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Presidential Elections and Federal Reserve Policy: An Empirical Test*

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I. Introduction

Traditional macro-economic models of Federal Reserve (Fed) behavior typically assume that the Fed enjoys a well defined objective function based on social welfare, and generally predict counter-cyclical monetary policy. The increasing observation of procyclical monetary policy has led many researchers to investigate new models of Fed behavior. Several recent papers imply that procyclical Fed behavior is due to a lack of political accountability. Friedman [7], Toma [23] and Shughart and Tollison [21] all attribute considerable bureaucratic discretion to the Fed and seek to explain monetary policy by examining typical bureaucratic objectives.¹ Other papers, such as Pierce [19; 20], Weintraub [26] and Kane [10; 11] argue that the Fed operates in an arena filled with political constraints that cause sub-optimal monetary policy, but these constraints are not modeled explicitly.

One possible political constraint on Fed behavior is the incumbent president's desire for re-election. In the Political Business Cycle (PBC) literature, presidential re-election opportunities are enhanced by the production of a precise set of inflation and unemployment outcomes leading up to the election. Thus, to the extent that presidents desire cyclical macro-economic outcomes, there will be Executive pressure on the Fed to create or accommodate such outcomes. The effect this pressure will have on Fed policy is ultimately an empirical question, but most models deal with it by assumption. Traditional macro modeling assumes a zero effect, while the PBC models implicitly assume that a favorable election cycle is a primary goal of all economic policymakers.

This paper examines presidential influence on the Federal Reserve by testing for an election cycle in money growth. The major result is the identification of a regular 16 quarter cycle in money growth corresponding with presidential elections. This cyclical effect is found to be stable over time and significant under a wide range of model specifications. Further, when the cyclical component of money growth is used to simulate a simple macro model, it produces a classic political business cycle in inflation and real output growth.

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1. These objectives are usually considered to be power, prestige or amenities and the usual empirical proxies are budget or size of staff. See Niskanen [17].

The outline of the paper is as follows. The next section provides a brief review of the empirical literature on the political business cycle, and electoral influence on monetary policy. This is followed by an explanation of the test methodology and development of the basic empirical result. Later sections extend the result by including several macroeconomic variables in the regression model, testing for stability across political regimes, and conducting a simulation experiment to determine the paths of output and prices consistent with the estimated cyclical effect. The concluding section discusses the implications of the paper both for existing macro-models and future research.

II. Monetary Policy and the Political Business Cycle

As originally developed by Nordhaus [18], the Political Business Cycle involves the political manipulation of unemployment or inflation rates to maximize votes from a myopic electorate.² Given the assumptions that (1) the public strongly discounts the future, basing its voting decision on current economic conditions, and (2) the existence of a non-vertical short run Phillips curve, Nordhaus argues that a vote maximizing president will slow down the economy early in his term, then accelerate growth so that unemployment is falling as the next election approaches. Nordhaus presents some simple evidence showing that U. S. unemployment rates broadly conform to this pattern. In a more formal test, McCallum [15] demonstrates that several election cycle dummy variables were insignificant for determining unemployment once past values of the unemployment rate were taken into account.³ However these papers ignore the fact that the necessary condition for deliberate political manipulation of the economy is a corresponding cycle in the macro-policy instruments affecting unemployment and inflation.

Tufte [24] claims that such cycles do exist in monetary policy, but his empirical evidence consists mainly of showing that changes in the money stock are more likely to be negative in the two years after a presidential election than in the two year period preceding one.^{4,5} Other papers examining the electoral cycle thesis have also used indirect techniques. Luckett and Potts [14] classify monthly Federal Open Market Committee directives as "tight" or "easy", then perform a discriminant analysis to predict what type of directive will be given. They find that there is no "bias in favor of expansionary policy in the two years prior to presidential elections."⁶ Laney and Willett [13] include electoral variables in an annual reaction function explaining the change in M1 from 1960–1976, and do not find them significant.⁷ However, an annual model will not pick up mid-year fluctuations in an election cycle. In sum, the existence of electoral cycle influence on money growth is a widely

2. There is a large literature on the other half of the PBC, namely the effect of economic variables on voting decisions. This literature also contains mixed results. See Kramer [12], Stigler [22], Arcelus and Meltzer [2], Tufte [25], and Fair [6].

3. McCallum's work shows that his dummy variables do not cause unemployment. He does not investigate the effect of elections on economic policy.

4. David Meiselman makes a similar claim in a recent (1-10-84) Wall Street Journal editorial.

5. Tufte does not control for any other determinants of monetary policy, nor does he provide evidence on the size or timing of the electoral effect.

6. Luckett and Potts [14, 545]. Note that Luckett and Potts ignore actual policy and only test to see if publically available announcements are sensitive to the election cycle.

7. Also, the regressions have only 9 degrees of freedom, making hypothesis testing problematic.

Table I. The Electoral Cycle Variables

Variable	Year One				Year Two				Year Three				Year Four			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
<i>EC1</i>	7	6	5	4	3	2	1	0	1	2	3	4	5	6	7	8
<i>EC2</i>	9	6	3	0	1	2	3	4	5	6	7	8	9	10	11	12
<i>EC3</i>	8	6	4	2	0	0	0	0	0	2	4	6	8	8	8	8
<i>EC4</i>	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0
<i>EC5</i>	0	0	0	0	0	0	0	0	0	-1	-1	-1	1	1	1	1
<i>EC6</i>	0	0	0	0	0	0	0	0	0	-1	-1	-1	1	1	2	2

Table II. Significance of Electoral Cycle Variables in Quarterly Regressions of Money Growth Containing Nine Lags of the Dependent Variable, 1961.1-1980.4

Cycle Var.	With Intercept				Without Intercept			
	Coefficient	t-ratio	D-W	SEE	Coefficient	t-ratio	D-W	SEE
<i>EC1</i>	.2256	1.85	2.06	2.381	.3007	2.75	2.07	2.395
<i>EC2</i>	.1867	2.44	2.07	2.341	.2266	3.29	2.09	2.347
<i>EC3</i>	.1706	1.99	2.06	2.372	.2157	2.60	2.08	2.408
<i>EC4</i>	.1911	0.61	2.05	2.438	.4341	0.70	2.06	2.513
<i>EC5</i>	.4689	1.02	2.07	2.421	.4645	0.99	2.09	2.504
<i>EC6</i>	.5656	1.72	2.08	2.390	.5923	1.74	2.10	2.469

discussed proposition that has not been subjected to the type of straightforward empirical testing that is the objective of this paper.

III. Testing for a Political Monetary Cycle

The empirical technique used in this paper is similar to that of McCallum [15]. The first step is to determine the best autoregressive model of money growth. Then several dummy variables designed to represent possible election cycles are added, one at a time, to the basic model and tested for significance.

Using the criterion of minimum standard error of the estimate, an AR9 model of money growth is chosen.⁸ The six election cycle dummy variables are labeled *EC1-EC6* and shown in Table I. Each one represents a possible shape of the electoral monetary cycle. *EC1* is the most straightforward specification, representing a symmetric V-shaped cycle of 8 quarters of monetary deceleration followed by 8 quarters of acceleration to the election. *EC2* shortens and intensifies the period of monetary deceleration, then allows 12 quarters of cyclical growth, while *EC3* is designed to capture deceleration after an election and acceleration before, with a 5 quarter trough in the middle. *EC4-EC6* are included to see if the electoral effect in money growth is felt only as a jump in the growth rate immediately before the election. The performance of these variables when included in an AR9 regression on money growth is shown in Table II.

8. Several of the higher-order AR models are almost identical in terms of fit. The results in the paper are very insensitive to the choice of AR structure.

This experiment will determine whether or not any of the electoral variables Granger-cause money growth, and is directly analogous to the test that McCallum uses with unemployment. Contrary to the findings of Laney and Willett, the results in Table II are generally supportive of the election cycle hypothesis. The variables that imply a 16 quarter cycle perform better than the ones that simply imply effects near the election. In particular, *EC2* is significant both with and without an intercept while *EC1* and *EC3* are almost as strong. This experiment does not pin down the exact size and timing of the cycle, but it does provide statistical evidence of a somewhat V-shaped cycle in money growth over the 16 quarters between presidential elections.

IV. Free Estimation of the Optimal Cyclical Pattern

The three significant variables identified above all have distinct shapes and impose different prior restrictions on the pattern of the election cycle, such as piece-wise linearity, precise turning points, and a duration of 16 quarters. By using a dummy variable/polynomial distributed lag (PDL) technique this type of prior restriction can be avoided and the data can “speak for itself” about the existence, shape, and periodicity of the electoral cycle. The technique works as follows: First construct a dummy variable that equals one in the first quarter following each presidential election and zero in all other quarters. Then in conjunction with the autoregressive parameters, estimate a 16 quarter polynomial distributed lag (PDL) on the dummy variable. This yields a unique lag coefficient for each quarter of the election cycle, but only uses $k+1$ degrees of freedom, where k is the degree of the polynomial specified.

In order to avoid imposing the restriction of a single turning point, the equation is estimated using second, third, and fourth degree polynomials.⁹ All three sets of polynomial lag coefficients have the same general shape; a single turning point in the second year of the cycle followed by increasing monetary acceleration to the election, but the second degree PDL gave the best statistical fit and further results will be based on it. Figure 1 compares the shape of the second degree PDL pattern with *EC2*.

The cycle uncovered by the distributed lag technique does not depend on the use of seasonally adjusted data or a particular autoregressive model. In an unpublished appendix, I use the technique on seasonally unadjusted data alone, on the unadjusted data with an AR8 autoregression, and on the unadjusted data with the AR parameters and three quarterly seasonal dummies. In each case the distributed lag technique yields a similar, significant cycle. The major difference between the adjusted and unadjusted data PDL's is that the trough occurs one quarter sooner in the adjusted data model. The trough to peak size of the cycle does not change much between the two techniques; for the seasonally adjusted model it is 2.34 percentage points, in the last unadjusted model it is 2.17 percentage points. Given that the mean of money growth is 5.37 over the sample, this cyclical effect is substantial.

9. The PDL regressions discussed here are in an appendix that is not included in the journal due to space constraints but is available from the author on request. Using a PDL still imposes “smoothness” on the cyclical effect, but allows the turning point (or points in the higher degree models) and shape to be whatever best fits the data. Thus the imposition of linearity and a precise turning point is avoided. Also this approach can test the assumption that the cycle is 16 quarters. With the third or fourth degree models there could be repeating shorter cycles.

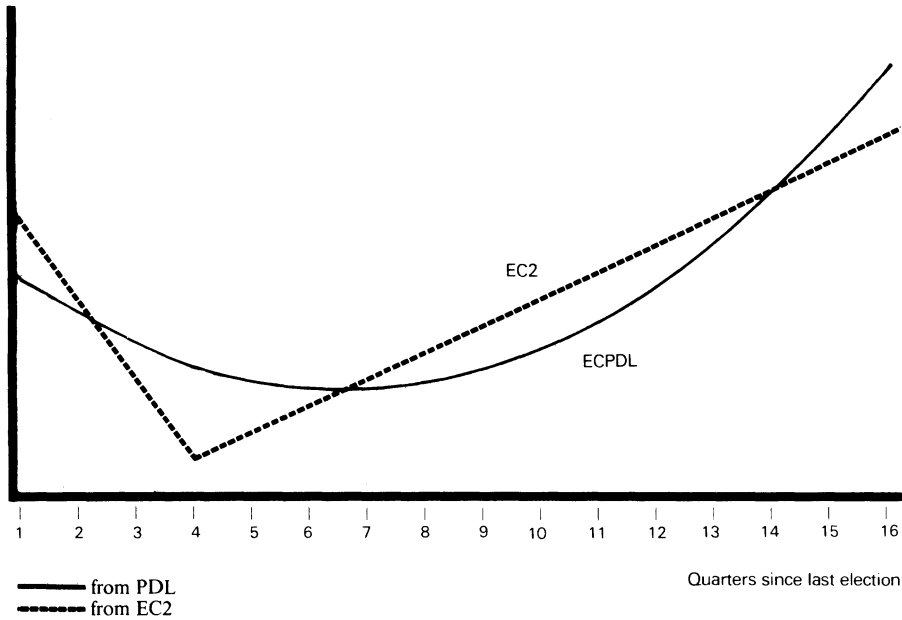


Figure 1. Comparing the PDL-Derived Election Cycle with EC2

To facilitate comparison with the previous regressions and to simplify the rest of the empirical analysis, the second degree PDL lag coefficients from the seasonally adjusted model are converted to a dummy variable by multiplying each lag coefficient by 10 and rounding. That is, rather than re-estimating a new cyclical PDL for each future specification, these lag coefficients are converted into a single independent variable to represent the monetary election cycle in the tests that follow.

The empirical tests reported above amount to one-way Granger causality tests demonstrating that, taking into account the relevant past values of money growth, knowledge about the state of the election cycle improves predictions of money growth. This approach is open to criticism on the grounds that the Fed may respond systematically to other variables, such as the state of the economy, the thrust of fiscal policy, or movements in interest rates which if included in the regression will dominate the election cycle effect. The next section addresses this possibility by including other variables in the basic model.

V. Controlling for Economic Variables

The tests in this section extend the sample to include the first two years of the Reagan administration (1981–82) and examine the robustness of the estimated election cycle effect with respect to specifications including macroeconomic variables often used to explain money growth. The results are presented in Table III. Equation (1) demonstrates that the electoral variable *ECPDL* is not entirely a creation of the original sample period. The size and significance of the coefficient is unchanged by the addition of the new observations.

Equations (2), (3), and (4) of Table III introduce three variables to control for the effect of the business cycle on money growth. They are the lagged percentage GNP gap (*YGAPI*), the lagged difference between full-employment unemployment and actual unemployment

Table III. *ECPDL* and Macroeconomic Variables; Controlling for the Business Cycle, Fiscal Policy, and Interest Rates, 1961-1982

EQ	ΣDM_{-i}	<i>ECPDL</i>	<i>YGAPI</i>	<i>UNGAPI</i>	<i>UNI</i>	<i>FEDEFI</i>	<i>DDBTI</i>	<i>DT20I</i>	<i>DCPRI</i>	\bar{R}^2	D-W
(1)	0.654 (5.66)	0.098 (3.45)	—	—	—	—	—	—	—	.31	1.99
(2)	0.653 (5.71)	0.084 (2.87)	0.139 (1.59)	—	—	—	—	—	—	.32	2.00
(3)	0.637 (5.58)	0.086 (2.98)	—	0.338 (1.83)	—	—	—	—	—	.33	2.00
(4)	0.533 (3.96)	0.067 (2.00)	—	—	0.230 (1.68)	—	—	—	—	.32	1.99
(5)	0.518 (4.35)	0.106 (3.90)	—	—	—	0.068 (2.98)	—	—	—	.37	2.02
(6)	0.519 (4.19)	0.102 (3.72)	—	—	—	—	0.072 (2.53)	—	—	.35	2.00
(7)	0.867 (8.81)	0.066 (2.81)	—	—	—	—	—	-3.828 (6.58)	—	.55	2.09
(8)	0.795 (7.68)	0.068 (2.73)	—	—	—	—	—	—	-1.288 (5.21)	.48	1.98
(9)	0.759 (7.25)	0.073 (3.22)	—	—	—	0.047 (2.49)	—	-3.579 (6.26)	—	.58	2.05

t-statistics in parentheses. Variables are defined in the text and listed in the Data Appendix.

(*UNGAPI*), and lagged unemployment (*UNI*). In each case, *ECPDL* is significant and the business cycle variables are marginally significant at best.

Another possible explanation for the significance of *ECPDL* is that the Fed responds to fiscal policy changes, and fiscal policy is manipulated over the election cycle.¹⁰ Equations (5) and (6) incorporate two variables representing fiscal policy, the lagged change in privately held government debt (*DDBTI*) and the lagged high-employment deficit (*FEDEFI*). These variables are each significant at the 0.05 level, but they do not have any adverse effects on the significance of *ECPDL*. Whatever happens to fiscal policy over the election cycle, *ECPDL* has a separate, significant effect on money growth.

The final set of economic control variables are used in equations (7) and (8) and allow for money growth to be affected by changes in interest rates. The variables are the lagged change in 20 year treasury rates (*DT20I*) and the lagged change in 90 day commercial paper rates (*DCPRI*). Each of these variables is significant at the 0.01 level, with *DT20I* producing a better overall fit in terms of \bar{R}^2 . Neither variable has a negative effect on the significance of *ECPDL*. Equation (9) uses both *FEDEFI* and *DT20I* in addition to *ECPDL*. Here the high employment deficit is significant at the 0.05 level, while *ECPDL* and *DT20I* are significant at 0.01.

Besides variables that may concern the Fed on a regular basis, it is possible that exoge-

10. This is the contention of Laney and Willett [13]. While they find that the deficit and not elections affect annual changes in money, this paper finds both variables to have a significant effect on quarterly money growth over a longer sample (61-82 vs. 60-76).

nous events may precipitate a significant monetary response. Two major shocks over this sample are the OPEC oil cartel and the credit control adventure of President Carter in 1980. I investigate the effect these events have on the significance of the election cycle below. Taking equation (9) as a base, these exogenous shocks are incorporated as two additional regressors; *DRPOI* is the lagged rate of change of the relative price of petroleum, and *CCC* is a dummy variable equaling -1.0 in 1980.II, 1.0 in 1980.III and zero elsewhere. The results, reported below as equation (1), show that the Carter credit controls had a significant impact on money growth while oil price inflation did not. In any event the significance of *ECPDL* is unaffected by these additional variables.

$$\begin{aligned}
 DM = & .767 \sum_{i=1}^9 DM_{-i} + 0.71 ECPDL + .049 FEDEF1 - 1.857 DT20RI \\
 & (7.32) \quad (3.46) \quad (2.90) \quad (2.91) \\
 & + 7.25 CCC - .006 DRPOI \\
 & (4.58) \quad (0.65)
 \end{aligned} \tag{1}$$

No amount of regression analysis can ever prove that the Fed is politically controlled. Indeed, these results cannot be interpreted as a model of Fed decision making. However, the previous sections have uncovered a sizable cycle in money growth corresponding to presidential elections. In addition, while other factors influence money growth (deficits and interest rates), the significance of the cyclical effect does not depend on a particular specification of the regression equation. The next section examines whether the significance of *ECPDL* depends on the sample period.

VI. Testing Cycle Stability Across Presidents and Fed Chairmen

Much of the literature discussing political pressure on the Fed concentrates on the importance of personalities in shaping the nature of Presidential-Fed interaction. Papers like Havrilesky et al. [9], Pierce [20], and Beck [5] emphasize the idiosyncratic nature both of political pressure and Fed accommodation. Given this viewpoint, it is reasonable to ask whether Presidents of different parties or administrations have differing success in influencing the Fed, or whether some Fed chairmen accommodate political pressure while others hold onto Fed independence. To examine this issue, the basic equation is reestimated allowing the coefficient on *ECPDL* to vary across regimes.

First the sample is split by the party affiliation of the incumbent president. *ECPDL* is allowed to take one value for the period 1969–76 and 1981–82; another for 1961–68 and 1977–80.¹¹ Equation (2) of Table IV reports this result and shows that the cyclical effect, while significant in both regimes, does not significantly differ between presidents of different political parties. Second, the sample is split into four presidential administrations: Kennedy/Johnson (1961–1968), Nixon/Ford (1969–1976), Carter (1977–1980), and Reagan (1981–82) and the experiment is repeated and reported in equation (3) of Table IV. Again the election cycle variable is significant in each administration, and the F-test shows that the hypothesis of equal effects across administrations cannot be rejected. Thus, the variable *ECPDL* is significant not only over the full sample but in smaller subsamples, indicating

11. I allow the coefficient to vary by creating a separate electoral variable for each regime that equals *ECPDL* over the relevant period and zero elsewhere.

Table IV. Testing the Stability of the ECPDL Effect across Presidential And Federal Reserve Regimes, 1961-1982.

<i>EQ</i>	ΣDM_{-i}	<i>ECPDL</i>	\bar{R}^2	SEE	D-W			
(1)	0.654 (5.66)	0.978 (3.45)	.31	2.416	1.99			
<i>ECPDL Split By Party of Incumbent President:</i>								
		<u>Democrat</u>	<u>Republican</u>					
(2)	0.678 (5.61)	0.100 (3.49)	0.0828 (2.33)	.30	2.423	1.98		
$F_{(1,77)} = 0.488$								
<i>ECPDL split by Presidential Administration:</i>								
		<u>Kennedy Johnson</u>	<u>Nixon Ford</u>	<u>Carter</u>	<u>Reagan</u>			
(3)	0.578 (3.83)	0.106 (3.57)	0.103 (2.53)	0.145 (2.82)	0.142 (1.97)	.30	2.435	1.98
$F_{(3,75)} = 0.583$								
<i>ECPDL Split by Fed Chairmen:</i>								
		<u>Martin</u>	<u>Burns</u>	<u>Miller</u>	<u>Volcker</u>			
(4)	0.452 (3.52)	0.121 (3.97)	0.150 (3.75)	0.283 (3.29)	0.136 (2.78)	.33	2.377	1.99
$F_{(3,75)} = 1.92$								

t-statistics in parentheses. The reported *F* statistics test the null hypothesis that the cyclical effect is equal in each regime.

that it measures an effect that was prevalent throughout the period and not just in a single instance, (i.e., the 1972 re-election campaign) as has been suggested elsewhere.¹²

Equation (4) repeats the experiment, only here the election cycle coefficient varies across Fed chairmen. In this sample the divisions are: Martin, 1961.I – 1969.IV, Burns, 1970.I – 1977.IV, Miller, 1978.I – 1979.III, and Volcker, 1979.IV – 1982.IV. Again, *ECPDL* is significant in each Fed administration and the hypothesis of equal effects of elections on money growth across Fed chairmen cannot be rejected.

VII. Implications for the Political Business Cycle

The election cycle variable, *ECPDL*, is a significant, stable, but non-exclusive determinant of money growth. Thus, evidence of a *ceteris paribus* cycle in money growth and the lack of

12. See Tufte [24], Pierce [19] or Beck [5]. Another interesting question is whether a lame duck president can or will create incentives for an election cycle during his second term. However, in this sample, every election except 1968 featured an incumbent president running for re-election. Lyndon Johnson did not decide to be a lame duck until 1968, after the primaries had already started.

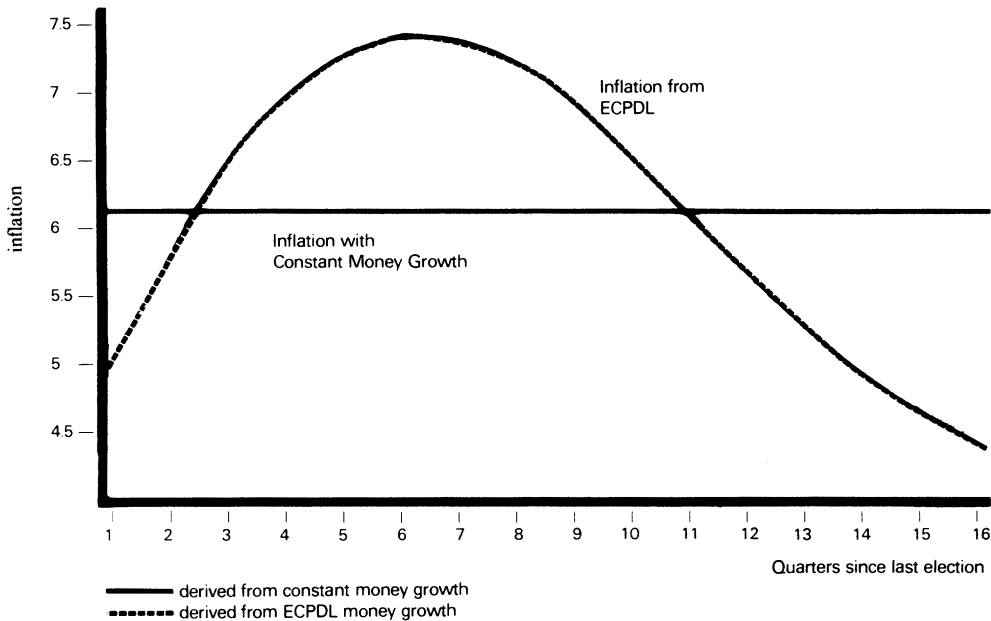


Figure 2. Inflation Over the Election Cycle

an observed unemployment cycle (as McCallum found) are not contradictory phenomena. However, the effect of cyclical money growth, in isolation, on the economy is an interesting question. If the cyclical effect is electorally motivated, it should help to produce macro effects that aid presidential re-election chances.¹³

In this section the political component of money growth, as represented by *ECPDL*, is incorporated into a simple macroeconomic model to investigate its implications for inflation and output over the election cycle. The model used is a version of the St. Louis model developed in Meyer and Varvares [16] and extended in Grier [8].¹⁴ Nominal GNP growth is determined by a modified Andersen-Jordan equation, where the independent variables are current and 4 lagged values of money growth and *FEDEF*. The inflation equation is a 16 quarter distributed lag of money growth with variables added to account for wage and price controls and oil price shocks. Real output growth is simply the difference between nominal growth and inflation.

The experiment here compares constant money growth to growth with a mean value equal to the constant level but conforming to the cyclical path of *ECPDL*. Figures 2 and 3 show the simulation results for inflation and real output growth over the election cycle. The results strongly confirm that, in the context of this simple macro model, the cyclical component of money growth identified above is consistent with a Nordhaus-type PBC in inflation

13. Of course, in a simple rational expectations/market clearing model, no such systematic policy can be effective, so the lack of an unemployment cycle is obvious.

14. Meyer and Varvares simplify the inflation sector of the St. Louis model and correct the unemployment gap equation for autocorrelation and find that the fit of the model improves substantially over the 1955–1980 period. Grier examines the Meyer-Varvares model over the 1961–1980 period and finds that shorter lag lengths in the inflation equation improve the fit and forecasting ability of the model. It is this latter version used for the simulations here. The actual estimated equations are in the extra appendix.

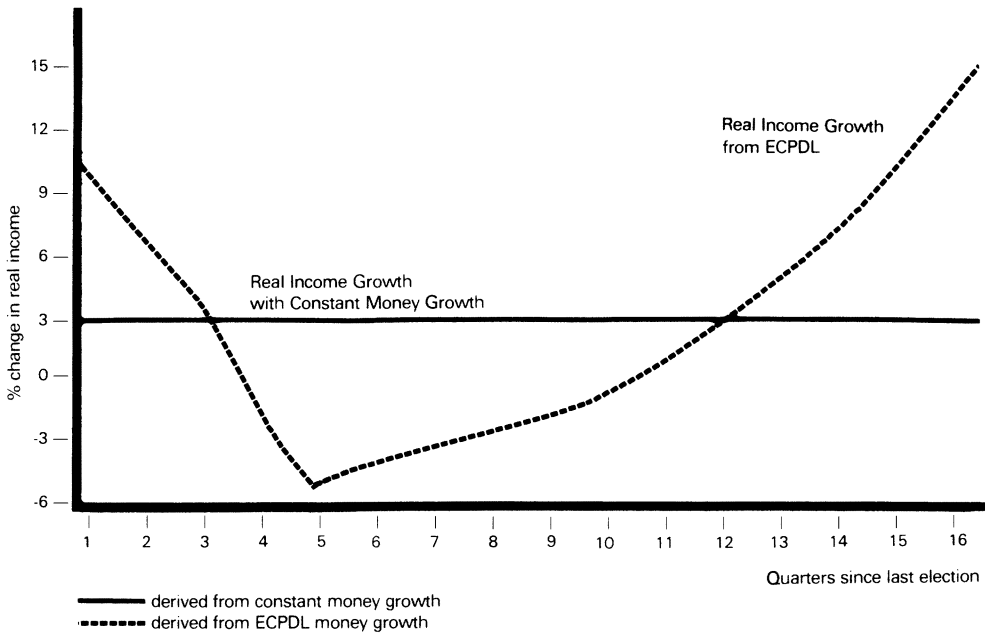


Figure 3. Real Income Growth Over the Election Cycle

and output.¹⁵ In the 6 quarters leading to the election, real output growth steadily accelerates to a maximum, while inflation steadily decelerates to a minimum at the quarter of the election. Immediately after the election, inflation rapidly accelerates for the next five quarters to its cyclical maximum, while output growth begins to decelerate producing a recession starting the fourth quarter after the election and lasting for 6 more quarters before the pre-election recovery and boom begins.

VIII. Summary and Conclusions

This paper tests for presidential political influence on Federal Reserve policy by examining quarterly money growth for an electorally induced cycle. I find a significant pattern of deceleration in the year following an election with accelerating growth the next three years, even when taking into account the autoregressive path of money growth, the effects of the business cycle, fiscal policy and interest rate fluctuations. Further, this cyclical effect is consistently significant over sub-intervals representing different political regimes and produces a very reasonable approximation of a political business cycle in inflation and output growth when isolated and used to simulate a small econometric model. These results imply that existing econometric models of the Fed are misspecified to the extent that they ignore this effect, and are thus likely to yield both inaccurate forecasts and biased hypothesis tests.

More fundamentally, these results call into question the generally accepted notion of

15. It is important to emphasize that these simulations are somewhat stylized, representing outcomes when the electoral impetus is the only component of money growth, and are not meant to track historical data. The energy price differential is set to zero, and *FEDEFI* is set to its mean value over the sample. See Grier [8] for stochastic simulations of the full model with various types of monetary reaction functions.

the operational independence of the Federal Reserve to maximize either social welfare or bureaucratic utility. Understanding and quantifying the role of the political process in shaping the decisions that economists call stabilization policy is vitally important for understanding and forecasting the time path of the U. S. economy.

Data Appendix

- $DM = \Delta \text{Log}(M1) \cdot 400$, annualized growth of the narrow money stock.
 $YGAP = (\text{Potential Real GNP} - \text{Real GNP}) / \text{Real GNP} \cdot 100$
 $UNGAP = \text{Adult Civilian Unemployment Rate} - \text{Clarke's Full Employment Unemployment Rate}$.
 $FEDEF = \text{The High Employment Federal deficit}$
 $DDBT = \Delta \text{ in Federal Debt held by the public}$
 $DT20 = \Delta \text{ in 20 year Treasury bond rates}$
 $DCPR = \Delta \text{ in 90 day commercial paper rates}$

The deficit variables are published by the Federal Reserve Bank of St. Louis. All other data are from the CITIBASE data bank. All data are seasonally adjusted.

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