, then they are irrational, because the rates of "unemployment and growth of income together [have] by far a

greater impact on presidential popularity than [does] inflation."[36]

The "popularity maintenance theory" implied by the popularity deficit variables in Frey's and Schneider's and Ahmad's models seems so unlikely in terms of cost-benefit analysis (see page 17) and receives so little supporting evidence in the empirical testing of these models[37] that this paper will consider it no further.

A 1986 paper by Stuart Allen tests econometrically whether or not a periodic political cycle exists in monetary policy-making. In separate regressions he uses one of two dependent variables: the first difference of the log of the monetary base, and the growth rate of M1. Using ten different specifications of electoral dummy variables, so as to allow for a number of possible electorally-motivated policy cycles, Allen runs separate regressions for four different (but overlapping) time periods and for each of the ten electoral variables. Allen's results for all forty regressions are so unimpressive that he concludes no evidence exists for an electoral cycle in the growth of M1.

Allen reports more positive results for a second specification, which indicates that the Fed's willingness to monetize the public debt varies with the presidential and congressional election cycles. His model includes terms for the change in net federal debt (DEBT) and an election cycle-debt interaction term (EVDEBT), equal to the electoral dummy times the debt variable. He reports positive coefficients for DEBT and negative coefficients for EVDEBT, the theoretically expected signs, and statistically significant values for those coefficients. He concludes:

> The results provide evidence that the Federal Reserve not only accommodates Treasury borrowing regardless of the electoral season, but also provides extra accommodation prior to presidential and congressional elections.[38]

The coefficient estimates of EVDEBT that correspond to Allen's specifications of a two-year cycle are a good deal larger than those corresponding to a four-year cycle. Hence the indirect link that Allen sees between monetary accommodation and national elections may be stronger for congressional elections than for presidential elections. My own test will consider both possibilities as well.

After going over some of the most often cited works in PBC literature, my strongest conclusion is that these works tend to be long on theory and short on solid evidence of a PBC, despite their authors' contentions. As Sulock puts it, too often "the induced changes are, at best, 'economically non-negligible.'"[39] The results pertaining to changes in such macroaggregates as real GNP, RDI and the unemployment rate in relation to electoral cycles seem a good deal more revealing than the estimated reactions of policy instruments to elections. Despite this asymmetry, however, in my own work I will try to analyze both of these aspects of a PBC, because the latter would seem to be the most likely cause of the former.

Theoretical Framework

Although my empirical tests will allow for the possibility of a two-year congressional economic cycle, I will be focusing mainly on the possible existence of a four-year "presidential business cycle." Despite Tufte's findings that RDI per capita grew much faster in midterm election years than in years with no election at all, it is nonetheless true that since 1947, there have been <u>five</u> midterm election years (1954, '58, '70, '74 and '82) in which real GNP declined from the previous year, as opposed to only one presidential election year (1980) in which the same occurred. Also, if such a cycle involves manipulating the

short-run Phillips curves to any extent, as I assume it would, two years seems far too short a time period in which to complete any such cycle.

There are three basic assumptions underlying my theory of a presidential business cycle: 1) voters base their electoral decisions largely on the economic conditions at election time; 2) politicians have some ability to manipulate the economy through fiscal and monetary policy; 3) a president's first duty (to paraphrase Adlai Stevenson) is to get re-elected or to see his party's nominee elected president. In the following pages I will explore these assumptions in greater depth.

1. Voters base their electoral decisions largely on the economic conditions at election time. If politicians did not believe this were true, they would have little incentive to stimulate the economy before an election. Fortunately for PBC theorists, the evidence suggests that levels and movements of economic variables have a profound impact on electoral outcomes.

Ray Fair (1975) found that voters apply an infinite discount rate in assessing the economic performance of prior presidential administrations. That is to say, they consider only the past four-year performance of the economy under the current administration in rendering their decision. Furthermore, after testing fourteen different economic variables as possible explanatory variables for the incumbent party's share of the two-party vote in presidential contests, Fair writes, "The growth rate of real per capita GNP, g_i, in the year of the election [emphasis added] was definitely the best measure of economic performance in terms of explaining" the vote share.[40] For the time period 1916-1972, g_i explains 78.4% of the variance in vote share (i.e., $R^2 = 0.784$). Thus Fair's results imply that voters are myopic to an extreme -- they

consider only the events of the most recent year of the current administration.

In constructing his model of voting behavior, Fair assumed that 1) "voters hold presidential administrations accountable for economic events" and 2) a voter bases his or her expectation of the future economic performance of the incumbent party's candidate on some measure of his party's past economic performance.[41] Both of these assumptions seem plausible enough to incorporate into my own underlying theory; and, applying Fair's above conclusions, we can extend the second assumption to be: a voter bases his or her expectations of the future economic performance of the incumbent party's candidate on the economic events of the election year.

These assumptions go against the "rational expectations" hypothesis -- which holds that "people form their expectations on the basis of all information, including any available information on the probable future actions of policymakers"[42] -- but I believe they form a plausible description of voting behavior. For one thing, as Chris Goodrich has noted, "the average voter is not a sophisticated econometrician" and is not able "to estimate the profile of the economy over the electoral term. Moreover, he is also not able to distinguish between government-induced actions and other influences upon the economy" such as supply shocks.[43] In addition, it seems unreasonable to expect voters who haven't taken a macro theory course to understand the dynamic properties of short- and long-run Phillips curves -- that is, for them to know that today's high growth rate may be tomorrow's inflation. And given the relative insignificance of one individual's vote in a presidential election (where the average margin of victory in postwar times has been

roughly eight million votes), the benefit one would derive from obtaining and learning to interpret all available economic information in order to vote "correctly" seems negligible compared to the costs of acquiring this information.

In addition, Frey claims his statistical estimates reveal that the voters' time horizon rarely goes back much further than one year in any country. Goodrich comments that

> such empirical studies as have been undertaken, both outside and through the popularity function over a broad range of countries and time, have shown that the electorate tends to be myopic. It has an incredibly short memory, and tends to be remarkably ignorant about the state of economic affairs ...[44]

In support of these claims, one might note that in the postwar U.S., real GNP declined during the second or third years of six presidential terms, yet the incumbent president won re-election in four out of these six cases. By contrast, the incumbent president's party has <u>never</u> retained control of the White House in a postwar presidential election year in which real GNP grew at a rate of less than 2.1 percent.

Tufte and Frey also report a strong connection between favorable economic news and votes for the incumbent presidential candidate. Running a multiple reression, Tufte gets significant coefficient estimates indicating that every 1.0% annual increase in per-capita RDI during the election year brings the incumbent party's nominee an extra 1.3% of the popular vote. Frey's "popularity function" also takes the form of a multiple regression, in which presidential popularity depends on the current rates of unemployment (U(t)) and RDI growth (G(t)) and the lagged value of the inflation rate (I(t-1)), as well as dummy variables for each president's base popularity level and popularity depreciation rate and an additionally dummy variable for the Watergate years (1973-74). Frey gets a value of corrected R^2 of 0.9 and

theoretically "correct" signs for the coefficients of U(t), G(t) and I(t-1). His estimates of these coefficients suggest that: 1) a 1% increase in unemployment causes popularity to drop by four percentage points; 2) a 1% increase in inflation causes popularity to drop by four percentage points; and 3) a 1% increase in the growth rate of RDI raises popularity by 0.5 percent.[45]

Taken together, Fair's, Tufte's and Frey's results provide almost overwhelming evidence that economic conditions are a key factor in explaining the outcomes of presidential elections.

2. Politicians have some ability to manipulate the economy through fiscal and monetary policy. Keynesian economics takes for granted that fiscal and monetary policy are within the control of government policy-makers. Although the government's policies do not create the business cycle, Keynesians assert, their actions certainly have an impact upon business cycles and macroaggregates. Monetarism, the directly competing school of thought, charges that the private economy is inherently stable and that most if not all fluctuations in economic performance -- that is to say, business cycles -- are directly traceable to governmental intervention. The point I am trying to make is that both camps agree that governmental policy actions have a potent effect on the economy. For the most part, this is not a controversial issue.

To go one step further as I do in assuming that politicians (rather than unelected bureaucrats), and presidents in particular, direct these economic policies invites somewhat more debate. Fiscal policy, although it is embodied in the federal budget which Congress passes and the President signs into law, inevitably reflects the

priorities of the Congress and not only those of the President, since it is Congress that votes for the final budget, which may differ quite drastically from the President's original proposal. Monetary policy is in the hands of a supposedly independent, non-partisan Federal Reserve Board of Governors that sets its own priorities. These seem to me to be the principal objections to Assumption 2, and I will deal with them summarily in the following paragraphs.

Before explaining why presidents exert such a strong influence on fiscal policy, I feel it necessary to explain how I am defining fiscal policy and why politicians are conscious of it. Fiscal policy involves total federal expenditures as measured against total federal tax receipts. Since downturns in the economy automatically result in reduced tax collections (because there is less national income to tax) and, to a smaller extent, increased government outlays, and economic upturns result in just the opposite, the federal budget deficit has what is called a cyclical component. Changes in the level of this component occur naturally in response to economic fluctuations, not as a calculated reaction on the government's part. Thus the correct measure of actual fiscal policy, many economists would agree, is the "high-employment" or "structural" federal deficit -- the estimated level what the deficit would be if the economy were operating at "high employment," i.e. the lowest sustainable unemployment rate that would not generate any new inflation. Estimates of the structural deficit are calculated officially by the Department of Commerce and unofficially by the Office of Management and Budget and the Congressional Budget Office; they were incorporated formally into the budget in 1972.[46]

Because the budget that Congress passes contains an estimated

measure of fiscal policy, it seems reasonable to assume that politicians have some awareness of the relative size of a particular fiscal stimulus. Even prior to 1972, at least in the post-Eisenhower years, politicians have seemed to know that a countercyclical fiscal policy is better than a procyclical one (such as the tax increase that President Hoover enacted in 1932 during the Depression). According to Paul Samuelson, Presidents Kennedy, Nixon, Ford and Carter all accepted the precept that the budget should be set "so that it can be financed by the tax revenues that a would be generated from a high-level full-employment economy."[47] Judging from published figures for the actual and structural deficits during the 1950s, it appears that the Eisenhower Administration's primary fiscal objective (especially in election years) was to maintain a balanced budget. For this reason, my econometric tests of the manipulation of fiscal policy will include one specification in which all observations from the Eisenhower years are excluded.

Because the postwar norm in American politics has been a Republican president and a Democratic-controlled Congress, one might question the influence that I ascribe to presidents in shaping fiscal policy. I believe, however, that partisan control of Congress limits a president's ability to conduct short-term economic policy considerably less than it limits his ability to achieve other objectives, such as ~~foreign policy and~~ domestic social policy goals. Moreover, since Representatives are up for re-election every two years and Senators every six years, and assuming that they are no less interested in their own re-elections than the President is in his, they may well be inclined to go along with any fiscal stimulus that the President

proposes, even if they belong to the opposition party. After all, fiscal stimuli such as income tax cuts and spending programs affecting one's constituency are politically popular. Applying Downs's theory of political self-interest, it seems fair to postulate that opposition members of Congress make their own re-elections a higher priority than they do the President's defeat. And studies have shown that members of Congress who belong to the same party as the President benefit from election-year economic booms in their own re-election attempts.[48]

Examples of presidents inducing an opposition-controlled Congress to accept a fiscal stimulus include the tax reductions of 1958, 1975 and 1981, under Republican Presidents Eisenhower, Ford and Reagan, respectively. In the first two cases, the Democrats had majorities in both houses of Congress; in the third case, they had a commanding majority in the House of Representatives. Moreover, even if a president is not in full control of fiscal policy, he still has the power to veto any spending or tax bill that Congress passes. And despite the fact that the budget that a president proposes each year is not always the same one that Congress enacts, the differences between the proposed and final budgets probably have more to do with conflicting spending priorities (i.e., how to allocate the budget among the military, social programs, entitlements, etc.) than with disagreements as to the proper level of the structural deficit.

Tufte describes the "collaboration" of presidents and opposition members of Congress, even opposition candidates for president, in election-year economic stimulations as follows:

> Even those not in power become implicated in election-year upturns. During the election campaign, nonincumbent candidates find themselves in the ironic postures of advocating stimulative economic policies as correctives for what they attack as the failed policies of the incumbent [administration]. Incumbents,

> proclaiming they are also keeping a keen eye on inflation and government spending, are happy to oblige.[49]

Tufte cites as an example of this pattern the 20 percent increase in Social Security benefits, effective October 1, 1972, that President Nixon signed into law in the election year 1972. Nixon had originally proposed a 5 percent increase, in late 1971. During the primary election campaign the following spring, several of the Democratic candidates proposed upping the increase to 20 or 25 percent. In July, both (Democratic-controlled) houses of Congress passed a 20 percent increase, despite hints of a presidential veto.[50] A similar example occurred during the Truman Administration early in the election year 1948, when Truman enacted a tax cut bill passed by a Republican Congress after having vetoed two tax reduction bills the previous year.[51]

In short, it seems highly plausible that opposition members of Congress would not only go along with a president's attempts at election-year fiscal stimulation, but that they might even initiate such an attempt.

As for monetary policy, numerous economists have questioned the degree to which the Fed is really independent of the political process. The Federal Reserve Board, as we know, consists of seven governors, all appointed to staggered fourteen-year terms by the President with the advice and consent of the Senate. Although fourteen years is considerably longer than the legal limit of a president's tenure in office, most Board members retire before half of their fourteen-year term is up.[52] In addition, the Chairman's term as chairman is only four years, giving each President the opportunity to appoint a chairman of his own choosing. Thomas Mayer states that "the President and Congress

have considerable influence over the Fed" and gives four reasons why this is so:

> One source of the government's influence is moral suasion; the governors are reluctant to oppose the views of the one person elected by the whole nation; they go along if they feel they can do so without dereliction of duty. Second, the Fed is continually active in Congress, trying to obtain certain legislation or to block other legislation. It wants the support of the President in these legislative struggles, and hence has an incentive to keep on good terms with him. Third, the Chairman wants the President's goodwill, so that when the President appoints a new governor, it will be someone the chairman prefers.... Moreover, to ward off undesired legislation and to obtain the legislation it does want, the Federal Reserve probably bends at least to some extent to Congressional pressures.[53]

Ever since it established the Fed in 1913, Congress traditionally has played a "watchdog" role in supervising its activities. The operational guidelines it gave the Fed were exceedingly vague up until recently, but it has always had the power to enact laws altering the Fed's charter or curtailing the Fed's independence. If the threat of such legislation is strong enough, then the Fed may be forced into a change of policy (assuming, of course, that the Fed, as a bureaucracy, derives its utility from staying as powerful and autonomous as possible). Furthermore, since 1975, the Chairman of the Board of Governors is required to appear twice a year before Congress to state and explain his annual growth targets for M1, M2 and M3, thus making Congressional supervision of monetary policy more direct.

Sherman Maisel, a former member of the Board of Governors, once estimated the distribution of power over Fed policy among outsiders as: presidential administration - 35%; Congress - 25%; the press, economists, lobbyists and the general public - 20%; financial interests - 10%; foreign interests - 5%; other regulatory agencies - 5%.[54] Thus Maisel believes the President and Congress together exert a potent influence on monetary policy. His estimates do not compare the

relative influence of these outsiders to that of Fed insiders, but a 1978 paper by Robert Weintraub provides compelling evidence of the active role that presidential regimes play in monetary policy-making.

Weintraub constructs several measures of monetary "thrust" -- a concept that is explained further following the table below -- year by year from 1951 to 1977. He finds that

> the Federal Reserve shifted course in the fundamental sense, easing or tightening significantly in 1953, 1961, 1971, 1974 and 1977. Except for 1971, these were the only years when the Presidency changed hands. Considering further that the thrust of monetary policy, which began to ease in 1961, eased significantly during Johnson's presidency from its first year (1964), it may be reasonably urged that the dominant force behind monetary policy is the President.[55]

Weintraub further supports this claim with a table of monetary policy thrust in the presidencies of this timeframe. I have reproduced this table in the space below:

MONETARY POLICY THRUST IN EACH PRESIDENT'S TERM, 1951-1977

President	Dates of term				
(1)	(2)	(3)	(4)		
Truman	3/51 - 12/52	4.75	0.80	0.81	0.77
Eisenhower	1/53 - 12/60	1.73	-2.32	-2.30	-2.28
Kennedy	1/61 - 10/63	2.31	-1.82	-1.78	-1.71
Johnson	11/63 - 12/68	4.78	0.77	0.82	0.79
Nixon	1/69 - 7/74	6.17	2.11	2.18	2.17
Ford	8/74 - 12/76	4.76	0.53	0.61	0.74
Carter	1/77 - 11/77	6.61	2.41	2.50	2.59

Thrust 1 = Average percent change in M1, from monthly data, at annual rate

Thrust 2 = Thrust 1 - $[4.0 + 0.0625(U_{t-1} - 4)]$

Thrust 3 = Thrust 1 - $[4.0 + 0.0625(U_{t-1} - 4 + time*0.003115*1.5)]$

Thrust 4 = Thrust 1 - $[4.0 + 0.0625(\log U_{t-1} - \log(4 + time*0.003115*1.5)]$

Thrust 2 allows for countercyclical money-growth policy as regards unemployment (U_{t-1}). It assumes that 4.0 is the structual or "natural" unemployment rate. The coefficient 0.0625 is three times the maximum fraction of the unemployed in excess of 4

percent that the economy can absorb in one month, according to Okun's Law.
Thrust 3 recognizes that the structural unemployment rate may have risen steadily over the given timeframe, from 4.0% in March 1951 (where time = 1) to 5.5% in November 1977 (time = 321).
Thrust 4 uses logarithms so as "to allow for absorbing higher fractions of the unemployed in excess of the [structural] unemployment rate as unemployment increases."[56]

Whichever measure of thrust one looks at, however, the inescapable conclusion one draws from Weintraub's table is that monetary policy changed significantly with the advent of every new postwar presidential administration. Not only did it change with successive presidencies, Weintraub adds, but "[e]xamination of the economic and financial histories of the administrations of ... Truman and his successors ... show[s] that in each administration monetary policy fitted harmoniously with the President's economic and financial objectives and plans."[57]

Despite this evidence, however, the separate contention that the Fed responds to an administration's <u>electoral</u> priorities has yet to be thoroughly tested, let alone proven. My own empirical work will attempt to test this claim. For now, the relevant question is whether or not politicians exert some control over monetary policy-making (as in Assumption 2); and I believe the above evidence suggests they do.

Few doubt that fiscal and monetary policy, together and even separately, have a pronounced impact on the U.S. economy. It is true, however, that the magnitude of this impact at any point in time will vary considerably with the prior economic and national conditions. In times of war, fiscal and monetary policies tend to be oriented towards providing maximum support for the war effort. Examples of such include the interest-rate pegging during World War II and the Korean War and the large federal deficits of the Vietnam era. In addition, upward

shifts in the short-run Phillips curves exacerbate the unemployment-inflation tradeoff, making policy manipulation more costly and less effective. Where appropriate, my own PBC test models will include explanatory variables for the Korea and Vietnam War years, as well as for quarterly changes in the Producer Price Index, which appear to be highly correlated with supply shocks and other factors causing shifts in the intercept of the SP curve.

3. A president's first duty is to get re-elected or to see his party's nominee elected president. Whether one assumes that a president derives his utility primarily from seeing his party's nominee elected president in the next election (as does Nordhaus) or that the need to be re-elected (or to anoint a successor) is simply a powerful constraint on a president's pursuit of utility (as do Frey and Schneider), it is indispensable for PBC theorists to assume that a president strongly <u>desires</u> that his party's nominee be elected.

A model of a presidential utility function seems to be in order. The one that I have postulated reveals my own assumptions about presidential utility to be closer to Frey's and Schneider's than to Nordhaus's, in that I view the need to win elections as an overriding constraint on utility rather than as an end in itself. The distinction may seem a fuzzy one, but it will become pertinent as we move on. The model is as follows:

$$UTILITY_{pres} = f(IDEOLOGY,\ POPULARITY,\ LEGACY)$$

subject to

$$\lambda(ELECTION,\ INFLUENCE,\ NATIONAL\ MOOD)$$

with all explanatory variables given in descending order of their importance. A further constraint on presidential utility is the degree

to which a president's goals of implementing his ideological objectives (IDEOLOGY), maintaining high approval ratings (POPULARITY) and being well-remembered by history (LEGACY) conflict with each other, as they may. The ELECTION constraint seems the strongest because if the president's party cannot maintain control of the White House after the next election, his ideologically-driven accomplishments may well be nullified by the next administration. The INFLUENCE constraint is itself a function of 1) the partisan and ideological composition of the House and Senate, since one would expect that, ceteris paribus, a president will be more likely to get what he wants legislatively from a Congress controlled by like-minded members of his own party than from an opposition-dominated Congress; and 2) the president's approval rating, since a popular president would presumably have an easier time setting the national agenda than an unpopular one. The NATIONAL MOOD constraint refers, at any point in time, to the relative receptivity of the general public to certain ideologically-motivated programs and ideas -- for instance, national health insurance, a balanced-budget amendment, or increased defense spending. As difficult as this model would be to express quantitatively, it nevertheless has important implications for PBC testing, as the following paragraphs will reveal.

The assumption that the ELECTION constraint is so strong as to be overriding means that theoretically we still have an "office-motivated" president, but that a president whose approval rating is above the "threshold level" that Frey and Schneider speak of will no longer be office-motivated. Applying this to PBC theory, we see that a highly popular president would only attempt an election-year economic stimulation if such a stimulus were in line with his ideological and

other goals. Because IDEOLOGY ranks highest among a president's goals in this model and because election-year economic growth peaks do not seem a product of any particular ideology, we can conclude that a highly popular president would feel little need to manipulate the business cycle so that it peaks at election time.

On the other hand, the INFLUENCE constraint affects not only a president's ability to achieve his ideological goals but also his ability to satisfy his re-election constraint through an economic stimulus or by any other means. Although INFLUENCE is assumed to depend on the partisan and ideological composition of Congress and also on the president's approval rating, on page 33 I theorized that partisan control of Congress affects election-year economic policy considerably less than it affects other areas of policy. Hence, in the making of election-year economic policy, presidential influence comes to depend on the president's popularity. The PBC models I will be testing shall take this factor into account.

We can reasonably expect that the ELECTION constraint will be greater when the incumbent president, rather than someone else, is his party's nominee, since an incumbent president and a different candidate are not perfect substitutes.[58] Another member of the president's party is likely to have somewhat different ideological goals than the president, and a president can no longer derive utility from POPULARITY after he has left office. Also, assuming that the self-interest axiom entails that presidents are more interested in maximizing their own utility than in the long-term success of their party, it follows that a lame-duck president might prefer to pursue his own ideological goals rather than do everything he can to help someone else get elected president. The ELECTION constraint still applies to

a lame-duck president, but it is not nearly so strong as when the president himself is running for re-election.

Combining the conclusions of these last three paragraphs, we see several reasons why a regular four-year presidential business cycle would be theoretically unlikely. The 22nd Amendment ensures that in every other presidential election year (barring any deaths in office, impeachments or resignations), an incumbent president will not be up for re-election. In addition, a president with a "popularity surplus" will have scant need to stimulate the economy in the election year; and a president with a severe popularity deficit will likely have insufficient influence with which to persuade Congress and/or the Fed to adopt expansionary policies in an election year. I see no reason to rule out the possibility of a four-year PBC altogether; but, to account for these circumstances, my empirical work will include alternate tests with dummy variables for "semi-popular incumbents" whose average third-year approval ratings (as measured by the Gallup Opinion Index) lie in the range $40\% \leq POP \leq 60\%$ and whose willingness and ability to stimulate the economy are unmitigated by any of the above factors. Thus I will test both for a "pure" four-year cycle, a test that involves a strict interpretation of Assumption 3, and for a PBC for semi-popular incumbents.

The Models

In my empirical work I ran regressions for four different dependent variables: percent change in real GNP; percent change in RDI; and, on the policy-instruments side, the real structural deficit divided by potential GNP and the percent change in the level of non-borrowed reserves. The estimation method used in all cases was

Ordinary Least Squares. In all my regressions I used quarterly data from the post-World War II era. All of these models rely heavily on dummy variables, to distinguish between the performance of a dependent variable during the pre-election quarters and during the post-election quarters. The use of dummy variables to represent all 16 quarters or all four years of a presidential term eliminates the need for a constant term. Each dummy variable coefficient is itself a constant term for a particular quarter or year of a presidential term.

In accordance with Tufte's claim that the Eisenhower Administration rejected stimulative interventionist policies, all of my models include alternate specifications that omit all observations from the Eisenhower years (1953-1960). Those models begin with the first quarter of 1961 (1961/I). For simplicity's sake, all models that include observations from the Eisenhower years will have an "a" after the equation numbers (e.g., Equation 1.1a) and all models that omit the Eisenhower observations will have a "b" after the equation numbers.

With the GNP and RDI models, which are highly similar, I ran three basic tests for each, using different sets of dummy variables. The first of these tests contains 16 dummy variables, one to correspond with each quarter of a presidential term. The second test instead uses four yearly dummies. The fourth-year dummy always represents a presidential election year. The third test also uses yearly dummies, but features two different sets of fourth-year dummies: one for years in which a semi-popular incumbent (as defined on the previous page) is running, and another for years in which a semi-popular incumbent is not running.

The GNP tests. These tests cover the timeframe 1948/II to 1986/III. The observations begin with 1948/II because of limited data

availability.

The first equation takes the following form:

$$\dot{GNP}_t = f(\dot{GNP}_{t-1}, \dot{GNP}_{t-2}, \dot{GNP}_{t-3}, \dot{GNP}_{t-4}, DUM1, DUM2, DUM3, \ldots, DUM16, VIET, KOREA, PRICE) \quad (1.1)$$

The last three independent variables are there to help account for the economic fluctuations caused by wars and supply shocks and hence to help avoid spurious results. GNP = the percent changes in the level of real GNP, at annual rates of growth. DUM1 = the first quarter of a presidential term, in which the president is inaugurated; DUM2 = the second quarter; DUM3 = the third quarter; and so on. VIET = the semi-annual change in total U.S. military personnel in South Vietnam; since these are semi-annual changes and the GNP data are quarterly, the value of VIET will be the same for successive observations that are within the same half-year (e.g., VIET = 2305 for 1961/III and 1961/IV, 6695 for 1962/I and 1962/II, 2300 for 1962/III and 1962/IV). Since similar data was not readily available for U.S. involvement in the Korean War, KOREA is a simple 0-1 dummy variable that equals 1 in all quarters in which the U.S. was a participant in the Korean War (1950/I - 1953/III) and equals 0 in all other quarters. PRICE = quarterly average of monthly percent changes in the Producer Price Index for industrial commodities. The PRICE variable serves as a proxy for supply shocks; this particular price index includes fuels and related products, and changes in it appear to be highly correlated with recent supply shocks. Since wars are supposed to boost real GNP growth and adverse supply shocks are supposed to hinder real GNP growth, the expected coefficients of VIET and KOREA are positive and the expected coefficient of PRICE is negative.

According to PBC theory, the coefficients of the quarterly dummies

should be highest in the quarters directly before and including the election. Assumption 1 implies that the coefficients should be highest in quarters 13-16, those of the election year, in order for the politicians to take full advantage of the voters' myopia. In accordance with the assumptions that voters have a decaying memory of past events and that politicians can manipulate the economy through fiscal and monetary policy, one would also expect higher GNP growth in the third year (quarters 9-12) than in the first and second years (quarters 1-8).

The second GNP test uses yearly dummies and takes the form

$$GNP_t = f(GNP_{t-1}, GNP_{t-2}, GNP_{t-3}, GNP_{t-4}, YEAR1, YEAR2, YEAR3, YEAR4, VIET, KOREA, PRICE) \quad (1.2)$$

where YEAR1 = 1 for observations from quarters 1-4 of a presidential term and 0 for quarters 5-16; YEAR2 = 1 for quarters 5-8, 0 for all others; YEAR3 = 1 for quarters 9-12, 0 for all others; YEAR4 = 1 for quarters 13-16 and 0 for quarters 1-12.

The third GNP test differentiates between election years in which a semi-popular incumbent is running (INCUM4) and all other election years (ORDYEAR4):

$$GNP_t = f(GNP_{t-1}, GNP_{t-2}, GNP_{t-3}, GNP_{t-4}, YEAR1, YEAR2, YEAR3, ORDYEAR4, INCUM4, VIET, KOREA, PRICE) \quad (1.3)$$

Of the ten presidential elections in the postwar U.S., four -- those of 1948, 1972, 1976 and 1984 -- involved a semi-popular incumbent.

The RDI tests. The three RDI models are nearly identical in specification to the GNP tests. I am testing for fluctuations in RDI growth as well as GNP growth because of Fair's and Tufte's findings that per-capita RDI growth is the strongest indicator of presidential vote share and also because RDI includes government transfer payments

-- which Tufte alleges are another tool of partisan politics -- and GNP does not. The RDI tests differ from the GNP equations in only two respects: 1) they begin with 1949/III, again because of the limited availability of the data; and 2) the KOREA variable has been removed, because Korean War activity does not seem to have appreciably affected RDI growth.

The policy-instruments tests. In these tests I employ several additional specifications, including ones with interaction dummies to gauge whether these instruments react more strongly to slowdowns in GNP growth in pre-election quarters than in other quarters. Some of the monetary policy specifications include a second interaction term, similar to that used by Allen, to test whether monetary policy becomes more accommodative of increases in the federal debt in the pre-election quarters.

Since alterations in fiscal and monetary policy instruments have a less-than-immediate impact on the economy, one must take into account the "effectiveness lags" of these policy instruments. The exact lengths of these lags are uncertain and cause considerable disagreement among economists. Estimates of these lags indicate that a fiscal stimulus has a small multiplier effect on the economy in the first quarter of its application and that its multiplier effect is largest anywhere from two to seven quarters later. Gordon estimates that a monetary stimulus acts with a "short but variable lag," ranging from five months (two quarters) to ten months (four quarters).[59] Thus in interpreting the results of the fiscal and monetary models, we should look at the estimated coefficients of the dummies closely preceding the election quarter (quarter 16). In the context of these models, the election quarter itself is best viewed as a post-election quarter,

because of the effectiveness lags.

The fiscal policy test corresponding most closely to Equation (1.1) is as follows:

$$FISCAL_t = f(FISCAL_{t-1}, DUM1, DUM2, DUM3, \ldots, DUM16, ECONOMY, VIET, REAGAN) \quad (3.1)$$

where FISCAL = the real structural budget deficit, projected at an annual rate, divided by real potential GNP; ECONOMY = the average percent change in real GNP growth over the previous four quarters; and REAGAN is a dummy variable equal to 1 in all quarters during which Reagan's 1981 tax cuts are in effect (I use as my starting point 1983/II, the quarter in which the final phase of the tax cuts took effect) and equal to 0 in all previous quarters. The REAGAN dummy variable allows for the fact that even after adjusting for inflation and the size of potential output, the Reagan deficits (after the 1981 tax cuts took full effect) are still so large as to be potentially significant outliers. The VIET variable accomplishes much the same purpose for the Vietnam-era deficits.

A second fiscal policy test, Equation (3.2), uses yearly dummies and is similar to (1.2). A third fiscal policy test corresponds to (1.3), except that additional dummy variables (INCUM3 and ORDYEAR3) are added for the third year of each term, because of uncertainty about the length of the fiscal policy lag. (One could argue that a semi-popular incumbent president in the third year of his term does not know if he will be his party's nominee in the following year's election, but I think that contention is dismissible.[60])

Equations (3.4) through (3.7) include interaction dummies to test whether countercyclical fiscal policy becomes more countercyclical in pre-election quarters than in post-election quarters. Equation (3.4)

takes the form

$$FISCAL_t = f(FISCAL_{t-1}, YEAR1, YEAR2, YEAR3, YEAR4, INTER1, INTER2, INTER3, INTER4, VIET, REAGAN) \quad (3.4)$$

where INTER(X) = ECONOMY*YEAR(X). Since countercyclical policy calls for an increase in the structural deficit in response to slowdown in real GNP growth (ECONOMY), the expected coefficients of the INTER terms are negative. PBC theory predicts that the coefficients of INTER3 and INTER4 will be of a greater magnitude than those of INTER1 and INTER2.

Equation (3.5) replaces both pairs of third- and fourth-year dummies with ORDYEAR3, ORDYEAR4, INCUM3, INCUM4, INTER3(o), INTER4(o), INTER3(i) and INTER4(i). INTER3(i) and INTER4(i) denote interaction dummies for years in which a semi-popular incumbent is running. INTER3(o) and INTER4(o) denote interaction dummies for all other third and fourth years.

Equation (3.6) uses quarterly interaction dummies and a single constant term in place of DUM1, DUM2,..., DUM16.

Equation (3.7) is similar to (3.6), but makes a distinction for semi-popular incumbents in the quarters 9-15, which I define to be the pre-election quarters.

Because of limited data availability, the FISCAL models begin no earlier than 1955/II. I expect, however, that the only models worth looking at will be those that omit the data from the Eisenhower years. The raw data for 1955-1960 show that the Eisenhower Administration ran its largest budget surpluses in the election years 1956 and 1960, perhaps under the belief that surpluses and low inflation were what the voters preferred. (That pattern may well represent a unique PBC in itself.) The inclusion of the Eisenhower data in the FISCAL models could therefore create serious disturbances in the results.

The monetary policy models have as their dependent variable the percent change (from the previous quarter) in the level of non-borrowed reserves (RESERVES). The first of these equations takes the form

$$RESERVES_t = f(RESERVES_{t-1}, DUM1, DUM2, \ldots, DUM16, ECONOMY, DEBT_{t-1}) \quad (4.1)$$

where debt equals the projected net change in the federal debt -- equivalent to the current federal deficit -- in a given quarter. Since a deficit is expressed here as a positive number and a surplus as a negative number, a monetary policy that accommodated increases in the debt would yield positive coefficient estimates for $DEBT_{t-1}$ in this and other equations.

Monetary equations (4.2) and (4.3) correspond to (1.2) and (1.3), in their respective use of yearly dummies, and semi-popular incumbent dummies for years three and four. Again, the INCUM3 and ORDYEAR3 dummies are used because of uncertainties about the length of the effectiveness lag.

Equation (4.4) is most similar to (3.6), in that it regresses RESERVES on sixteen quarterly interaction variables and a constant term, as well as on $RESERVES_{t-1}$ and $DEBT_{t-1}$.

Equation (4.5) uses yearly interaction terms (INTER1Y, INTER2Y, INTER3Y, INTER4Y); otherwise it is the same as (4.4).

Equation (4.6) uses quarterly interaction terms and replaces $DEBT_{t-1}$ with an additional set of interaction terms of the form DINTER1 = $DUM1*DEBT_{t-1}$, DINTER2 = $DUM2*DEBT_{t-1}$, and so forth. A positive coefficient estimate for DINTER(X) means that in quarter X, the Fed's tendency is to monetize increases in the debt. PBC theory predicts that the coefficients of DINTER will be largest in the pre-election quarters (9-15).

Equation (4.7) retains the sixteen debt interaction variables but replaces the sixteen ECONOMY interaction terms with the single variable ECONOMY.

Equation (4.8) roughly corresponds to (3.7), in that it uses quarterly interaction terms and for quarters 9-15 uses separate interaction dummies for semi-popular incumbents and all other quarters.

Unfortunately, the consistent data on non-borrowed reserves dates back only to 1959. One consequence of this limitation is that observations from all but seven quarters of the Eisenhower years are automatically eliminated. Thus omitting the Eisenhower data will have virtually no impact on the monetary regression results.

Test Results

The GNP and RDI tests. Table 1 displays the results for Equations (1.1) and (2.1). These results provide some, but not much, support for a PBC. The t-statistics of the quarterly dummy coefficients in Equation (1.1a), which covers the full timeframe, are significant at a 5% error level (i.e., at a 95% level of confidence) in only 7 of the 16 quarters and at a 20% level in 11 of the 16 quarters. Thus they indicate that quarterly variations in GNP growth do not have a great deal of explanatory value. In Equation (2.1a), the t-values are significant at a 5% level in 15 of the 16 quarters, probably because of the generally high coefficient estimates; in Equation (2.1b), 12 of the 16 dummy coefficients have t-values that are significant at the 5% level. In (1.1a) and (1.1b), the estimated coefficients of the dummies tend to be somewhat higher in the pre-election quarters (quarters 9-16) than in the post-election quarters (quarters 1-8), although the pattern is not sufficiently clear-cut to provide strong evidence of a PBC. In

TABLE 1

INDEPENDENT VARIABLES	EQUATIONS (1.1a)	(1.1b)	INDEPENDENT VARIABLES (cont'd)	EQUATIONS (2.1a)	(2.1b)
GNP_{t-1}	.318 (3.72)*	.306 (2.85)*	RDI_{t-1}	-.00400 (-.0462)	-.0524 (-.484)
GNP_{t-2}	.148 (1.65)	.122 (1.07)	RDI_{t-2}	.00807 (.0939)	.0503 (.474)
GNP_{t-3}	-.113 (1.27)	-.0277 (-.242)	RDI_{t-3}	.0641 (.753)	.0625 (.577)
GNP_{t-4}	-.202 (-2.39)*	-.0698 (-.646)	RDI_{t-4}	-.181 (-2.14)*	.0297 (.277)
			RDI_{t-5}	-.131 (-1.51)	-.185 (-1.61)
DUM1	4.71 (3.39)*	6.79 (4.31)*		4.30 (2.62)*	4.46 (2.51)*
DUM2	.894 (.655)	1.32 (.978)		5.10 (3.32)*	5.66 (3.28)*
DUM3	2.41 (1.78)	2.78 (1.81)		4.68 (3.02)*	5.65 (3.35)*
DUM4	.637 (.462)	2.01 (1.27)		4.00 (2.62)*	4.74 (2.72)*
DUM5	2.02 (1.49)	1.14 (0.72)		4.24 (2.81)*	2.56 (1.46)
DUM6	3.00 (2.24)*	2.74 (1.83)		3.19 (2.11)*	4.41 (2.54)*
DUM7	3.66 (2.69)*	1.87 (1.27)		4.44 (2.92)*	3.16 (1.84)
DUM8	1.36 (.957)	.161 (.104)		4.17 (2.60)*	2.67 (1.58)
DUM9	2.30 (1.62)	2.04 (1.33)		3.50 (2.24)*	4.17 (2.45)*
DUM10	4.51 (3.16)*	4.12 (2.69)*		7.46 (4.83)*	6.89 (4.05)*
DUM11	4.21 (2.87)*	5.22 (3.32)*		3.09 (1.88)	3.45 (1.88)
DUM12	1.85 (1.27)	2.11 (1.28)		4.68 (2.87)*	4.60 (2.55)*
DUM13	4.72 (3.21)*	5.94 (3.50)*		5.22 (3.15)*	6.39 (3.48)*
DUM14	2.11 (1.49)	1.76 (1.02)		5.33 (3.23)*	4.96 (2.63)*
DUM15	2.02 (1.46)	1.93 (1.13)		4.79 (2.85)*	4.81 (2.55)*
DUM16	3.74 (2.74)*	3.52 (2.11)*		4.97 (3.12)*	3.54 (3.00)*
VIET	.109E-04 (1.09)	.665E-05 (.735)		-.112E-04 (1.06)	.894E-05 (.934)
KOREA	2.56 (2.18)*				
PRICE	-.129 (-.201)	-1.30 (-1.87)		-.611 (-.879)	-1.69 (-2.18)*

t-statistics in parentheses
* - indicates statistical significance at the 5% level

REGRESSION STATISTICS				
Time bounds	1948/II -1986/III	1961/I -1986/III	1949/II -1986/III	1961/I -1986/III
Mean of dependent variable	3.48	3.47	3.51	3.63
DW	1.95	2.09	2.03	2.06

DW - Durbin-Watson statistic

(unless no t+ when sig. autocorrelation (lagged dependent variables)

both of these equations, the highest coefficient estimates among the dummy variables are those of DUM10, DUM11, DUM13, DUM16 and DUM1. (Viewed in the context of PBC theory, the high estimate of DUM1 suggests that politicians may be overshooting their targets.) The lowest coefficient estimates in (1.1a) are for DUM2, DUM4 and DUM8. The lowest coefficient estimates in (1.1b) are for DUM5 and DUM8, but the values of DUM14 and DUM15 (two election-year quarters) are also quite low. The estimated dummy coefficients in the RDI tests (2.1a) and (2.1b) using quarterly dummies display somewhat less variation among each other and provide less evidence of a PBC.

The test results present a clearer pattern when the GNP and RDI data are grouped into yearly dummies, in Equations (1.2) and (2.2). The t-statistics for the individual dummies become consistently significant, and all four specifications -- (1.2a), (1.2b), (2.2a) and (2.2b) -- lend some support to the PBC hypothesis. The estimates for Equation (1.2b), covering real GNP growth in the post-Eisenhower years, indicates that GNP growth plummets almost 2 percentage points from its YEAR1 rate in YEAR2 and rises by 2 percentage points in YEAR3, staying at the YEAR3 level in the election year (YEAR4) and YEAR1. Thus the economy bottoms out in the second year of the term, a "post-election" year. The results for Equation (2.2b) are similar but better: RDI growth drops nearly 2 percentage points in YEAR2, rises by one-and-a-half points in YEAR3 and reaches its peak in YEAR4. Table 2 gives the test results for these models.

Using a t-test to determine whether the coefficients of YEAR2 and YEAR4 differ significantly, we see that their difference is significant at a 10% level in Equation (1.2b) and at a 5% level in (2.2b).

When we replace the YEAR4 dummy with the ORDYEAR4 and INCUM4

TABLE 2

Equations

INDEPENDENT VARIABLES	(1.2a)	(1.2b)	(1.3a)	(1.3b)	(2.2a)	(2.2b)	(2.3a)	(2.3b)
GNP_{t-1}	.310	.265	.283	.248				
	(3.77)*	(2.63)*	(3.44)*	(2.47)*				
GNP_{t-2}	.119	.109	.0885	.0875				
	(1.38)	(1.03)	(1.02)	(.824)				
GNP_{t-3}	-.112	-.0562	-.125	-.0751				
	(-1.29)	(-.526)	(-1.46)	(-.705)				
GNP_{t-4}	-.179	-.0172	-.177	-.0246				
	(-2.21)*	(-.171)	(-2.21)*	(-.246)				
RDI_{t-1}					-.0331	-.0815	-.0416	-.0844
					(-.404)	(-.822)	(-.507)	(-.848)
RDI_{t-2}					.807E-02	.0265	.403E-02	.0274
					(.0994)	(.276)	(.0498)	(.285)
RDI_{t-3}					.0801	.0970	.0687	.0888
					(.991)	(.998)	(.848)	(.904)
RDI_{t-4}					-.194	.0339	-.201	.0275
					(-2.42)*	(.343)	(-2.51)*	(.276)
RDI_{t-5}					-.124	-.227	-.123	-.229
					(-1.50)	(-2.23)*	(-1.50)	(-2.25)*
YEAR1	2.15	3.28	2.34	3.50	4.63	5.35	4.73	5.40
	(2.76)*	(3.42)*	(3.02)*	(3.64)*	(4.77)*	(4.85)*	(4.88)*	(4.87)*
YEAR2	2.46	1.36	2.54	1.51	4.11	3.46	4.20	3.50
	(3.26)*	(1.49)	(3.40)*	(1.65)	(4.43)*	(3.16)*	(4.53)*	(3.19)*
YEAR3	3.22	3.36	3.46	3.50	4.80	4.95	4.91	4.99
	(3.86)*	(3.76)*	(4.17)*	(3.93)*	(5.07)*	(4.93)*	(5.19)*	(4.94)*
YEAR4	3.09	3.34			5.18	5.65		
	(3.73)*	(3.10)*			(5.12)*	(4.86)*		
ORDYEAR4			2.12	2.39			4.60	5.18
			(2.29)*	(1.95)			(4.23)*	(3.84)*
INCUM4			5.24	4.91			6.72	6.25
			(4.10)*	(3.34)*			(4.47)*	(4.26)*
VIET	.109E-04	.657E-05	.157E-04	.105E-04	.111E-04	.955E-05	.140E-04	.109E-04
	(1.08)	(.704)	(1.55)	(1.09)	(1.08)	(1.04)	(1.34)	(1.16)
KOREA	2.75		3.35					
	(2.34)*		(2.81)*					
PRICE	.0405	-.958	.0418	-.914	-.746	-1.64	-.753	-1.61
	(.0634)	(-1.36)	(.0665)	(-1.31)	(-1.12)	(-2.28)*	(-1.13)	(-2.24)*
REGRESSION STATISTICS								
TIME BOUNDS	1948/II-1986/III	1961/I-1986/III	1948/II-1986/III	1961/I-1986/III	1949/III-1986/III	1961/I-1986/III	1949/III-1986/III	1961/I-1986/III
MEAN OF DEPENDENT VARIABLE	3.48	3.47	3.48	3.47	3.51	3.63	3.51	3.63
DW	1.99	2.07	1.97	2.06	2.04	2.05	2.04	2.05

dummies, the GNP and RDI models provide very strong support for the "semi-popular incumbent" version of the PBC hypothesis. Including and excluding the Eisenhower years, the coefficients of INCUM4 are the highest of all the dummy coefficients in the GNP and RDI models. In all four specifications -- (1.3a), (1.3b), (2.3a) and (2.3b) -- the estimated coefficient of INCUM4 is at least a point (usually two points) higher than that of ORDYEAR4, suggesting that the presence of a semi-popular incumbent in any given presidential election makes a big difference in the rate of income growth in the year of the election. (Indeed, the generally low coefficients of ORDYEAR4 indicate that there is no PBC when a semi-popular incumbent is <u>not</u> running.) In three of these specifications, income growth is slowest in the second year of the term, another observation that is consistent with a PBC.

Again using t-tests to determine whether the INCUM4 coefficients differ significantly from those of the other yearly dummies, I find the differences to be fairly substantial in all of the specifications. The coefficient differences are clearest in Equation (1.3a), the GNP model covering 1948/II-1986/III. Table 3 presents the results of these t-tests for all four specifications.

One should note that the "cycles" in GNP and RDI growth that we observe in these results are not really business cycles per se, in which periods of recession follow periods of expansion, because the dummy coefficients are never negative. Rather, these trends in income growth are <u>patterns</u> within ongoing business cycles.

The fiscal policy tests. The results of the FISCAL tests provide weaker support for a PBC than do the GNP and RDI results. As expected, the specifications that omitted all observations from the Eisenhower years performed better from the standpoint of PBC theory

than the models that used all available data back to 1955. (Equations (3.3a), (3.5a) and (3.7a), all of which included semi-popular-incumbent dummies, are the only exceptions to this rule.) The FISCAL tests using yearly dummies perform better than those with quarterly dummies, and the coefficients of the interaction terms provide an additional measure of evidence of a PBC.

Table 3

RESULTS OF T-TESTS FOR COEFFICIENT EQUALITIES

IN EQUATIONS (1.3) AND (2.3)

H_o: $B_j = B_k$, where B_jPV and B^k are two coefficients from the same equation.

The t-statistics are given in the table.

	EQUATIONS			
COEFFICIENT PAIR	(1.3a)	(1.3b)	(2.3a)	(2.3b)
YEAR1, INCUM4	2.26 (5%)	2.01 (5%)	1.39 (20%)	2.20 (5%)
YEAR2, INCUM4	1.03 (40%)	2.38 (5%)	.966 (40%)	1.55 (20%)
YEAR3, INCUM4	1.40 (20%)	1.75 (10%)	1.26 (40%)	1.39 (20%)
ORDYEAR4, INCUM4	.641 (60%)	2.03 (5%)	.912 (40%)	.681 (60%)

The error levels of statistical significance are in parentheses.

Equation (3.1b) gives somewhat mixed results. The highest coefficient estimates are those for DUM8, DUM10, and DUM14, and the only negative coefficient is for DUM1; but the t-values of these quarterly dummies are mostly insignificant at the 5% level. In

addition, although DUM1 has the only negative coefficient, the next-lowest coefficients are those of DUM11 and DUM15, two pre-election quarters. Thus the pattern is an inconsistent one.

The tests using yearly dummies yield significant t-statistics for the dummies, probably due to the larger number of observations (and hence the smaller standard errors) that each dummy variable encompasses. In (3.2b) and (3.3a), the estimated coefficient of ECONOMY is negative and significant at a 5% level, indicating that fiscal policy tends to "lean against the wind." Table 4 gives the results of these two regressions. In Equation (3.2b), the YEAR4 coefficient is highest and the YEAR1 coefficient is lowest, in accordance with a PBC; the difference between the two is significant at a 30% error level. In Equation (3.3a), the INCUM4 coefficient is the highest and the INCUM3 coefficient is the next highest. The INCUM4 and YEAR1 coefficients differ at a 10% error level. The coefficients for ORDYEAR3 and ORDYEAR4 are by far the lowest, providing support for the "semi-popular-incumbent" version of a PBC.

When yearly interaction dummies are added to the model, in Equation (3.4b), the original yearly dummies show less of a PBC-like pattern; but we see that fiscal policy tends to be countercyclical in all years except the post-election YEAR1 and that it reacts most strongly to decelerations in the rate of real GNP growth in the pre-election YEAR3. Table 4 includes the regression results of this equation.

Equations (3.5a) and (3.7a), which include separate interaction variables for semi-popular incumbents, prove very little. The responsiveness of fiscal policy to decelerations in GNP growth appears not to depend on whether or not a semi-popular incumbent is seeking re-election. Equation (3.6b) uses quarterly interaction terms but does

Table 4

INDEPENDENT VARIABLES	EQUATIONS (3.2b)	(3.3a)	(3.4b)
$FISCAL^{t-1}$	.768 (12.7)*	.840 (18.7)*	.739 (11.7)*
YEAR1	.341 (2.14)	.283 (2.14)*	.0576 (.223)
YEAR2	.449 (2.92)*	.379 (3.01)*	.534 (3.01)*
YEAR3	.419 (2.76)*		.582 (3.22)*
YEAR4	.541 (2.88)*		.377 (1.30)*
ORDYEAR3		.149 (.894)	
ORDYEAR4		.0720 (.484)	
INCUM3		.438 (2.24)*	
INCUM4		.691 (2.97)*	
ECONOMY	-.0575 (-2.35)	-.0584 (-2.66)	
INTER1			.0181 (.313)
INTER2			-.0782 (-2.05)*
INTER3			-.120 (-2.45)
INTER4			-.0129 (-.231)
VIET	.220E-05 (1.46)	.320E-05 (2.09)*	.239E-05 (1.56)
REAGAN	.770 (3.15)*	.505 (2.21)*	.824 (3.18)*
t-statistics in parentheses			
REGRESSION STATISTICS			
MEAN OF DEPENDENT VARIABLE	1.19	0.732	1.19
DW	2.25	2.32	2.31

not perform as well as the tests using yearly interaction dummies.

The monetary policy tests. The results of Equations (4.1), (4.2) and (4.3) provide not a shred of evidence of an electorally-related pattern in the growth of non-borrowed reserves. Moreover, the low t-statistics for the quarterly and yearly dummies indicate that these dummies do not even provide meaningful ways of grouping the data. The rest of the monetary models use a constant term, the t-values of which are consistently significant.

Those equations yield positive coefficient estimates for $DEBT^{t-1}$, indicating that the Fed monetizes increases in the debt to some extent, but Equations (4.6) and (4.7) -- which include the quarterly debt-interaction terms -- provide no evidence that the Fed's willingness to monetize the debt varies with the electoral cycle. Again, the t-statistics for these individual variables are mostly insignificant.

The monetary equations with an ECONOMY term yield negative and significant coefficient estimates for this term, suggesting that the Fed responds countercyclically to fluctuations in real GNP growth. And, judging from the results of Equations (4.4) and (4.8), it seems that the Fed's willingness to "lean against the wind" is the one aspect of monetary policy that does indeed vary with the presidential cycle and along the lines of a PBC.

Tables 5 and 6 display the regression results of (4.4) and (4.8). They show monetary policy to be countercyclical in almost every quarter except quarter 16, the first post-election quarter, in which policy is highly procyclical. Moreover, policy is most strongly countercyclical (i.e., the interaction term has the largest negative coefficient) in quarter 15, especially when a semi-popular incumbent is up for re-election. In (4.4a), INTER10, INTER13 and INTER14 have relatively

Table 5

COEFFICIENT ESTIMATES IN EQUATION (4.4a)

INDEPENDENT VARIABLE	COEFFICIENT	INDEPENDENT VARIABLE	COEFFICIENT
C	1.43 (2.50)*	INTER9	-.197 (-.543)
$RESERVES^{t-1}$	-.053 (-.491)	INTER10	-.415 (-1.42)
INTER1	-.132 (-.484)	INTER11	.0491 (.169)
INTER2	-.273 (-.997)	INTER12	-.0726 (-.220)
INTER3	-.0958 (-.322)	INTER13	-.324 (-1.09)
INTER4	.178 (.661)	INTER14	-.267 (-1.15)
INTER5	-.251 (-1.00)	INTER15	-.613 (-2.57)*
INTER6	-.193 (-.701)	INTER16	.561 (2.09)*
INTER7	-.207 (-.722)	$DEBT^{t-1}$	.00912 (1.78)
INTER8	-.246 (-.791)		

t-statistics in parentheses
* - indicates statistical significance at a 5% error level

Mean of dependent variable = 1.22. DW = 2.01.

Table 6

COEFFICIENT ESTIMATES IN EQUATION (4.8a)

INDEPENDENT VARIABLE	COEFFICIENT	INDEPENDENT VARIABLE	COEFFICIENT
C	1.35 (2.25)*	INTER12(o)	.00395 (.00986)
RESERVESt-1	-.0464 (-.409)	INTER13(o)	-.728 (-1.67)
INTER1	-1.43 (-.528)	INTER14(o)	.0933 (.250)
INTER2	-.268 (-1.00)	INTER15(o)	.252 (.651)
INTER3	-.0898 (-.309)	INTER16	.563 (2.15)*
INTER4	.179 (.677)	INTER9(i)	-.0152 (-.0148)
INTER5	-.250 (-1.02)	INTER10(i)	.142 (.237)
INTER6	-.182 (-.676)	INTER11(i)	.179 (.321)
INTER7	-.194 (-.692)	INTER12(i)	-.216 (-.418)
INTER8	-.227 (-.752)	INTER13(i)	-.0370 (-.100)
INTER9(o)	-.202 (-.532)	INTER14(i)	-.474 (-1.75)
INTER10(o)	-.544 (-1.67)	INTER15(i)	-1.05 (-3.79)*
INTER11(o)	.0243 (.0752)	$DEBT^{t-1}$	.0111 (2.06)*

t-statistics in parentheses
* - indicates statistical significance at a 5% error level

Mean of dependent variable = 1.22. DW = 1.91.

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large negative coefficients as well. In (4.8a), the same is true of INTER12(i) and INTER14(i). These test results are in no way spectacular -- indeed, the t-values for most of the interaction dummies are insignificant at even a 20% error level -- but the t-values of INTER15, INTER15(i) and INTER16 are significant at a 5% level and a pattern is apparent.

Conclusion

The regression results for the models I constructed using macro-aggregates (GNP, RDI growth rates) as the dependent variables and the models using policy instruments as the dependent variables are far from symmetrical. Table 2 presents impressive evidence that peaks in GNP and RDI growth are coincident with years in which a semi-popular incumbent president seeks re-election, plus additional (though less striking) evidence of a regular four-year presidential business cycle; but the results of the fiscal and monetary regressions provide only mild support for the hypothesis that the government engenders such patterns.

The fiscal-policy test results are more favorable to PBC theory than are the monetary results. This seems altogether logical, given that fiscal policy is more directly under politicians' control than monetary policy. Still, although the coefficient estimates of the fiscal equations in Table 4 follow the pattern of a PBC, the fourth-year coefficients do not differ from the other coefficients in these equations at the same high levels of statistical significance as the ones in the GNP and RDI models (Equations (1.3) and (2.3)). In addition, the dummy coefficients often do not appear large enough to have a pronounced effect on the macroeconomy.

The monetary regression results indicate that Fed policy is more

strongly countercyclical in pre-election quarters than in post-election quarters, but too many of the quarterly dummy coefficients in these regressions (Equations (4.4a) and (4.8a)) are insignificant at even a 20% error level. In addition, to say that the Fed's policy at any given time is countercyclical means not only that it increases the growth of reserves when the GNP growth slumps, but also that it decreases the growth of reserves when the economy is booming. Hence the countercyclical policy that the Fed employs in pre-election quarters is sometimes a contractionary policy instead of an expansionary one. The absence of evidence of a cycle in the growth rate of reserves in relation to political cycles alone, or in the Fed's willingness to monetize changes in the debt, seems to say more about the connection (or lack thereof) between monetary policy and presidential elections than do the ECONOMY interaction dummies.

If politicians are in fact attempting to create a political business cycle, then they do not go as far in this endeavor as they might. The results of the fiscal and monetary regressions provide some evidence that they try to engineer such cycles; but however irresponsible such attempts may be, the damage they wreak on the economy seems altogether slight, because the policy changes seem too small to have any great impact.

Thus we are left with strong evidence of a presidential business cycle in the trends in national income growth, but notably less evidence of a political cycle in the making of fiscal and monetary policy. This is much the same conclusion that I reached at the end of my review of the previous PBC literature. It could be that the economic upturns in presidential election years are for the most part unrelated

to governmental policy manipulations. The cycle could well be a polar opposite of Akerman's, one in which business and investor confidence rises in anticipation of an upcoming election and falls after the election outcome is settled. Perhaps firms and investors expect the economy to do well in election years and adjust their plans for those years accordingly, and their increased investment has the usual multiplier effect. Whatever explanation one chooses, the "presidential business cycle" seems to arise from more than just attempts by politicians to stimulate the economy at election time.

APPENDIX: DATA SOURCES

The vast majority of the data I used in my empirical tests came from monthly issues of Business Conditions Digest (BCD), a publication of the U.S. Department of Commerce's Bureau of Economic Analysis. The BCD data included the figures I used for real GNP growth rates, RDI levels, the Producer Price Index for Industrial Commodities, the unemployment rate and the inflation rate (GNP deflator). Because of an inconsistency between the pre-1985/III data for GNP and RDI, which is given in terms of 1972 dollars, and the post-1985/III data, which is given in 1982 dollars, I found it necessary to deflate the latter figures by a value of 2.131. A slight discontinuity still exists between the pre- and post-1985/III data, unfortunately, because the latter figures incorporated some other revisions besides the change of base years. I do not expect that the discontinuity is great enough to seriously affect the test results, however.

The estimates of the structural deficit and real potential GNP, as well as the GNP deflator that I used to put the structural deficit into constant-dollar terms, were obtained through the courtesy of the Brookings Institution in Washington, D.C. This data ran from 1955/I to 1985/IV.

The data for non-borrowed reserves, which ran from January 1959 to March 1986, was provided by the Federal Reserve Board in Washington, D.C. This data is adjusted seasonally and also for changes in reserve requirements. As mentioned in the text, I obtained the quarterly figures for non-borrowed reserves by comparing monthly averages from the final months of successive quarters -- i.e., from March, June, September and December. I multiplied the percent differences by 4 in order to put them in annual terms.

The semi-annual Vietnam manpower figures are from Table IV of The Wars in Vietnam, Cambodia and Laos, 1945-1982: A Bibliographic Guide, by Richard D. Burns and Milton Leitenburg (Santa Barbara, California: ABC-Clio Information Services, 1984). They obtained their figures from the U.S. Department of Defense.

The Gallup Poll figures which I used as the criteria for "semi-popular incumbents" came from several compendiums of Gallup surveys: The Gallup Poll: Public Opinion 1935-1971 (Volumes 1-3; New York: Random House, 1972); The Gallup Poll: Public Opinion 1972-1977 (Volumes 1 and 2; Wilmington, Delaware: Scholarly Resources, 1978); The Gallup Poll: Public Opinion, yearly volumes from 1978 through 1984 (Wilmington: Scholarly Resources, 1979-1985); and official Gallup press releases from 1985.

Wherever applicable, data is adjusted for seasonal fluctuations.

FOOTNOTES

[1]Alesina, "Rules, Discretion and Political Business Cycles," Nov. 1986, p. 1.

[2]See especially Fair (1975), Tufte (1978) and Frey & Schneider (1978), all of whose work in this area is cited on pages 21-24 of this paper.

[3]Patrick J. Buchanan, Conservative Votes, Liberal Victories (New York: Quadrangle, 1975), pp. 119-120. Cited in Tufte, p. 53.

[4]Private conversation with Edward Tufte, Oct. 1986.

[5]Actually, a recession did not occur in 1980 in the technical sense of real GNP falling for two straight quarters. What did occur, however, was an extremely severe drop in real GNP in the second quarter of 1980 -- a severe enough drop so that the level of real GNP fell in 1980 relative to 1979. Many observers called it a recession at the time.

[6]Alesina, p. 3.

[7]Samuelson and Nordhaus, Economics, 12th Edition (McGraw Hill, 1985), p. 196.

[8]Alt and Chrystal, Political Economics, p. 125.

[9]Alesina, p. 3.

[10]Kalecki, "Political Aspects of Full Employment," pp. 326, 329-30.

[11]Akerman, "Political Economic Cycles," Kyklos, p. 109.

[12]Anthony Downs, An Economic Theory of Democracy (New York: Harper & Row, 1957), p. 28.

[13]Nordhaus, "The Political Business Cycle," p. 174.

[14]R. Dinkel, "Political Business Cycles in Germany and the United States," from Contemporary Political Economy: Studies on the Interdependence of Politics and Economics, Hibbs and Fassbinder, eds., p. 212.

[15]Nordhaus, p. 180.

[16]Nordhaus, p. 182.

[17]Nordhaus, p. 184.

[18]Nordhaus, pp. 185-6.

[19]Nordhaus, p. 186.

[20]Tufte, p. 22.

[21]Tufte, p. 24.

[22]Tufte, pp. 17, 25.

[23]Tufte, pp. 26-7.

[24]Tufte, pp. 21, 27.

[25]Tufte, p. 57.

[26]Tufte, pp. 29-30.

[27]Tufte, p. 27.

[28]Tufte, p. 51.

[29]Thomas Mayer, et al., Money, Banking and the Economy, 1984, p. 386. See Figure 21.1 on the same page for a diagram explaining the relation among Federal Reserve tools, instruments, targets and goals.

[30]As measured by the Gallup Organization, a president's approval rating is the percentage of survey respondents answering "yes" to the question, "Do you approve of the way _____ is handling his job as President?" The Gallup Organization introduced this particular survey in 1938 and began asking this question on practically a monthly basis in 1951.

[31]Frey and Schneider, "An Empirical Study of Politico-Economic Interaction in the United States," Review of Economics and Statistics, May 1978, p. 179.

[32]Sulock, "The Economic Significance of the Political Business Cycle," October 1985, pp. 10, 21-3.

[33]Sulock, "The Political Business Cycle: Confirmations But Mainly Contradictions of Previous Research," November 1986, p. 10.

[34]Sulock, op cit, p. 18.

[35]Frey, "The Political Business Cycle: Theory and Evidence," from The Economics of Politics, James Buchanan, et al., p. 103.

[36]Schneider and Frey, "An Empirical Study of Politico-Economic Interaction in the United States: A Reply," Review of Economics and Statistics, February 1983, p. 180. See also Tufte and Fair for information to corroborate this claim.

[37]See especially Sulock, "The PBC: Confirmations But Mainly Contradictions ...," p. 17. In his replications of six PBC models over various timeframes, Sulock found that those two models performed the worst.

[38]Allen, "The Federal Reserve and the Electoral Cycle," Journal of

Money, Credit and Banking, February 1986, p. 94.

[39]Sulock, "The Economic Significance of the PBC," p. 21.

[40]Fair, "On Controlling the Economy to Win Elections," p. 11.

[41]Fair, pp. 3-4.

[42]Robert J. Gordon, Macroeconomics, p. 271.

[43]From James Buchanan, et al., The Economics of Politics, p. 114.

[44]James Buchanan, p. 114.

[45]Frey, Modern Political Economy, p. 148.

[46]George P. Shultz and Kenneth W. Dam, Economic Policy Behind the Headlines, p. 40.

[47]Samuelson, Economics, 11th edition, p. 340.

[48]See especially Tufte, pp. 110-112, and Gerald H. Kramer, "Short-Term Fluctuations in U.S. Voting Behavior, 1896-1964," The American Political Science Review, March 1971, pp. 131-143.

[49]Tufte, p. 60.

[50]Tufte, p. 36.

[51]Stein, Herbert, The Fiscal Revolution in America, p. 208.

[52]Mayer notes that "In the period 1960-82, of the twenty-two governors who were appointed, only six -- little more than one quarter -- served for as long as seven years" (p. 138).

[53]Mayer, p. 145.

[54]Maisel, Managing the Dollar (New York: W.W. Norton, 1973), p. 110. Cited in Mayer, p. 141.

[55]Weintraub, "Congressional Supervision of Monetary Policy," Journal of Monetary Economics 4, 1978, p. 349.

[56]Weintraub, pp. 349-51.

[57]Weintraub, p. 350.

[58]Tufte notes "the apparent ambivalence that presidents seem to have felt towards their party's nomination of a successor" (p. 24) in the three postwar elections in which the incumbent was not his party's nominee -- Truman-Stevenson in 1952, Eisenhower-Nixon in 1960 and Johnson-Humphrey in 1968.

[59]Gordon, pp. 411, 520-1.

[60]I believe the contention is dismissible because incumbent presidents who are eligible to run for re-election are almost invariably their party's nominees. The only two exceptions in the postwar era were Truman in 1952 and Johnson in 1968. Truman's third-year approval ratings were well below the semi-popular range; and although Johnson's decision not to seek re-election did not come until the spring of the election year, the escalation of the Vietnam War effort in 1965-68 seems to have been the chief explanatory factor for the budget deficits of that period.

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