When strategic complementarities lead to the existence of multiple equilibria, a change in control of government may lead to changes in economic behavior by consumers or firms even if the different parties pursue the same policies. The existence of multiple equilibria, however, is not necessary to predict partisan effects. Furthermore, electoral uncertainty is not necessary to generate partisan effects; indeed, such uncertainty can dampen the cycle.

1. INTRODUCTION

Analyses of the effect of politics on economic outcomes commonly focus on the different policies that different parties are likely to pursue. Surely that is often the correct approach. Nevertheless, for a better understanding of the relation between elections and the economy, it is worthwhile to see how far we can explain observations without recourse to the assumption that, ignoring stochastic elements, different outcomes are the result of different policies. We can go far.

Our focus is on the partisan cycle—that is, the empirical regularity that economic growth is higher and unemployment is lower under one political party than under another.¹ This focus is of particular interest both because of the intrinsic importance of aggregate economic fluctuations, and because a sophisticated literature explains why such partisan cycles appear.² Our interpretation of the partisan cycle does not contradict existing explanations, but instead illustrates other explanations and shows that heretofore neglected effects can be important.

We use a new-Keynesian model that exhibits strategic complements. In particular, we assume that the profit to any one firm from an investment is

¹ Revised June 3, 1996. We are grateful for comments by the editor, two anonymous referees, members of the Public Choice Study Group at UC-Irvine, Alberto Alesina, John Londregan, Susanne Lohmann, Donald Wittman, and seminar participants at the UC Political Economy Workshop (UC-Santa Cruz, June 1995), Brown University and the University of California-Riverside.

² Corresponding author: Amihai Glazer, Department of Economics, University of California, Irvine, CA 92697.

¹ For example, economic growth in the United States typically falls in the first half of Republican administrations and rises during the first half of Democratic administrations. See Alesina, Londregan and Rosenthal (1993). Similar evidence is found in other industrialized democracies with two-party systems or with two clearly distinguishable coalitions. See Alesina and Roubini (1992) and Alesina, Cohen and Roubini (1992).

² For a brief survey, see Alesina and Roubini (1992).
greater the higher is aggregate investment. When strategic complementarities are present, equilibrium production (or investment) can change in response both to changes in economic fundamentals and to changes in individuals’ beliefs, leading to the existence of multiple equilibria. If economic agents see the victory of a particular party or president as a coordinating event, then the economy may move from one equilibrium to another; beliefs that economic conditions vary with the party in power are self-fulfilling and consistent with rational behavior. The existence of multiple equilibria, however, is not necessary to generate a partisan cycle.

For greater generality, we consider both the case where the competing parties adopt different policies and the case where they adopt identical policies. When policies differ by party, the analysis shows that electoral uncertainty reduces the magnitude of the partisan effects on aggregate outcomes. In the more restrictive case where policies are identical, the analysis identifies the conditions under which partisan effects nevertheless emerge. We also look to the data and discuss some results from existing empirical studies that can help distinguish our interpretation of the partisan cycle from the well-known explanation, developed by Alesina (1987) and Chappell and Keech (1986, 1988), that builds on both electoral uncertainty and differences in policy.

2. ASSUMPTIONS

Consider an economy consisting of risk-neutral firms. Each firm (indexed by $i$) is endowed with a production project that, if initiated, yields one unit of output at a cost of $c_i$. This cost is drawn from a (fixed) distribution of projects over the interval $[c_{\text{min}}, c_{\text{max}}]$, where $0 < c_{\text{min}} < c_{\text{max}} < \infty$. Let $f(c)$ be the probability density function of $c_i$; the corresponding cumulative distribution function is $F(c)$. Each firm knows its own costs when it decides whether to invest. But, the actual return need not be known with certainty when decisions are made, because the return can depend on which party wins the next election.

In those parts of the analysis below which assume that the election outcome is perfectly anticipated, it does not matter if we assume that investment decisions

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3 This model extends those developed in Haltiwanger and Waldman (1985, 1989). See Cooper and John (1988) for a useful discussion of macroeconomic models with strategic complements. Cooper and Haltiwanger (1993) give a more recent survey of this literature, highlighting the implications of both intertemporal and contemporaneous complementarities; they also present evidence for the existence of such complementarities. Caballero and Lyons (1992) find evidence for positive external effects of aggregate output on individual firm productivity. Also see Oh and Waldman (1990) who, in looking at the effects of revisions in (previously announced) leading indicators on future economic activity, find evidence consistent with the existence of strategic complementarities.

4 For evidence that fluctuations in output can be generated by expectations, see Matsusaka and Sbordone (1995); they find that between 13 and 26 percent of GNP innovation variance can be attributed to variations in consumer confidence. Farmer (1993) describes a model which relies on self-fulfilling prophecies and which, in simulations, explains many features of the business cycle at least as well as does a standard real business cycle model.

5 Although the cost of each firm can vary over time, the time notation is suppressed for convenience.
are made before or after the election. Where we consider uncertainty about election outcomes, by contrast, we must suppose that investment decisions are made before the election. In all parts of the analysis, however, actual investment expenditures are made after the election.

Two political parties compete for office: party $H$ and party $L$. The party in power adopts a number of projects, $g_\theta$, where $\theta = H, L$. The analysis takes these values as exogenously given and, to fix ideas, assumes that $g_H \geq g_L$. The analysis with the assumption that $g_H > g_L$ is consistent with Hibbs's (1977) evidence on partisan differences. As shown below, however, partisan effects can appear in aggregate outcomes even with identical parties (i.e., when $g_H = g_L$).

After public and private investments are made, the gross return from private investment is realized. We suppose that public investment increases the return from private investment. Specifically, the return to a firm on its private investment, $r$, increases with the sum of aggregate private investment, $n$, and public investment, $g$:

$$ r = R(n + g), $$ (1)

where $R'(\cdot) > 0$.

The assumption that $R'(\cdot) > 0$ reflects the presence of strategic complementarities among firms. As discussed in Cooper and John (1988), such complementarities can arise from thick market effects—both positive trading externalities or positive demand externalities. In search models (e.g., Diamond (1982)) thicker markets make it easier to find trading partners. In multi-sector models of imperfect competition (e.g., Hart (1982)), demand linkages across sectors mean that the marginal revenue function shifts out as production in other sectors rises. These thick market effects, which induce firms to invest more when others do, magnify the effects of sector-specific and aggregate shocks.

Further, given (1), the assumption that $R'(\cdot) > 0$ captures the notion that public investment enhances productivity in the private sector. Several studies find such an effect of public investment on productivity.
Each firm’s investment decision depends only on expected net profits from investment. Let firm $i$’s expectations about its revenue from an investment be $E_i(r)$. Then, taking $n$ and $g$ as given, firm $i$ invests if $E_i(r) > c_i$. Initially, the analysis assumes that firms have identical expectations. But the formulation does allow firms to hold heterogeneous beliefs about the returns to private investment.

In what follows, we characterize the equilibria for the model presented above. The analysis shows that under both certainty and uncertainty about election outcomes, differences in the policies of the two political parties can generate partisan effects on private investment. The analysis then studies behavior when there is no electoral uncertainty and the parties adopt identical policies. Here we identify two sets of conditions under which partisan effects still emerge.

### 3. Politics with Policy

Throughout this section, we assume that $g_H > g_L$. In addition, we suppose that all firms are “sophisticated” – each recognizes the differences between the parties’ policies and understands how the differences affect the returns from an investment. An equilibrium solution is characterized by a critical value of $c$, such that firms with costs below this value invest and firms with higher costs do not. This critical value then satisfies the condition that the marginal firm’s expected revenues cover costs. Let $c^*_\theta$ be the critical value of $c$ when party $\theta$ is in office. From this critical value, we can calculate aggregate private investment under party $\theta$: $n^*\theta = F(c^*_\theta)$.

#### 3.1 No Electoral Uncertainty

Suppose that there is no electoral uncertainty – firms correctly anticipate the outcome of the forthcoming election. Then the critical values of $c^*_\theta$ are determined by the equilibrium conditions

$$R(F(c^*_\theta) + g_\theta) = c^*_\theta,$$

for $\theta = H, L$. We assume that $R(F(c_{min}) + g_\theta) > c_{min}$ and that $R(F(c_{max}) + g_\theta) < c_{max}$, for $\theta = H, L$. This assumption ensures the existence of at least one equilibrium under each party.

Since, however, $R'(\cdot) > 0$, this model can have multiple equilibria under each party. For now, suppose that the equilibrium under each party is unique.\(^{11}\) Uniqueness holds when strategic complementarity is limited and, in particular, when

$$d [R(F(c) + g_\theta) - c ]/dc < 0,$$

or when

$$R'(F(c) + g_\theta) < 1/f(c),$$

for $\theta = H, L$ and for all $c$.

\(^{11}\) The possibility of multiple equilibria is considered below in section 4.1.
Let the equilibrium levels of aggregate private investment when inequality (3) is satisfied be $n^S_H$ and $n^S_L$. Then equations (2) and (3) yield\(^\text{12}\)

**Proposition 1.** If $g_H > g_L$, then $n^S_H > n^S_L$.

Not surprisingly, given our assumption that public investment increases private rates of return ($R'(. > 0$), both private and public investment are higher under party $H$ than under party $L$. The changes in private investment produced by alternating administrations suggest a partisan cycle.

It is important to note that the assumption of strategic complementarity among firms is not necessary to generate this result. Under an alternative assumption that the return to private investment is independent of aggregate private investment but increases with public investment, Proposition 1 remains valid.\(^\text{13}\) But the presence of strategic complements among private firms magnifies the effects of differences in policy. Thus, even small differences in preferences for public investment by the two political parties can imply large partisan effects. In any case, electoral uncertainty is not an essential ingredient of the predicted partisan cycle.

### 3.2 The Effects of Electoral Uncertainty

Does uncertainty about the results of elections increase or reduce the size of the partisan cycle? To answer this question, suppose firms decide whether to invest before the outcome of the election is known. Firms attach a probability $\pi$ to the event of a victory by party $H$, and a probability $1 - \pi$ to a victory by party $L$. Given these beliefs, the election outcome has no direct effect on the critical value of $c$, $c^*$, which defines private investment in equilibrium.

Maintaining the assumption that the political parties set different policies (i.e., $g_H > g_L$), the equilibrium condition under electoral uncertainty, analogous to (2), is

$$\pi R(F(c^*) + g_H) + (1 - \pi) R(F(c^*) + g_L) = c^*.$$  \hfill (4)

The assumptions made earlier to ensure the existence of an equilibrium in the presence of electoral uncertainty are sufficient to ensure the existence of at least one solution to (4). Similarly, if (3) is satisfied then the solution is unique. That is,

$$\pi R'(F(c) + g_H) + (1 - \pi) R'(F(c) + g_L) < 1/f(c)$$  \hfill (5)

for all feasible $c$.

\(^{12}\)The proof of this and the following propositions are in the Appendix.

\(^{13}\)Were public investment to crowd out private investment (i.e., were $\partial R/\partial g < 0$), partisan effects would emerge if the return to private investment increased with aggregate private investment (i.e., $\partial R/\partial n > 0$). The direction of the effects, however, is reversed so that $n^S_H < n^S_L$. 

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Equation (4) shows that election results do not then directly influence private investment; but firms' beliefs about those results (summarized by \( \pi \)) do. To proceed, let \( \bar{n}(\pi) \equiv F(c^*) \) be the equilibrium level of private investment (as defined by equation (4)) when equation (5) holds for given beliefs, \( \pi \). Then we obtain

**Proposition 2.** \( \partial \bar{n}(\pi)/\partial \pi > 0. \)

In words, more firms will invest when they believe that party \( H \) is likely to win than when firms believe that party \( L \) is likely to win.

Of course, if firms' beliefs, \( \pi \), were time-invariant, the model would not generate partisan effects. Suppose, however, that the distribution of the voting population changes from election to election, and that firms recognize these changes. Thus, changes in the distribution of voters change the beliefs firms hold at the times they decide whether to invest. More specifically, assume that \( \pi > \frac{1}{2} \) before an election won by party \( H \), and \( \pi < \frac{1}{2} \) before an election won by party \( L \). Then the model predicts that private investment is higher when party \( H \) wins than when party \( L \) wins. Moreover, from Proposition 2, the rise in investment associated with a victory by party \( H \) is greater the more confident firms were of that victory. Similarly, the decline in investment associated with a victory by party \( L \) is greater the larger the probability that firms attached to such a victory. Thus, our analysis predicts that, given the differences in the policies preferred by the two political parties, greater certainty about the outcome of elections magnifies the variation in investment over the partisan cycle.14

### 4. POLITICS WITHOUT POLICY

Is a partisan cycle possible when the parties have identical policies? For convenience, we normalize \( g_H = g_L \) to zero and again assume that there is no electoral uncertainty. The assumption that all firms are "sophisticated" now means that firms know that the political parties set the same policies. The equilibrium condition for \( c^* \) is then (2), where \( g_H = g_L = 0 \). If equation (3) with \( g_H = g_L = 0 \) held for all \( c \), then the solution \( c^* \) would be unique and equilibrium private investment would be a constant: elections would be irrelevant for economic outcomes. For future reference, let this equilibrium level of investment be denoted by \( n^S \equiv F(c^*) \).

#### 4.1 Multiple Equilibria and Self-fulfilling Beliefs

But, as previously noted, the model with strategic complements can have multiple equilibria.15 Suppose that two values of \( c^* \) satisfy the equilibrium

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14 As for Proposition 1, these results do not hinge on the assumption that strategic complements among private firms exist; we only need the assumption that the return to private investment increases with public investment.

15 A necessary condition for multiple equilibria is that Equation (3) with \( g_0 = 0 \) does not hold for all \( c \). This condition, however, is not sufficient.
condition in (2): $c^*_H$ and $c^*_L$, where $c^*_H > c^*_L$.\textsuperscript{16} Although all firms expect the two parties to set the same policies, each firm may expect other firms to invest more under party $H$ than under party $L$. That is, firms expect aggregate investment to be high and, therefore, have a greater incentive to invest when party $H$ is in office than when party $L$ is in office. In this model, then, an election outcome can select one of several possible equilibria, even when the parties set the same policies.\textsuperscript{17}

While this model with strategic complements can predict a partisan cycle even when the parties set the same policies, it does not predict the party under which aggregate economic activity will be higher. One possibility is that economic conditions in the past were typically better under one party than under the other. With that historical experience and the presence of complementarities, expectations about such differences would be reinforced over time even if the parties follow the same policies. In the United States, for example, the common association of Republicans (party $L$) with Herbert Hoover and of Democrats (party $H$) with Franklin Roosevelt may explain the differences in expectations under different parties.\textsuperscript{18} In addition, presidential candidates of the different parties emphasize different problems. For example, Democrats typically speak more of growth than do Republicans. Knowing the priorities of the different parties, investors have additional reason to believe that growth will be higher under Democrats. Thus, even if the differences in the parties' policies do not directly affect economic growth, we can observe partisan effects.

4.2 Heterogeneous Beliefs

A partisan cycle can also appear when the strategic complementarity is sufficiently weak such that the condition in (3) is satisfied for all $c$ given $g_H = g_L = 0$ — that is, when the policies are identical and the equilibrium is unique. To see this possibility, suppose now that only a fraction, $1 - \alpha$ (with $\alpha < 1$), of firms are sophisticated; the remaining fraction, $\alpha$, are "naive". These naive firms ignore the effects of strategic complements and simply expect higher returns under party $H$, $r'_H$, than under party $L$, $r'_L$, where $r'_H > r'_L$.\textsuperscript{19}

\textsuperscript{16}For example, suppose that $c_i$ has a truncated normal distribution. Specifically, take a normal distribution with mean 10 and shift the mass of that distribution for which $c < 0$ to $c = 0$. (The mean of the modified distribution will greater than 10.) Furthermore, let $R(n) = 3 + 15n$. Then two stable equilibria exist: $\tilde{c}^*_L = 3.0$ and at $\tilde{c}^*_H = 18.0$. The first stable equilibrium has few firms investing; the second has nearly all firms investing. (There is also an unstable equilibrium at $\tilde{c}^* = 9.9$.)

\textsuperscript{17}The idea that beliefs can generate self-fulfilling equilibria is old. Fisher (1930), building on Darwin (1859), uses such an idea in discussing sexual selection: male birds that sing beautifully will be more attractive to female birds, who expect their male offspring to reproduce more successfully when they sing more beautifully.

\textsuperscript{18}Admittedly, the explanation lies beyond the scope of our analysis. But note that similar indeterminacies appear in other areas of economics. Most notably, the new trade theory predicts that economies of scale in production generate specialization, but does not predict which countries will produce which products.

\textsuperscript{19}We assume that the distribution of naive and sophisticated firms is independent of the distribution for $c_i$. Note that if $g_H = g_L = \bar{g} > 0$, then this belief could be modeled as (a mistaken) one about differences in the investment policies of the parties.
Assume that naive firms, like the sophisticated firms, are risk neutral: each invests if $r^\theta > c_i$, for $\theta = H, L$. A sophisticated firm realizes that the political parties set the same policies and understands how election outcomes influence the investment decisions of naive firms. As previously specified, a sophisticated firm invests if $E(R(n)) > c_1$.

Given these beliefs and investment policies, the equilibrium is defined by two conditions, one corresponding to each party holding office:

$$R(1 - \alpha)F(c^\theta_0) + \alpha F(r^\theta_0) = c^\theta_0.$$  \hspace{1cm} (6)

Assume that a unique equilibrium under each political party exists. Uniqueness requires that

$$R((1 - \alpha)F(c^\theta_0) + \alpha F(r^\theta_0)) < 1/f(c),$$  \hspace{1cm} (7)

for $\theta = H, L$. Then aggregate private investment under party $\theta$ is $n^\theta = (1 - \alpha)F(c^\theta_0) + \alpha F(r^\theta_0)$. Recalling that $n^S$ denotes the (hypothetical) equilibrium level of investment when all firms are sophisticated, equations (2) and (3) with $g_H = g_L = 0$, and equations (6) and (7) imply

**Proposition 3.** If $0 < \alpha < 1$, then $n^L < n^S < n^H$.

This proposition suggests that neither electoral uncertainty nor differences in the parties’ policies are necessary for macroeconomic conditions to differ under different parties.

The intuition behind the proposition is simple. In an economy with strategic complements, the erroneous beliefs held by naive firms affect the willingness of sophisticated firms to invest. Specifically, as too many naive firms invest under party $H$, the profitability of investment by other firms, both naive and sophisticated, increases. Conversely, under party $L$, too few naive firms invest, thereby reducing the profitability of investment by other firms.

The belief of naive firms that investment is more profitable under party $H$ than under party $L$ is correct: Proposition 3 implies that $R(n^L_H) < R(n^S) < R(n^L_H)$. But the naive firms overestimate the difference in returns under the two parties. That is, $r^L_H < R(n^S)$ and $r^L_H > R(n^L_H)$.$^20$ Hence, naive firms are likely to suffer losses. Some firms may learn from their mistakes, and others may be forced into bankruptcy. Consequently, the number of naive firms would fall over time, and the variation of private investment over the partisan cycle would also fall; that is, the value of $n^H - n^L$ would decline.

The reduction in the variation of private investment from election to election, however, would be smaller if before each election a new generation of inexperienced investors entered the market. Moreover, arguments similar to those in Haltiwanger and Waldman (1985, 1989) show that the naive firms have

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$^20$ This claim can be verified along the lines of the proof of Proposition 3. See the Appendix.
a disproportionate effect on aggregate investment. Let the equilibrium level of investment when all firms are naive be \( n^*_H \) under party \( H \). Then

**Proposition 4.** If \( 0 < \alpha < 1 \), then \( n^*_H > (1 - \alpha)n^S + \alpha n^*_V \) and \( n^*_L < (1 - \alpha)n^S + \alpha n^*_V \).

The inequalities in Proposition 4 mean that aggregate investment when some firms are naive is not simply an average of the behavior of firms when all are sophisticated or all are naive. The presence of naive firms instead increases investment by the sophisticated firms under party \( H \), and reduces investment by the sophisticated firms under party \( L \). Thus, in an economy with strategic complements, the existence of even a few naive firms (a small value of \( \alpha \)) can have a large effect on the economy.

5. DISSINGUISHING BETWEEN ALTERNATIVE THEORIES OF THE PARTISAN CYCLE

As noted in the introduction, alternative explanations of the partisan cycle exist. For expository purposes, we shall contrast our explanation with what we refer to as the "monetary surprise model" – see Alesina (1987), and Chappell and Keech (1986, 1988). These models build on the hypothesis developed by Hibbs (1977) that political parties have different preferences, reflecting differences in their core constituencies. In particular, they assume that the left-wing party finds inflation less costly and unemployment more costly than does the right-wing party. Thus, the left-wing party, once in office, pursues a more expansionary monetary policy than does the right-wing party. When long-term labor contracts are signed before the election outcome is known with certainty, monetary policy following the election will have an element of surprise. Thus, election outcomes can affect economic conditions even when expectations are rational. This monetary surprise model predicts that, to the extent that an election outcome is imperfectly anticipated, the victor's policies can have real though temporary effects. But both differences in the policies that the political parties prefer and electoral uncertainty are essential to this interpretation of the partisan cycle.

Though, as noted earlier, some evidence supports the empirical relevance of strategic complementarities, testing our interpretation of the partisan cycle

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21 In contrast, when congestion effects are present, the naive firms have a smaller than proportionate effect on aggregate investment. See Haltiwanger and Waldman (1985).

22 A numerical example illustrates the effects of naive firms. Let \( z \) be uniformly distributed over the range \([0, 20]\) and let \( R(z) = 0.5 + 18z \). With \( z = 0 \), the equilibrium has \( e^* = 5 \). Suppose now that party \( H \) is in office and \( r^*_H = 20 \). When \( z = 0.01 \), the equilibrium has \( c^* = 6.24 \). Thus, an increase in the fraction of naive firms from 0 to 1 percent increases the fraction of firms that invest from 25 percent to 34 percent, a 28 percent increase from the initial level.

23 Because a period is defined as an election term, our analysis cannot explain why the partisan effects on output growth and employment are temporary. However, an extension of the model which allows for a stock of potential investments, implying that a period of abnormally high investment is followed by a period of abnormally low investment, could account for this empirical regularity.
Table 1 Partisan Effects in The United States: 1949–1994

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Republicans</th>
<th>Democrats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in GDP in first year of term</td>
<td>0.03</td>
<td>-0.60</td>
</tr>
<tr>
<td>Growth in GDP over term</td>
<td>2.40</td>
<td>4.30</td>
</tr>
<tr>
<td>Growth in business expenditures on new equipment (first year of term)</td>
<td>4.99</td>
<td>6.95</td>
</tr>
<tr>
<td>Growth in new business formations (first year of term)</td>
<td>-0.04</td>
<td>2.10</td>
</tr>
</tbody>
</table>

Source: authors' calculations based on inflation-adjusted data reported in the Economic Report of the President, 1995.

against the monetary surprise model is difficult – by design, ours makes similar predictions. Moreover, whatever causes a change in economic activity will also cause a change in other aggregate economic variables – inflation, unemployment, investment, and interest rates.

What we can do is to look to some data and results from existing empirical studies which are inconsistent with the monetary surprise model, but which are consistent with ours. We can also examine the data and empirical studies that could refute our model.

5.1 Partisan Effects on Economic Growth, Investment and Confidence in the United States

As has often been noted and as shown in Table 1, economic growth is higher, on average, under Democratic presidents than under Republicans (4.3 percent versus 2.4 percent). Our focus, however, is on expectations and on investment. With this focus, rather than looking over the whole term, we compare the first year of a term to the preceding year (the election year). Here we find little difference in growth between Republicans and Democrats; indeed the growth rate increases in the first year of a Republican, but slightly declines under a Democrat.

By contrast, measures of investment confidence show large differences between Republicans and Democrats.24 Expenditures on new equipment increase by almost two percentage points more in the first year of a Democratic president than in the first year of a Republican. Similarly, new business formations increase more under a Democrat than under a Republican.

The increase in investment under Democrats might arise not from differences in expectations about growth or the behavior of other firms, but instead from the direct effects of monetary policy: the lower interest rates under Democrats

24 Gross fixed domestic investment and changes in business inventories account on average for 36 and 38 percent respectively (or a total of nearly 75 percent) of the decline in spending during the last seven most recent recessions in the United States [Barro (1993), Table 9.1, p.219]. Thus, as a first approximation, explaining the business cycle amounts to explaining the sharp changes in investment.
could induce higher investment. Such direct effects would negate the importance of the strategic complementarities we posit. Previous empirical studies, however, find little evidence for such direct effects. Clark (1979, pp. 103-104) writes "output is clearly the primary determinant of nonresidential fixed investment while, at last in the short run, the effect of moderate variations in taxes and interest rates is likely to be negligible." Similarly, in his survey of the literature, Abel (1990) says that the data do not show investment to be sensitive to user costs (which include interest rates), but instead investment seems to depend more on accelerator or output effects.

One way to distinguish the two theories of the partisan cycle would build on a standard empirical model of investment, which includes indicators of monetary policy (e.g., interest rates or measures of credit availability). If partisan effects arose from differences in monetary policy, the coefficient on a dummy variable indicating when the left-wing party is in office should not be significantly different from zero. In contrast, our hypothesis that strategic complementarities magnify the effects of policy on investment implies that the coefficient is positive. Implementing this test, however, is well beyond the scope of the present paper, and is left for future research. Instead, we consider the existing evidence on the two crucial assumptions of the monetary surprise model.

5.2 Differences in Policies

The monetary surprise model emphasizes differences in monetary policy, neglecting the effects of central bank independence. Were the monetary surprise model correct, we should find, holding all else constant, partisan effects to be smaller the more independent the central bank. But a cross-sectional analysis of OECD nations by Alesina and Summers (1993) finds no correlation between the variability of real economic variables (growth and unemployment) and central bank independence.26

Related evidence is offered by Chappell, Havrilesky and McGregor (1993) who find that U.S. presidents influence monetary policy mostly by appointments to the Board of Governors of the Federal Reserve System. Because these appointments are typically made after the first year of an administration, a president has little influence on monetary policy early in his administration; in addition, his appointments will be unsurprising once made. This conjecture is consistent with the results reported in Chappell and Keech (1988). Specifically, they find that, while there are systematic differences in monetary policy pursued under Democratic and Republic administrations [also see Hibbs (1986, 1994)], these differences do not fully explain observed differences in unemployment.

25 But see Bernanke (1983) for a brief presentation of an alternative view.

26 Recently, however, Alesina and Gatti (1995) point out a possible offsetting effect of increased central bank independence on the variability of output and employment: a more independent (i.e., more inflation-averse) central banker is less willing to stabilize output.
5.3 Electoral Surprise

As pointed out by Hibbs (1992), the monetary surprise model is inconsistent with some aspects of rational, forward-looking, behavior. Specifically, it assumes that agents repeatedly enter into multi-period nominal wage contracts before elections, while they all could be made better off by waiting until after the election. Indeed, Garfinkel and Glazer (1994), who examine the timing of nominal wage contracts in the United States during the period 1960–1992, find that firms and unions tend to avoid entering into contracts during presidential election years. This delay of contract negotiations weakens the power of monetary surprises to explain the partisan cycle.

Furthermore, the monetary surprise model's prediction that the change in the economy should be greater the more surprising the election outcome is not supported by the data. Specifically, as Hibbs (1992) notes, the U.S. election outcome of 1964 (when Johnson defeated Goldwater) was hardly surprising, yet was followed by a boom. Similarly, while the elections of 1960 and 1968 were surrounded by considerable uncertainty, they were followed by weak movements in output and employment.\(^\text{27}\) In addition, Sheffrin (1989, chapter 6) shows that the behavior of stock prices around six elections of Republican presidents is not fully consistent with the predictions of the monetary surprise model.

6. CONCLUSION

Our model offers a new explanation for how elections affect the economy. Though the model is stylized, the implications are quite general. In an economy with strategic complements, both economic fundamentals and individuals' beliefs can affect aggregate economic activity. One implication is that increased uncertainty about electoral outcomes reduces the effects of elections on economic activity. Another implication is that a partisan cycle can arise even when political parties set identical policies. Nonetheless, the analysis is consistent with differences in the political parties' preferred policies. Indeed, the effects of elections would be magnified if public officials took actions consistent with those beliefs. And though our model does not explain all the facts (in particular why partisan effects do not persist over the entire electoral term), our model is consistent with other facts that cast doubt on the monetary surprise model.

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\(^{27}\) To go beyond anecdotes, we estimated regressions in which the dependent variable is the absolute value of the change in economic growth between the election year and the following year, and the explanatory variables are the electoral college vote or the popular vote received by the victor. We would think that the greater the victory, the less surprising the outcome. The coefficients on these votes are not significant even at the 25 percent level.

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**APPENDIX**

**Proof of Proposition 1**

Suppose that $n_H^S \leq n_L^S$. Since $F'(\cdot) > 0$, this assumption implies that $c_H^* \leq c_L^*$. or, from (2), that $R(F(c_H^*) + g_H) \leq R(F(c_L^*) + g_L)$. Our assumption that a unique equilibrium exists under each party (see inequality (3)) implies that $R(F(c_H^*) + g_H) \leq R(F(c_H^*) + g_L)$. Since $R'(\cdot) > 0$, this last inequality contradicts our assumption that $g_H > g_L$. Thus, $n_H^S > n_L^S$.

**Proof of Proposition 2**

We assume that, given $\pi$, the equilibrium is unique. Then this proposition can be verified by applying the implicit function theorem to equation (4). Specifically, the condition that the equilibrium is unique (equation (5)) implies that the sign of $\partial \pi / \partial \pi$ is given by the sign of $R(F(c^*) + g_H) - R(F(c^*) + g_L)$. Since $g_H > g_L$ and $R'(\cdot) > 0$, it follows that $R(F(c^*) + g_H) - R(F(c^*) + g_L)$ is positive.

**Proof of Proposition 3**

Suppose that $n^S \leq n^S_L$. From the definitions of $n^S$ and $n^S_L$, this assumption implies that $F(c^*) \leq (1 - \alpha)F(c^*_Y) + \alpha F(r^*_Y)$. In turn, since $R'(\cdot) > 0$, the equilibrium conditions in equations (2) with $g_L = 0$ and the equilibrium conditions in equations (6) with $\theta = L$ imply that $c^* \leq c^*_Y$. Note that $F(c) = (1 - \alpha)F(c) + \alpha F(r^*_Y)$ only for $c = r^*_Y$, and recall our assumption that $r^*_Y < R(n^S) = c^*$. If both condition (3) with $g_L = 0$ and condition (7) with $\theta = L$ are satisfied, our assumption that $n^S \leq n^S_L$ implies that $F(c^*) \leq (1 - \alpha)F(c^*) + \alpha F(r^*_Y)$. But this implication reveals a contradiction – it violates our assumption that $R(F(c^*)) > r^*_Y$ or, equivalently, the assumption that $c^* > r^*_Y$. Thus, $c^*_Y < c^*$ and $n^S_L < n^S$. Analogous reasoning shows that $n^S < n^S_H$. © Blackwell Publishers Ltd 1996.
Proof of Proposition 4

Suppose that $n^*_H \leq (1 - \alpha)n^S + \alpha n^V_H$. This assumption, the definitions of $n^S$ and $n^V_H$ in the text, equation (6) with $\theta = H$, and equation (6) with $\alpha = 0$ imply that $c^*_H \leq c^*$, or equivalently, $R(n^*_H) \leq R(n^S)$. Since $R'(\cdot) > 0$, we have that $n^*_H \leq n^S$ which contradicts Proposition 3. Thus, $n^*_H > (1 - \alpha)n^S + \alpha n^V_H$. Similar reasoning shows that $n^*_L < (1 - \alpha)n^S + \alpha n^V_L$. 