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Partisan stabilization policy and voter control

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Abstract. Representative democracy is a principal-agent institution. Voter influence over macroeconomic policy should be noticeable during election years when the president (agent) and median voter (principal) disagree about goals. They might disagree due to the prospective benefit of choosing a policymaker who is more conservative than the voter. This conclusion is demonstrated analytically in a new Keynesian model of endogenous stabilization in which the president reacts quickly to lean against the macroeconomic wind. We support the principal-agent characterization of voters and presidents in an endogenous policy model with regression estimates of growth rate targets, allowing for differences between Democrats and Republicans.

1. Introduction

In a democracy voters delegate the implementation of economic policy to presidents, who compete for elections on the basis of their records and campaign promises. The ultimate policymaker may be the voter, but her control over policy is limited. Voters can elect candidates whose promises they favor, but if a president were to break her promises, there is little the electorate can do beyond punishing the incumbent (or her successor) at the next election. This situation has classic principal-agent features, where the voter is the principal, and the president the agent. When the president and the voter disagree over policy goals, macroeconomic outcomes may be a compromise, but the president's preferences often dominate. This paper presents an elaboration of this retrospective view of economic politics and demonstrates that it is well supported by U.S. postwar history.

Stabilization preferences differ according to party affiliation. Generally presidents from the Democratic Party, in compliance with preference of their constituency, attempt to achieve a high level of employment. While Republican presidents are more concerned with the prevention of inflation, and more willing to tolerate recessions in order to achieve this goal; see Hibbs (1977). There may be more to political economy than different goals; the macroeconomy may fluctuate with the election cycle. One hypothesis, the rational partisan model, predicts recessions at the beginning of right-wing govern-

ments and booms in left-wing ones due to uncertainty about election results; see Alesina (1987). The macroeconomic effects of ideological differences can be modeled by assuming that presidents attempt to dampen exogenous shocks, but are constrained by a short-run Phillips curve.

Such partisan models can be contrasted with opportunistic models in which presidents use stabilization tools to increase the likelihood of re-election; see Nordhaus (1975).[1] According to this theory, farsighted opportunists invest in recessions just after their inauguration to reduce inflationary expectations, hoping that the electorate will forget about this during a pre-election boom. The existence of opportunistic manipulation is debatable. A counter argument holds that once presidents have successfully manipulated the economy to win a few elections, people should accurately forecast more opportunism before the next election counterbalancing the incumbent's stimulation. Both these scenarios assume rather sophisticated planning, on the part of either presidents or economic agents. It is also possible that presidents have only short-term objectives and that pre-election outcomes are merely short-term reactions to opinion polls, not part of a sequence of moves determined from a multi-term re-election strategy.

It would be natural to think that democracy chooses candidates whose economic goals are close to those of the median voter, but this need not follow. The forward-looking median voter may actually prefer an economic conservative, due to the president's role as an economic manager. On the other hand, voters in a principal-agent model chose candidates in a retrospective fashion, punishing a poorly performing incumbent by choosing the challenger regardless of her economic ideology. In this case incumbents might attempt to improve their re-election odds by compromising their stabilization policy toward the median preference. Such voter control will be more noticeable in election years, and when the incumbent's ideology differs from that of the median voter. It will less noticeable when the incumbent is either very popular or very unpopular so that there is little to be gained from catering to voters. The inclusion of this retrospective principal-agent effect is found to significantly improve the statistical fit of a regression model of the U.S. economy.

2. The structure of the economy and the objective function

The literature on political macroeconomics invariably invokes an augmented Phillips curve as a structural constraint on policymakers.[2] Conventionally this is an inverse relation between the unexpected inflation and the gap between actual unemployment and its "natural" level. Here we substitute the output gap for the unemployment gap,[3]

$$\pi_t = \pi^e_{t|t-1} + \psi y_t + \varepsilon_t, \tag{1}$$

where the output gap y_t is the log deviation of real output Y_t from its "natural" level Y^*_t, that is, $y_t = \ln(Y_t) - \ln(Y^*_t)$. ε_t defines a random inflation shock with a zero mean and a constant variance. Expected inflation is written as $\pi^e_{t|t-1}$ to indicate a forecast based on information available in the previous period. Since expectations should be fulfilled in the long run, this relation rules out any long-run deviation from $y = 0$. However, as long as economic agents do not fully anticipate the effects of fiscal, monetary and other policies, governments are able to temporarily increase output at the cost of more rapid inflation.

Another essential element of these models is an assumption about political objectives. Many theorists specify the government's goals as a quadratic function of growth and inflation,

$$U^i_t = -\frac{1}{2}\left(\left(g_t - \hat{g}^i\right)^2 + \pi_t^2\right), \tag{2}$$

where g_t is defined as the growth rate of real output $g_t = \ln(Y_t) - \ln(Y_{t-1})$. Differing targets for real growth account for ideological differences, with $\hat{g}^r$ for Republicans and $\hat{g}^d$ for Democrats. Since Democratic presidents traditionally prefer higher growth than Republicans, thus we expect that $\hat{g}^r < \hat{g}^d$.[4] Sometimes the objective function is generalized so that there are differences within parties. Sometimes its circular indifference curves are made elliptical by adding a parameter to reflect the relative weight of growth versus inflation goals. Sometimes it includes a nonzero inflation target. An alternative specification asserts that goals are specified in terms of output levels, rather than growth rates. Equation (2) assumes that only current conditions matter, but it might also include the discounted value of future outcomes. The government might plan for its current term of office only, or it might plan to be in office for several terms, discounting the future according to the probability of holding office.[5] Alternatively, it might weigh pre-election years more heavily. The 1/2 is included for algebraic convenience.[6] It is possible that both presidents and voters target growth rates in excess of the natural growth rate $g^*_t = \ln(Y^*_t) - \ln(Y^*_{t-1})$, even when this is logically unsustainable. One rationale arises from the existence of distortions caused by taxes in the labor market. The income tax, for example, drives a wedge between the cost of labor to employers and the rewards to employees. This can result in too few workers employed as compared with the no-tax equilibrium. A president might attempt to compensate for such underemployment, at least temporarily, by targeting a more rapid growth rate. Or, it may simply be that presidents prefer high growth for ideological reasons. Presidential targets may reflect

a weighted average of citizen preferences, with heavier weights assigned to the party's core constituents. Whatever the president's ideology, she certainly notices that slower economic growth increases claims on her social insurance budget. Thus, economic liberalism in this sense may be inherent in the presidency. Section 7 reports growth target estimates for Democrats, Republicans and voters.

3. An endogenous stabilization democracy

The government has limited options in a new Keynesian model of activist stabilization. It is assumed that the president can exploit information and implementation advantages to lean against the macroeconomic wind, although her goal ($g = \hat{g}^i$ and $\pi = 0$) may be unattainable.[7] Rational agents come to understand that an ideology of $\hat{g}^i > g_t^*$ implies inflation; this expectation is a self-fulfilling prophecy. The stylized fact of inflation is consistent with the hypothesis that governments have unrealistic growth targets, and that agents forecast stabilization policy.

The long-run equilibrium is disturbed by exogenous shocks, and perhaps also by uncertainty about which party will rule in the next period. Dividing the term of office into two halves with an election at the end of the second half, the hypothesized timing of events is:

1st	president observes the current inflation shock and sets the inflation rate,
2nd	agents forecast inflation for the next period and sign contracts,
3rd	voters elect the next president (if in the second half).

The government uses up-to-date information to guide policy, observing the shock and setting inflation accordingly. It has an information advantage over agents whose forecasts date from the previous period.

To derive the president's policy, we substitute the definition of the growth rate $g_t \equiv y_t - y_{t-1} + g_t^*$ into the Phillips curve (1),

$$\pi_t = \pi^e_{t|t-1} + \psi(g_t + y_{t-1} - g_t^*) + \varepsilon_t,$$

and use this to substitute for g_t in the objective function (2),

$$U_t^i = -\frac{1}{2}\left(\left(\frac{\pi_t - \pi^e_{t|t-1} - \varepsilon_t}{\psi} - (y_{t-1} - g_t^* + \hat{g}^i)\right)^2 + \pi_t^2\right).$$

Maximizing with respect to π_t, the government's policy rule is

$$\pi_t^i(\pi_{t|t-1}^e) = \frac{\psi(\hat{g}^i - g_t^*) + \pi_{t|t-1}^e + \psi y_{t-1} + \varepsilon_t}{1 + \psi^2}. \tag{3}$$

Assuming that the president can implement her preference, the growth rate is

$$g_t^i(\pi_{t|t-1}^e) = g_t^* + \frac{(\hat{g}^i - g_t^*) - \psi(\pi_{t|t-1}^e + \psi y_{t-1} + \varepsilon_t)}{1 + \psi^2}. \tag{4}$$

Among other things, this implies that inflation and growth may either rise or fall over a government's term, depending on expectations, on conditions inherited from the past, and on policy targets.

A forward-looking agent uses available information to forecast inflation. Prior to the second half of the presidential term, the typical agent knows which party will be in power and what its growth target will be. She also knows the slope of the Phillips curve, the long-run trend in growth and current economic conditions. However, she cannot predict the next inflation shock ε_t. Her information set is $I^a = \{\hat{g}^i, g_t^*, \psi, y_{t-1}\}$. To obtain the rational expectation of π given I^a, we take the conditional expectation of the inflation equation (3) and solve:

$$E(\pi_t|I^a) = \pi_{t|t-1}^e = \frac{\hat{g}^i - g_t^* + y_{t-1}}{\psi}. \tag{5}$$

Before the first half of the term (and before the election) the situation is less certain. Then, a sophisticated agent takes into account her opinion about the outcome of the upcoming election. Now the agent's information set is $I^a = \{\hat{g}^d, \hat{g}^r, \rho_{t|t-1}^d, g_t^*, \psi, y_{t-1}\}$, where $\rho_{t|t-1}^d$ is her forecast of the probability that the Democrat will win the election (her probability for a Republican victory is $\rho_{t|t-1}^r = 1 - \rho_{t|t-1}^d$). Invoking rational expectations under these conditions, expected inflation in the first half equals the probability-weighted average of partisan preferences, $\pi_{t|t-1}^e = \rho_{t|t-1}^d \pi_t^d(\pi_{t|t-1}^e) + \rho_{t|t-1}^r \pi_t^r(\pi_{t|t-1}^e)$. Substituting (3) into this expression, we obtain

$$\pi_{t|t-1}^e = \frac{\rho_{t|t-1}^d \hat{g}^d + \rho_{t|t-1}^r \hat{g}^r - g_t^* + y_{t-1}}{\psi}. \tag{6}$$

In the absence of shocks and elections, the "time consistent" equilibrium inflation rate should occur where inflation is just high enough so that the president is not tempted to spring a policy surprise. It is the natural output, natural growth and an ideologically determined rate of inflation,

$$y = 0, g = g^* \text{ and } \pi = \frac{\hat{g}^i - g^*}{\psi}. \tag{7}$$

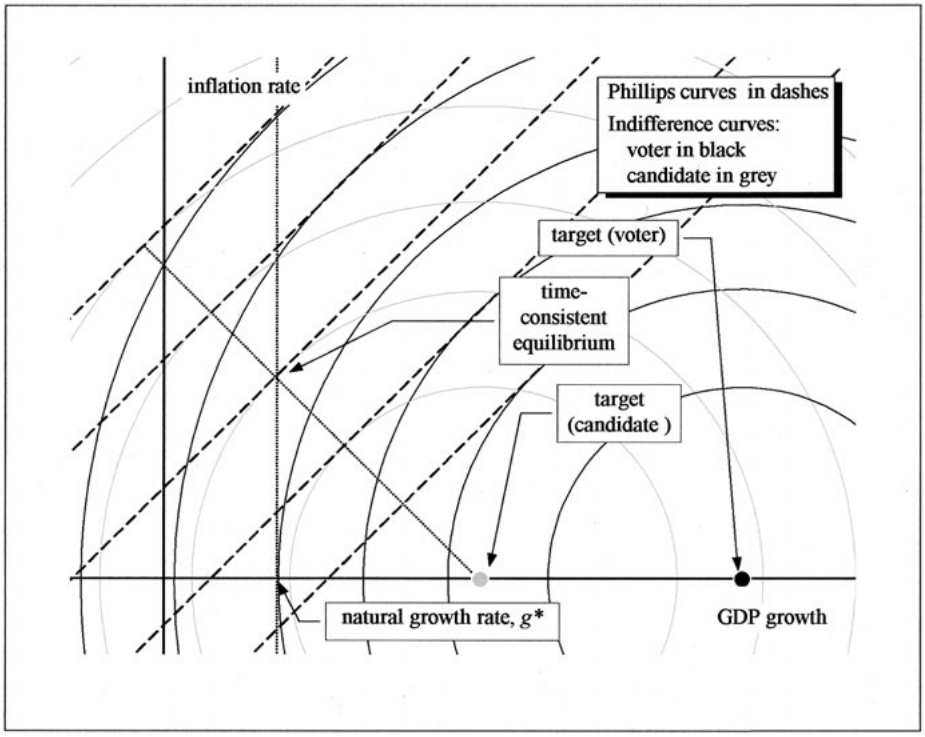

Figure 1. Prospective voter's view of a candidate's stabilization platform

4. The preferences of a forward-looking voter

Before a presidential election it would be natural for the median voter to compare the candidates' platform statements about macroeconomic policy. The victorious candidate should maximize the median voter's expected utility. The forward-looking voter's evaluation of a presidential candidate is illustrated in Figure 1. Both the candidate and the voter have quadratic utility functions, but they may have different ideological parameters. This drawing assumes that the voter is more liberal than the candidate, and that both have targets exceeding the natural rate, $g^* < \hat{g}^c < \hat{g}^v$.

The prospective voter knows that random shocks will occur, and that she will not observe them until after forecasting inflation. She does know the variance of these shocks, and that the president will lean against them. In evaluating candidates, the voter knows that inflation will be determined by the president's policy rule (3) at a tangency with the prevailing Phillips curve, drawn in growth-inflation space. Given her knowledge of candidate's ideology, her macroeconomic forecast is the time-consistent equilibrium. In short, we assume that the voter's information set is $I^v = \{\hat{g}^c, g^*, \psi, \sigma^2\}$.[8] Substitut-

ing (3) and (4) into U_v, and taking expectations conditional on I^v yields her expected utility,[9]

$$E(U^v|I^v = -\frac{1}{2}\left((\hat{g}^v - g^*)^2 + \left(\frac{\hat{g}^c - g^*}{\psi}\right)^2 + \frac{\sigma^2}{(1+\psi)^2}\right).$$

A sophisticated voter should refer to this formula in evaluating candidates.[10]

Treating the candidate's ideology as variable, the voter's expected utility is maximized when $\hat{g}^c = g^*$. This condition is unambiguous; it does not depend on $\hat{g}^v$. Even when the voter has a target well above the natural rate, she is still better off with a president who targets g^*. The intuition is that since voters know that presidents of all ideologies will eventually achieve natural growth, they thus concentrate on inflation performance. In this sense forward-looking liberals should prefer a more conservative president, one who will stabilize prices and spare them from their urge for unsustainable growth, who can achieve ($g = g^*, \pi = 0$) in the absence of shocks or elections.

Since 1948 U.S. voters have elected eight Republicans to the presidency versus five Democrats. Nevertheless, it is doubtful that this approach can explain election results. Political scientists have been hard-pressed to find evidence favoring the forward-looking model of voting.[11]

5. Backward-looking voters and the re-election constraint

> The impact of voters on economic policymaking should be viewed less in terms of what voters demand than in terms of what they will tolerate and reward. Voters are not the initiators of public policy; they are more like an audience whose approval is necessary for a show to continue. The question is not what kind of show they demand, but whether or not the shows that are produced will receive good reviews and continued support (Keech 1995: 140).

We believe that voters are more likely to reveal retrospective evaluations of incumbents, than judgments about the future. It is the threat of electoral veto that compels incumbent presidents to depart from their preferred policy. We develop a backward-looking model of this kind of voter control following Ferejohn's (1986) principal-agent model.

We assume that election outcomes are determined by a trigger rule:

$$\begin{array}{ll} \text{if } U^v \geq \kappa, & \text{re-elect incumbent,} \\ \text{if } U^v < \kappa, & \text{elect challenger.} \end{array}$$

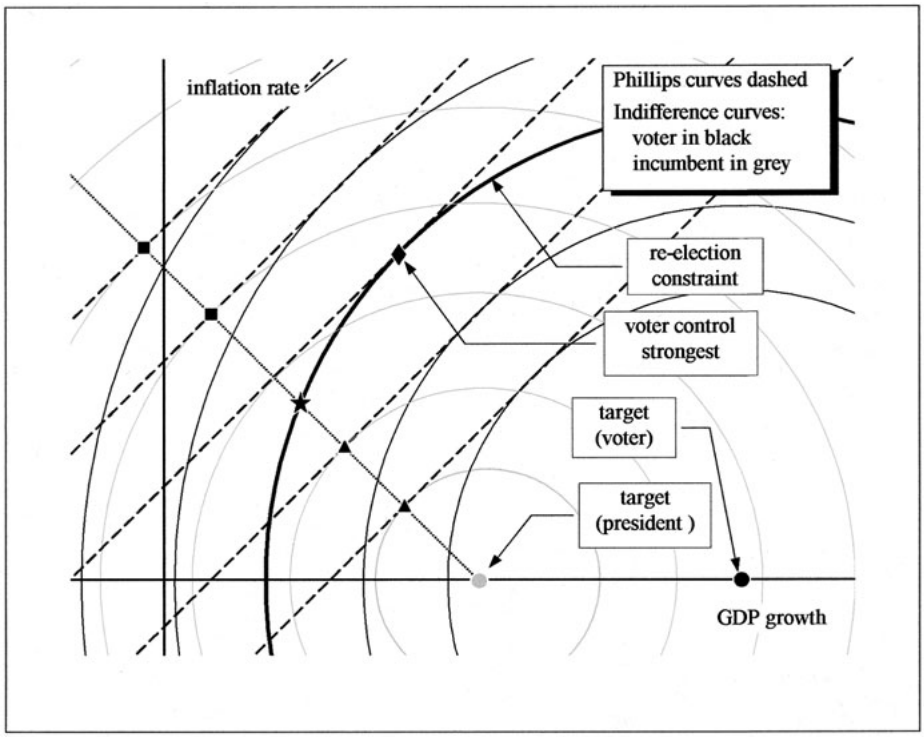

Figure 2. Voter control is effective before toss-up elections, not landslides

Letting voter utility take the quadratic form again, the re-election constraint implied by this rule is

$$\kappa = -\frac{1}{2}\left(\left(g_t - \hat{g}^v\right)^2 + \pi_t^2\right) \tag{8}$$

This curve is shown in bold in Figure 2 for the same case as in Figure 1. Whenever the incumbent's pre-election performance falls outside of this contour, she is defeated. When this constraint is binding, governments are encouraged to deviate from their preferred policy to insure re-election. They would not want to be inside the constraint, unless at a tangency point. Although the power of this constraint should be more apparent in pre-election years, presidents might be influenced in non-election years as well.

We can think of the incumbent president's stabilization policy as an optimization problem with two constraints, the Phillips curve and the bold re-election contour.[12] It may be that re-election is out of the question because the current Phillips curve does not intersect the re-election contour. These lame-duck presidents follow their own preferences according to (3), shown as squares. Or, it may be that a very favorable shock puts the president

so close to her target that she has a tangency option inside the re-election constraint.[13] Then, with re-election assured, the president again follows her ideological preferences, shown as triangles. A principal-agent effect is predicted only for incumbents whose re-election is uncertain. When re-election is still possible but the president's preferred rule would put her outside the re-election constraint, the solution of (8) can be written as

$$\begin{aligned} \pi_t &= \frac{\psi(\hat{g}^v - g^*) + \pi^e_{t|t-1} + \psi y_{t-1} + \varepsilon_t}{1+\psi^2} \\ &\pm \frac{\sqrt{-\psi^2\left(2\kappa(1+\psi^2) + (\psi(\hat{g}^v - g^*) + \pi^e_{t|t-1} + \psi y_{t-1} + \varepsilon_t)^2\right)}}{1+\psi^2} \end{aligned} \tag{9}$$

This solution is similar in form to the president's (3), except for the square root term and the different target. The effect of voter control is to pull the macroeconomic outcome toward that preferred by the median voter. These effects should be most visible when the median voter does not share the government's stabilization objective, perhaps because liberal voters chose a conservative at the last election. The square root term in (9) defines the compromise between presidential and voter preferences. Voter control dominates completely when this term is zero, the case where the Phillips curve is tangent to the re-election contour, shown as a diamond. Voter influence lessens until the president's preferred policy is unconstrained at the point shown as a star. Thus, the principal-agent generalization of partisan business cycle model is (9) if the re-election constraint is binding, and (3) otherwise.

There are many ways that Figure 2 can be redrawn, of course. We assumed that the median voter is more liberal than the president, but maybe the voter and the president are in agreement about stabilization, $\hat{g}^i = \hat{g}^v$. Then voter control disappears then because the re-election constraint is never binding. Or, it could also happen that the voter is more conservative $\hat{g}^i = \hat{g}^v$, and then voter control shifts outcomes in the other direction from the president's preferences (toward the southwest in Figure 2).

6. Econometric specification

Economic outcomes should always fall between the tangency point preferred by the president and that preferred by the voter; and both solutions follow the functional form of (3). These analytical results suggest a regression model, where the target is a weighted average of the president's target (different for Republicans and Democrats) and the voter's,

$$\pi_t = \frac{\psi((1-w)(d_t, \hat{g}^d + (1-d_t)\hat{g}^r) + w\hat{g}^v - g_t^*) + \pi^e_{t|t-1} + \psi y_{t-1} + \varepsilon_t}{1+\psi^2} + e_{1t}, \tag{10}$$

$$g_t = g_t^* + \frac{((1-w)(d_t, \hat{g}^d + (1-d_t)\hat{g}^r) + w\hat{g}^v - g_t^*) - \psi(\pi^e_{t|t-1} + \psi y_{t-1} + \varepsilon_t)}{1+\psi^2} + e_{2t}.$$

These equations look like (3) and (4) except that target parameters are replaced by the term $(1 - w)(d_t\hat{g}^d + (1 - d_t)\hat{g}^r) + w\hat{g}^v$; error terms e_t are also added. d_t is a partisan indicator variable: one when a Democrat holds power, zero for Republicans. To test whether voter control is stronger when an election is imminent, and when the outcome is likely to be close, our weighting function has three versions. Version (a) is the base case that neglects voter influence, but (b) and (c) depend on incumbent popularity and election timing,

$$w = \begin{cases} 0 & \text{version (a)}, \\ e^{-\frac{(\rho_t-\mu)^2}{\sigma^2}} & \text{version (b)}, \\ h_t e^{-\frac{(\rho_t-\mu)^2}{\sigma^2}} & \text{version (c)}, \end{cases}$$

where ρ_t is the president's approval rating. We specify (b) and (c) by a "normal" curve centered at the approval rating μ, with the standard deviation σ, both parameters are to be estimated. This bell-shape only approximates the derivation in Section 5, but surely the trigger rule model oversimplifies voter influence on stabilization. The re-election constraint probably impinges on incumbent behavior more gradually than implied in Figure 2. Version (b) includes our main theoretical result (disregard for voter preferences when popularity is either high or low), while permitting functional flexibility. Version (c) modifies the weight so that this voter influence is felt only during pre-election periods. h_t is one in the second half of presidential terms, zero otherwise.

We estimate two models of inflationary expectations, rational and adaptive. We obtain a rational partisan model by substituting for $\pi^e_{t|t-1}$ in (10) (using (6) during the first half and (5) during the second half).[14] Alternatively, substituting $\pi^e_{t|t-1} = \pi_{t-1}$ into (10), we obtain an adaptive partisan model. This expectations model assumes that agents are quick learners, but forgetful. Many view the adaptive model with suspicion because such forecasts can be irrational. Nevertheless, the adaptive model may approximate behavior well.[15]

Given our two-period modeling framework, we define an observational period to be two years long, two observations in each presidential term.

The timing assumptions of Section 3 may be approximately true. U.S. elections do occur just before end of the second half. While our assumption that agents sign contracts two years in advance is not literally true, we interpret it as an approximation of a variety of contractual rigidities. Whether presidents observe shocks accurately and adjust the inflation rate quickly during each observational period is unknown; it is the maintained hypothesis of our statistical test.

All variables are measured as two-year rates or averages. We measure the president's approval rating ρ_t as that surveyed in the Gallup poll; these are monthly data averaged over two year periods. In our rational expectations specification, we use this rating as a measure of the probability that the incumbent will win the upcoming election. Inflation is the percentage change in the GDP deflator (annualized). Growth is the percentage growth in real GDP. We measure the GDP gap y_t using Gordon's (1996) estimate of the natural real output Y_t^*.[16] Gordon's estimates are also used to measure natural growth g_t^*. We measure exogenous inflation shocks as the difference between the inflation rates of the CPI and of the CPI less food and energy, denoted $\Delta\pi_t$. Since this may be an imperfect indicator of inflation shocks, we include a scale factor so that

$$\varepsilon_t = \beta\Delta\pi_t;$$

we expect estimates of β to be close to unity.

7. Estimation results

In addition to our endogenous variables (π_t and g_t), our models include seven variables that we take to be exogenous, or at least predetermined: π_{t-1}, y_{t-1}, g_t^*, $\Delta\pi_t$, h_t, d_t, ρ_t. Regression model (10) is a reduced form for consistent estimation, even though we use only 23 two-year observations of the U.S. economy from 1948–49 through 1994–95.[17] Conventional nonlinear estimation methods are used to obtain the results presented in Table 1 for four alternatives. Model (i) is a rational partisan model without any voter control effects. Its statistical fit is poor and its parameter estimates are implausible. None of the parameters are statistically significant; the presidential target estimates are too high, so is the slope of the Phillips curve. Model (ii), which substitutes the adaptive expectations assumption, is a considerable improvement. It shows the predicted result that Democrats have a higher growth target than do Republicans; both are higher than the natural rate average of 3.2% during the this period. These results imply that the adaptive expectations model is more accurate than the rational model, at least in this application.

Table 1. Partisan business cycle estimates with, and without, voter control (*t*-ratios in parentheses)

	(i) rational partisan model	(ii) adaptive partisan model	(iii) approval rating model	(iv) pre-election influence model
Voter control weight	(a)	(a)	(b)	(c)
Expectations model	rational	adaptive	adaptive	adaptive
Phillips curve slope (ψ)	12.636	0.302	0.410	0.309
	(0.276)	(1.846)	(2.126)	(2.576)
Democrat goal ($\hat{g}^d$)	30.467	5.838	7.282	5.842
	(0.311)	(7.255)	(6.758)	(9.916)
Republican goal ($\hat{g}^r$)	32.322	3.486	3.227	2.466
	(0.284)	(4.483)	(3.795)	(3.707)
Voter goal ($\hat{g}^v$)			5.165	6.458
			(4.017)	(6.574)
Centering parameter (μ)			0.391	0.488
			(4.338)	(35.024)
Width parameter (σ)			0.152	0.065
			(1.606)	(2.726)
Shock scaling parameter (β)	13.539	1.591	1.589	1.700
	(0.272)	(3.230)	(3.054)	(3.331)
R^2 (inflation)	0.022	0.742	0.748	0.723
R^2 (growth)	0.298	0.314	0.349	0.687
System log-likelihood	–105.944	–84.169	–82.521	–76.326

Introducing the influence of presidential popularity in model (iii) using weighting function (b) yields plausible results, but with little improvement in the goodness of statistical fit. However, limiting voter control to pre-election periods according to weight (c) results in a much better R^2 for the growth equation in model (iv), and perhaps more important, a corresponding increase in the system log-likelihood statistic. This pre-election influence model is our preferred specification. Its estimated popularity weighting function looks quite plausible with a sharp peak at 49% approval (Figure 3). Observed approval rates averaged 54% over the sample period with a standard deviation of 11%. It shows that voter influence is limited to the central popularity range.

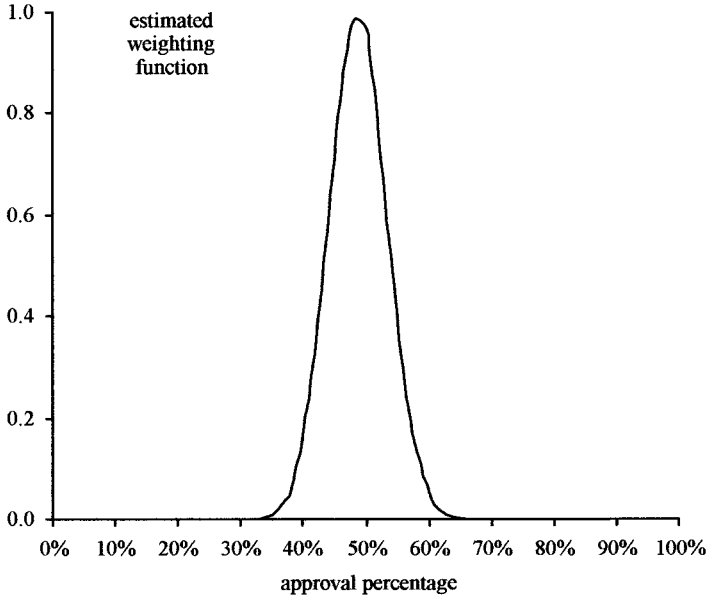

Figure 3. Estimated voter control weight in model (iv)

At 40% popularity re-election seems so hopeless that the incumbent ignores the voters, and likewise at 60% the president's popularity is unassailable.

According to (7), model (iv) implies an equilibrium inflation rate of –2.3% under a Republican regime, it's 8.6% under a Democrat, and would be 10.6% if the voters could have their way.[18] In all cases long-run equilibria should occur at the natural rate of real growth, shown in Figure 4 as a vertical line. Also plotted are the estimated indifference curves of model (iv) (grey for Republicans, black for the median voter, Democrats omitted for convenience) and estimated Phillips curves (dashed). The median voter's macroeconomic preference is considerably more liberal than that of Republican presidents, and even more than that revealed by Democrats.

Figure 5 plots average growth and inflation rate by party according to the year of the presidential terms. Because the Democrats have a growth target close to that of the median voter, their average trajectory proceeds in a north-westerly direction toward their long-run equilibrium without any observable pre-election influence. It is clear that Democratic outcomes have averaged far less than their equilibrium at 9% inflation. Furthermore, convergence has been slow, certainly much slower than predicted by the forward-looking model. Because Republican preferences are much more conservative, their terms often begin with recessions, but they shift dramatically toward higher growth as the next election approaches. Without the principal-agent constraint

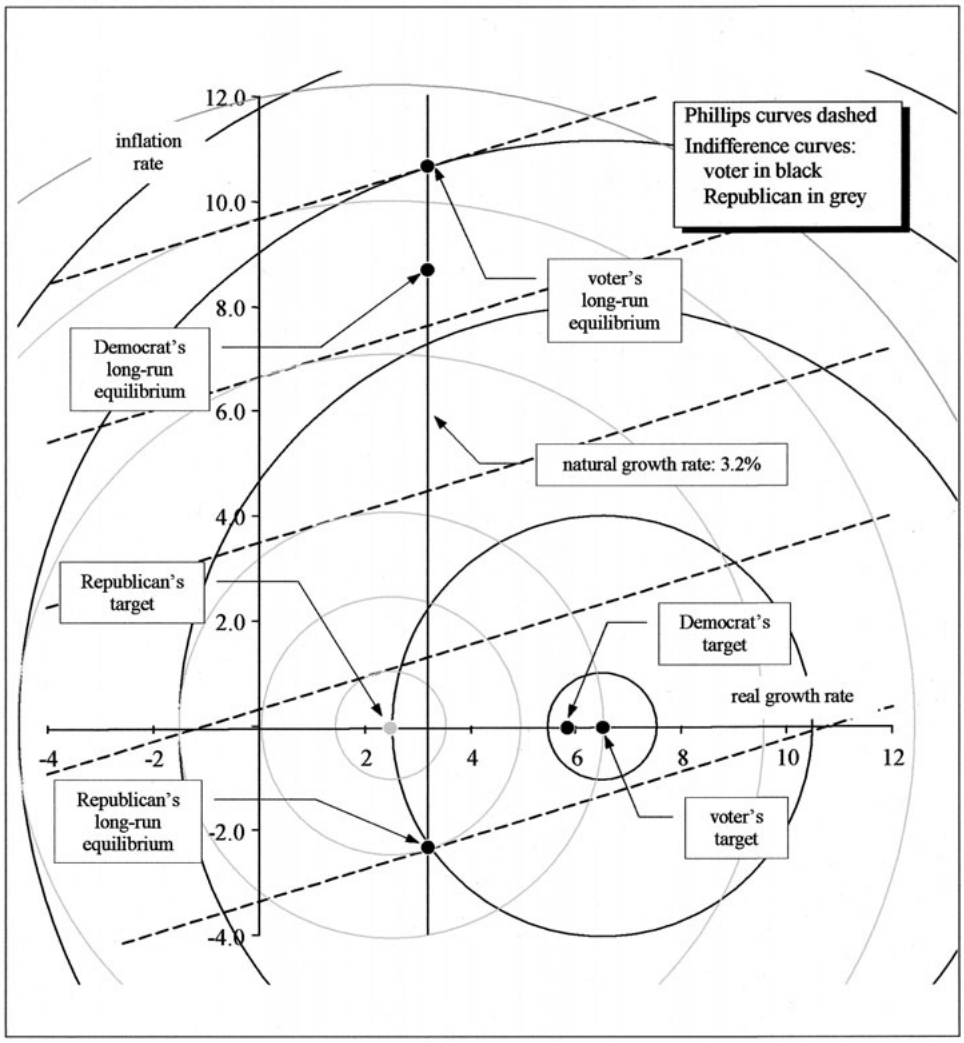

Figure 4. Estimated targets and long-run equilibria according to model (iv)

our model predicts that the typical Republican trajectory would be in a south-easterly direction toward its equilibrium. There might even be a tendency for deflation under Republicans in the long run, a tendency that has gone unobserved during Republican presidencies. Judging by the average trajectories plotted here the long run takes a rather long time. These patterns reinforce our interpretation of the regression results.

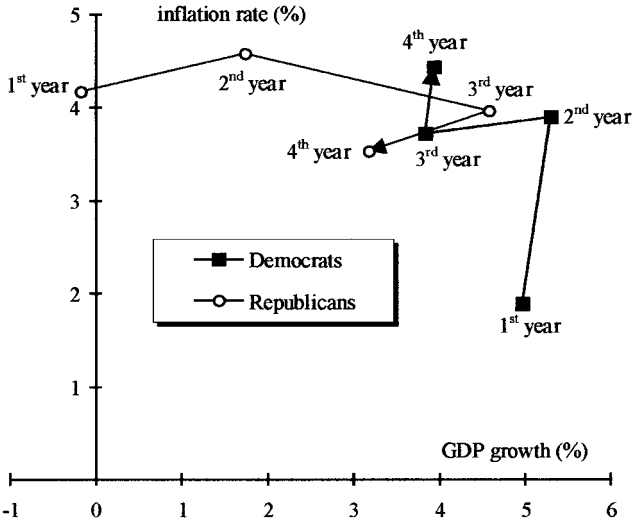

Figure 5. Postwar partisan trajectories, averaged by the years of the presidential term

8. Conclusion

Among the formal explanations of the interaction between politics and economics, the rational partisan model is appealing because its inclusion of forward-looking rational agents coheres with accepted economic doctrine. However, an examination of the historical record reveals that the rational partisan model is inconsistent with observation in the sense that enforcing this model's restrictions results in unbelievable coefficient estimates for the postwar U.S. The rational expectations hypothesis is not very successful, at least as it has been applied to political macroeconomics. Replacing of the rational assumption with a backward-looking adaptive one is a natural specification change, and one that results in more plausible parameters and an improved statistical fit.

Rethinking the connection between politics and economics, we generalize the partisan model to account for voter control in a principal-agent framework. Voter influence is more noticeable when the president and median voter disagree about goals. Generalizing our regression model, we find evidence of a divergence between presidential, especially Republican, and voter targets for real growth. Democratic presidents have had growth targets very close to those of the voters, while Republican goals have been significantly more conservative.

We confirm the prediction that voter influence peaks before close elections, but not before landslides either in the direction of the incumbent or the challenger. When Republicans are in power, we see evidence of a late-

term tendency for economic policy to accommodate voter preferences. This Republican effect is similar to that predicted by the opportunistic political business cycle hypothesis, although here the rationale is different. In the Nordhaus model presidents plan ahead for a pre-election boom. Our interpretation is that of pre-election control by retrospective voters, instead of presidential manipulation.

Notes

1. Nordhaus' model is a development of Kalecki's (1943) original conjecture that governments engineer booms.
2. See, for example, Nordhaus (1975), Chappell (1982) or Alesina (1987).
3. The name of this equation derives from Phillips' (1958) study of the inverse relation between the unemployment rate and the wage inflation rate. Later Phelps (1970) and Friedman (1968) reformulated the relation in terms on price inflation and added expected inflation. Due to the linkage between labor and product markets, the unemployment and output gaps are essentially equivalent indicators, with the natural level of output being equivalent to the natural rate of unemployment. Lucas' (1973) aggregate supply curve is similar in terms of output, inflation and its expectation.
4. In support of this view of partisanship see Tufte's (1978: 71–83) content analysis of the differences in party platform statements, in the *Economic Report of the President* and in the *Report of the Council of Economic Advisors* during the 1960s and 1970s. Waller (1992) offers an analytical explanation for such ideological differences with a similar endogenous stabilization model. He divides society into two classes on the basis of labor market membership, finding that workers in a sector characterized by inflexible nominal-wage contracts prefer more liberal macro policy, while those employed in a flexible-wage sector prefer greater conservatism.
5. See Kiefer (2000) for empirical evidence that only current conditions matter in political business cycle econometrics.
6. Another plausible objective function is parabolic. In contrast to the quadratic form (which implies satiation at the growth target) the parabolic form specifies that politicians are never sated with growth. The quadratic-parabolic distinction may not be too important as long as observed economic outcomes are in the region where the preferred set is always in the direction of increased growth and decreased inflation.
7. Fischer (1977) is an early example in this literature.
8. We assume that she ignores the possibility that the equilibrium might be distorted by the efforts of future presidents to win re-election.
9. In evaluating this expression we take $E(\varepsilon|I^v) = 0$, $E(\varepsilon^2|I^v) = \sigma^2$, and assume that the voter expects the time-consistent equilibrium, so that $E(y_{t-1}|I^v) = 0$ and $\pi^e_{t|t-1} = \frac{\hat{g}^c - g^*}{\psi}$.
10. Rogoff (1985) develops a similar model.
11. Lewis-Beck (1988) uses survey evidence from Western Europe to argue that prospective voting is at least as strong as retrospective. Nevertheless, the empirical literature supports backward-looking behavior; see Mueller (2003) for a review.
12. While Ferejohn derives an equilibrium value for the trigger point analytically, we take a more empirical approach.
13. Frey and Schneider's (1978) regression study of government policy instruments reports evidence for this "popularity surplus" effect.

14. A rigorous application rational expectations to this principal-agent generalization would be more complex. Agents should also forecast the degree to which the re-election constraint will distort the president's preferred policy in the future. Consequently, they should also predict future presidential popularity. Formalization would add considerable complexity to an already complex regression. See Kiefer (2000) for an application of rational expectations to a complex future involving uncertain elections.
15. It has the desirable property that it too can converge to the long-run equilibrium (7).
16. Gordon uses a benchmark-interpolation method to estimate the natural GDP.
17. Although 23 observations seem insufficient for reliable time-series testing, we examine the Dickey-Fuller unit roots statistics for these series. They test the assumption that a stationary stochastic process generates the data. It is well known that nonstationary series may incorrectly appear to be related in regressions. Our results are mixed: at the 90% confidence level we can reject unit roots for growth, natural growth and the president's approval rating, but not for inflation, the inflation shock or the GDP gap. This is surprising because the GDP gap, for example, is defined as a deviation from a long-run trend. It ought to be stationary, although the Dickey-Fuller test suggests otherwise. Although we do not pursue this issue further, we acknowledge the possibility that our series could be independent random walks and our results spurious.
18. These calculations use the sample average of 3.2% for g^*. The Republican growth target estimate is not statistically different from 3.2% at the 95% confidence level, although the Democrat's and median voter's are.

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