

Political Business Cycles and Their Policy Implications: An Extension of Alesina's Model

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Abstract: This paper reviews and empirically tests the most recent theoretical and empirical work on political business cycles in the United States. It focuses on the rational partisan theory of Alesina et al. (1997) and extends their data from 1994 to 2005. We tested three different political business cycle models- the opportunistic, traditional partisan, and rational partisan models- to observe whether they remain valid. Overall, our results show that the rational partisan model outperforms both the opportunistic model and the traditional partisan models in explaining the variations of monetary and fiscal policy outcomes, which are consistent with Alesina et al.'s work (1997). More specifically, we found a significant partisan effect on money growth, a weak partisan effect on the federal funds rate, and no partisan effect on other interest rates including the discount rate, three-month Treasury bill, and ten-year Treasury note. Our findings on the partisan effects of money growth resemble those of Alesina (1988), but our results on interest rates differ. In addition, we found a strong partisan effect on the budget deficit (higher during Republican administrations) and no partisan effect on the level of government transfers. Both findings are consistent with Alesina's work (1988). Future research is required to identify how partisan effects vary across both developed and developing countries and how stock market performance and the role of the central bank during presidential elections are related.

Keywords: Political business cycle, opportunistic model, rational partisan model, presidential election.

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Manuscript received June 2009; out for review June 2009; review completed August 2009; accepted August 2009.

The Korean Journal of Policy Studies, Vol. 24, No. 1, 127-147 (2009)

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INTRODUCTION

The literature on political business cycles has explored various models of relationships between politics and macroeconomic outcomes across countries over time. Competition exists between models such as opportunistic policy behaviors and rational expectations and between government-dominant and game-theoretic models. The opportunistic model hypothesizes pre-electoral high growth and low unemployment and increasing inflation around the election time (Nordhaus 1975). The partisan model emphasizes systematic differences in inflation and unemployment between right- and left-wing parties (Hibbs 1977). However, these traditional approaches have neglected the rational expectations from interactions between macroeconomic policies and elections. Recent studies have added a game-theoretic approach to the traditional political business cycle model and have introduced a rational opportunistic model (Rogoff and Sibert 1988) and a rational partisan model (Alesina 1987).

All these studies have relied on samples drawn only from the United States before the mid 1990s or from advanced countries. However, empirical questions on how these competing models are observed in presidential elections remain unexplored. There is a need to extend the data beyond Alesina's (1987) model for two reasons: (1) extension of the data to 2005 increases the degree of freedom necessary to validate the empirical results, since the presidential elections between 1970 and 1995 are not sufficient to identify the political business cycle models in the United States; and (2) extension from the Clinton to the Bush administration adds good examples of different partisan effects on macroeconomic outcomes.

This article uses the rational partisan model to examine policy instruments used in the presidential elections including monetary policy and fiscal policy. This is the second part of Alesina's "political cycles in the United States." We expanded Alesina et al.'s (1997) data by eleven years, from 1995 to 2005, to test whether the parties (Democratic and Republican) have used monetary and fiscal policy to influence U.S. election outcomes. We will examine competing theories regarding various political business cycles in American elections, specifically the relationships between political business cycles and monetary and fiscal policy, with an updated data set as a comparison to Alesina's model.

THE LITERATURE ON POLITICAL BUSINESS CYCLES

Three Models-Opportunistic, Traditional Partisan, and Rational Partisan

The literature on political business cycles has developed in two distinctive phases, from (1) manipulation of macroeconomic models by the government to (2) the game theoretic approach to macroeconomic policy.¹ In the first phase, the literature suggested that the government, politicians, and parties try to influence macroeconomic outcomes during election years. In the second phase, the literature argued that policy makers increase government spending prior to presidential elections to signal greater competence to the voters. Thus, it is argued that prior to election periods, incumbent presidents or parties have an incentive to manipulate the economy to make their performance look good.

Political business cycle models can be divided into two categories: opportunistic and partisan. The *opportunistic* models argue that policymakers maximize their probability of re-election by manipulating the economy before an election. The *partisan* models argue that political parties represent the interests of different constituencies; the left-wing party speaks for labor and is more concerned with reducing the unemployment rate, while the right-wing party represents white-collar and business constituencies and is more concerned with reducing inflation.

Table 1 summarizes four models of the relationship between policy makers and the public based on the behaviors of policy makers. The first phase of the political business cycle is indicated in cells I and II, while the second phase is indicated in cells III and IV. Opportunistic models are represented in cells I and III, while partisan models are represented in cells II and IV. The discussion that follows will review these models in more detail.

1. Beginning right after Hibbs (1977), several studies applied game theory to the political business cycle. For instance, Fair (1978) pinpointed U.S. presidential elections from 1916 to 1976 by using hypothesis tests with political dummy variables and argued that the economic variables were statistically unaffected by both Democratic and Republican incumbents (Drazen 2000). These theories, however, assume that the voters are irrational and backward-looking; thus the success of opportunistic pre-electoral manipulation relied on the assumption of imperfect information about the competence of an incumbent government, because of their use of expansionary policy before the election (Persson et al. 2000, 431). In contrast, Kydland-Prescott (1977) analyzed the two parties with different policy goals and examined the rational forward-looking and wage-setting behavior of private agents in a game-theoretic setting. Barro and Gordon (1983) extended this theory further and pointed out that private agents first set the nominal wage and policy-makers act second.

Table 1. Models of Political Business Cycles

	Opportunistic	Partisan
Traditional Macroeconomic models with an exploitable Phillips curve	I Nordhaus 1975	II Hibbs 1977
Rational Game theoretic approach to macroeconomic policy	III Rogoff and Sibert 1988 Persson and Tabellini 2000	IV Alesina 1987 Alesina et al. 1997

Source: Alesina et al. 1997, 2.

The first empirical study of political business cycles was done by Kramer (1971), which Tufte (1975, 1978) developed further. The concept of *political business cycles* was given its name by Nordhaus (1975). He argued that the cycle was due to opportunistic pre-electoral manipulation; this idea was also recognized by Kalecki (1943) and Schumpeter (1939). Nordhaus (1976) pioneered the *opportunistic model*, suggesting that the unemployment rate tended to rise in the first half of each electoral cycle and fall during the second half because of partisan policy actions. He argued that politicians only choose the policies that maximize their chance of election victory.² According to this viewpoint, voters behave reactively and short-sightedly, and knowing this, politicians manipulate the economy just before the election. Hence, growth is higher and unemployment is lower before an election, and inflation is higher immediately after an election. Policy makers are assumed to have no partisan preferences.

In contrast, proponents of the *traditional partisan model* argue that policy makers' partisan motivation matters in terms of macroeconomic policies. Hibbs (1977) presented the partisan model and argued that partisan differences are the key driving force in policy making. He provided convincing evidence that the two major U.S. political parties, Democrats and Republicans, each cared to a different extent about inflation and unemployment. Considering the two major voting classes, working class (or blue-collar) and middle and upper class (or white-collar), it makes sense that each party would concentrate on its own constituents and propose policies accordingly. Hence, the parties no longer care about economic ideologies or the future benefit of the state but only about the interests of their voters. The goal of policy is to induce a change in economic activity, achieved by moving along an exploitable Phillips curve. Under Democratic administrations, growth is always higher, unemployment is always lower,

2. Sargent and Wallace (1975) argued that an incumbent government could not manufacture booms because output and unemployment were unaffected by prices. Nordhaus (1976) developed the opportunistic model in opposition to that point of view.

and inflation is always higher.

The *rational partisan model*, initiated by Alesina (1987), incorporated the idea of rational expectation into Hibbs's traditional partisan model. Alesina argued that economic activity after an election often includes unexpected inflation due to uncertainty about electoral outcomes. The rational partisan theory suggests that a business cycle peak will be more likely to be higher in the wake of a Republican presidential victory and less likely after a Democratic presidential victory. On the other hand, a business cycle trough is less likely after a Republican win and more likely after a Democratic win (Klein 1996, 84-101). However, this effect will disappear as wage contracts adjust to these previously unforeseen outcomes. This implies that people adjust their expectations and renew the wage contracts as soon as they recognize the discrepancy of expectations after an election. Alesina (1987) also suggested that the difference between the rates of growth and unemployment is greater if the electoral outcome is surprising, but that this difference is temporary rather than permanent.

In sum, rational partisan theory suggests that (1) growth is higher and unemployment is temporarily lower than its natural rate after a Democratic victory and vice versa after a Republican victory; (2) the difference between growth and unemployment is greater than its natural rate if the electoral outcome is surprising; (3) growth and unemployment will return to their natural rates in the second term of either a Democratic or Republican administration; and (4) inflation is permanently higher when a Democratic administration is in office.

EMPIRICAL STUDIES

Since 1960, the United States has encountered seven business cycles with an average length of seventy-five months or a little over six years. Presidential election cycles occur every forty-eight months. The relationship between elections and economic performance has been a popular topic in the United States, on the premise that an incumbent government is eager to win re-election and thus attempts to stimulate the economy in order to increase its chance at re-election, even at the cost of higher inflation and slower growth later on.³ This notion was taken up by Nordhaus (1975) and McRae (1977) and developed into a political business cycle theory based on the thought that the cycle was caused by opportunistic pre-electoral manipulation. Nordhaus tested his

3. President Richard Nixon exemplified this notion during the 1972 election, as he increased Social Security benefits by close to 20 percent while also assertively lobbying the Federal Reserve to loosen monetary policy (Rogoff 2004).

hypothesis by analyzing changes in the unemployment rate in elections from 1948 to 1972 and found that unemployment rates fell in five of six pre-election periods and rose in five of six post-election periods.

However, Nordhaus's opportunistic model fell short when the unemployment rate began to rise in both the 1976 and 1980 elections. This gave more credence to Hibbs' (1977) traditional partisan model, which underlines the differences between political parties as they represent the interests of their constituencies, with left-wing parties more concerned with reducing unemployment and right-wing parties more concerned with reducing inflation. However, Alesina (1988) and Alesina et al. (1997) developed the rational partisan model, taking Hibbs's idea further and arguing that the partisan effect is not permanent. Alesina (1988) successfully applied this model to the postwar United States and eighteen OECD (Organisation for Economic Co-operation and Development) countries, and empirically proved that the basic opportunistic model does not explain fluctuations in economic activity very well in many countries, though there is evidence of opportunism in income transfers.

In addition, Alesina and his colleagues (1997) suggested that there were strong partisan effects but few election effects on macroeconomic outcomes (e.g., inflation and unemployment rate) and partisan effects on monetary and fiscal policies in the United States and developed countries, based on data from before the mid-1990s. Overall, these studies provided evidence of post-election increases in inflation prior to 1979, and a rational partisan effect prior to 1995, but no evidence from later years on what political cycles interact with partisan effects and how. Further research is necessary to extend the period of data collection to 2005.

In another study, Min and Svensson (2006) used a large panel data set consisting of 85 countries over a 21-year period (1975-1995) and found evidence of political budget cycles in those countries. They found that the government fiscal deficit increases by 1 percent of GDP on average in elections. The authors created a model that underlines the incumbent's ability to manipulate policy instruments (which are observable to voters only with a lag) in order to bias the voters' inference process before elections. Especially for re-elections, the incumbent has an incentive to boost the supply of public goods prior to the election, hoping that voters will attribute the boost to his competence. However, this effect of political budget cycles is large in developing countries but small or nonexistent in developed countries. In the United States, it might not appear as strong as in developing countries,⁴ or it may have only appeared in the United States during its early stages of development. The extended data to 2005 in the United States may show different trends.

4. Ghana, Guyana, and Jamaica.

DATA AND RESEARCH METHODS

This study used seasonally adjusted quarterly data from 1970 to 2005 and 144 observations for monetary and fiscal policy and political economy variables in the United States. Previous empirical work by Alesina et al. (1988, 1997) used these types of data from the United States (1947-1994) and eighteen OECD countries (1960-1987). We used more recent subsample data than previous works such as Alesina et al. (1997) and Hibbs (1994). The extended period included each of the two terms of the Clinton and Bush administrations from 1995 to 2005, allowing us to update the analysis of opportunistic and partisan cycles in monetary and fiscal policy in the United States.

We introduced three dimensions to test the political business cycle models. First, we tested the relationship between macroeconomic performance (e.g., output growth, unemployment rate, and inflation rate) and political economy variables (presidential election dummies). Second, we examined monetary policy instruments such as money supply growth and interest rates as they relate to political economy variables (partisan dummies between a Republican and a Democratic administration). Third, we analyzed the relationship between fiscal policy instruments (e.g., budget deficits and government transfers) and political economy variables (presidential election and partisan dummies).

Opportunistic Model: Growth Rate and Unemployment

In this section, we tested an opportunistic political business cycle model to see whether economic growth rate and unemployment were significantly different from normal levels around election years. Nordhaus (1975) suggested that during election years, economic growth is likely to be above the natural rate and unemployment is likely to be below the natural rate. This argument is called the traditional opportunistic model. In addition, Rogoff and Sibert (1988) argued that the inflation rate is likely to increase right after an election year, which is called a rational opportunistic model. In order to test the impact of pre-electoral manipulation on economic growth and unemployment in the United States, we introduced the following econometric model:

$$y_t = b_0 + b_1y_{t-1} + b_2y_{t-2} + b_3y_{t-3} + b_4NRD4_{t-1} + e_t \quad (4.1)$$

In this equation, y_t is the vector of time-series data from 1970 to 2005 on the growth-output and unemployment rates. The output growth (y) is the rate of change that is chain weighted; real gross domestic product (billions of 2000 dollars) was used.

$$y = \text{GDP growth rate} = \frac{\text{GDP}_t - \text{GDP}_{t-4}}{\text{GDP}_{t-4}} \times 100\%$$

In this equation, t stands for the quarters.

In addition, the unemployment rate % (U) was taken from the standardized unemployment rate. NRDN is a political dummy variable, which is coded as 1 in the (N-1) quarters preceding an election and in the election quarter and as 0 otherwise. For N = 4, 6, 8 were chosen because the model considers voters as short-sighted and through regression it was confirmed that NRD4 has the highest t-value.

Table 2 shows no pre-electoral boom or reduction in unemployment rate. The NRD4 (-1) dummies were not statistically significant for either output growth or unemployment. In terms of signs of the coefficient, the model holds as output rises before the election and unemployment falls. This supports Tufte's (1978) "four year cycle" assertion that the unemployment rate falls before the election. However, as it is not statistically valid, we cannot conclude that there is an opportunistic effect in the model.

Table 2. Testing the Opportunistic Model

Independent variables	Coefficient (t-statistics)	
	Output growth	Unemployment
Constant	0.77 (4.88)	0.6 (2.29)
Lag 1	1.07 (14.44)	0.72 (9.53)
Lag 2	-0.08 (0.67)	0.4 (5.45)
Lag 3	-0.25 (2.76)	-0.22 (4.36)
NRD4(-1)	0.07 (0.34)	-0.07 (0.73)
R ²	0.78	0.82

N = 144, 1970-2005

BG and BP tests showed that autocorrelation exists in both output growth and unemployment regressions; therefore, they were corrected by NW test.

Not only in the traditional opportunistic model but also in the rational opportunistic model, inflation is argued to be higher immediately after an election (Alesina et al. 1997, 94). The relationships between inflation rate and elections have provided an opportunity to test the rational opportunistic model. In our study, the inflation rate (π)

is used as a dependent variable. It is measured as the yearly rate of change of the Consumer Price Index:

$$\pi = \frac{CPI_t - CPI_{t-4}}{CPI_{t-4}} \times 100\% \quad (\%)$$

To obtain an unbiased inflation rate, it was necessary to take the yearly change in the international price of oil (POIL)⁵ into account. We have used crude oil price in real terms (adjusted for inflation) in U.S. dollars per barrel with a base year of 1973 as 100.

$$POIL = \frac{realP_t - realP_{t-4}}{realP_{t-4}} \times 100\% \quad (\%)$$

The political dummy variable of NPOSTN was constructed to test this argument. The NPOSTN was coded as 1 in the *N*-1 quarters following an election and in the election quarter and otherwise as 0. The following result suggests no post-electoral increase in the inflation rate (t-value of the NPOST3 = 0.44).

$$\pi = 0.17 + 1.48\pi_{t-1} - 0.52\pi_{t-2} + 0.06NPOST3_{t-1}$$

(1.77) (20.25) (7.08) (0.44)

R² = 0.96

Table 3 also shows that there were no post-electoral increases in the inflation rate for the regressions of NPOSTN with 4, 5, 6, 7, and 8.

Table 3. Inflation Rates and Elections in the United States

Independent variables (PDUM only)		
Coefficient (t-statistics)		
Inflation		
NPOST3(-1)	NPOST4(-1)	NPOST5(-1)
0.65	-0.001	-0.04
(0.48)	(0.01)	(0.31)
NPOST6(-1)	NPOST7(-1)	NPOST8(-1)
-0.06	-0.43	0.04
(0.58)	(0.42)	(0.41)

5. See the website of the Organization of Petroleum Exporting Countries (www.opec.org.)

Political Cycles in Monetary Policy

This section reviews the tests on policy instruments and in particular on monetary policy. A general assumption of the policy instruments is that they are used as tools for politicians or administrations to create a favorable economic situation to help them win an election (Alesina 1997, 166). The results on monetary policy will be closely compared with those of Alesina.

Although there is no agreement on how monetary policy is conducted, its overall goal is to promote stable growth in aggregate demand, since rapid growth will yield inflation, low unemployment, and high output growth and vice versa. Bearing in mind that Democratic administrations care more about output growth and unemployment and less about inflation, both rational and traditional partisan theory imply that money expansion should be greater under Democratic administrations than under Republican administrations. Furthermore, the theories suggest that under Democratic administrations nominal interest rates will be higher, due to the fact that their administrations see higher inflation than Republican administrations (Heckelman and Whaples 1996, 247).

In the following observations, like Alesina, we have considered quarterly data for money supply growth rates and short- and long-term interest rates. Alesina used these data as they are the Federal Reserve's instruments of monetary policy, and especially a short-term interest rate has been, and is, the main instrument of monetary policy in the United States (Alesina 1997, 95).

Money Supply Growth Rates and Partisan Effect

Combining the Federal Reserve's monetary policy reaction function and Alesina's partisan model, we arrive at the following model:

$$m_t = a_0 + a_1 m_{t-1} + a_2 m_{t-2} \dots + a_n U_{t-1} + a_{n+1} PDUM_t + e_t \quad (4.1)$$

Monetary policy instruments address two measures that are also addressed in this study: growth rate of money and interest rate. Monetary policy data include money supply growth rates (m).

$$m = \frac{M_t - M_{t-4}}{M_{t-4}} \times 100, \text{ where } M_t \text{ is the level of monetary aggregate (M0 and M1).}$$

In (4.1), m_t is the vector of time-series data on money growth; this rate of the money supply is defined as $m = (M_t - M_{t-4}) / (M_{t-1}) \times 100$ where M_t is the level of the monetary aggregate in the regression (Alesina 1997, 96). The reaction function implies that monetary growth is correlated with business cycle conditions as U (representing the

unemployment rate) is included in the function. This basically means that when the unemployment rate is falling, monetary policy becomes tighter than otherwise, because the Federal Reserve tries to avoid the inflationary consequences of excessive growth.

For M_t , we considered monetary base (M0), which is known to be more directly controllable by the Federal Reserve and monetary aggregate (M1) is also used as one of the monetary policy instruments. *PDUM* is a dummy variable mentioned earlier to test the implication of different theories of the political business cycle. In the regressions for interest rates we considered four different interest rate measures. The federal funds rate and the discount rate are under the Federal Reserve's direct control; whereas the rates for the three-month Treasury bill and the ten-year Treasury note are determined by the market (Alesina 1997, 97) *PDUM* also includes a partisan model of RADM.

The idea behind targeting monetary aggregate (i.e., M1 supply) is that in the short run, a high money supply growth rate increases inflation and employment, all other things being equal, and a low money growth rate yields lower inflation but also lower output growth and employment.

As economists have suggested, one important property of any econometric model is the stability of its parameters over the sample period, which is assessed using Chow's breakpoint test. This is appropriate to test for the existence of structural breaks as they provide formal statistical criteria to distinguish outliers from more fundamental structural changes (Calza 2003, 115).

Like Alesina, we chose 1982 as a subsample to test the stability of the results. This was done because there is instability in money demand. As a result, we considered two different samples— from 1970 to 2005 (the full sample) and from 1970 to 1982. From a macroeconomic viewpoint, instability of money demand was one of the primary causes of difficulties of money supply targets. The year 1982 was chosen to capture the changes in financial regulations that made money demand more stable as well as the finishing of tight monetary aggregate control (Alesina 1997, 97). Thus the Chow test breaks the time series into two periods so as to investigate changes in policy impacts.

Our results will be closely compared with Alesina's work. Alesina's full sample results had the expected signs, and monetary policy was proven to be tighter when the unemployment rate fell. His results also had their constants negative signs, and M1 was significant for the 1 percent level. Both samples showed cyclical variables, since when $M0(-1)$ is positive, $M0(-2)$ gives a negative sign and the same for M1.⁶ *PDUM*

6. See Figure 1 in the Appendix.

(RADM) was not significant in the full sample with negative signs for both M0 and M1, which implies that money growth rates are lower under Republican administrations.

However, our work differed from Alesina's in a few aspects. As shown in Table 4, Constants and U did not have the expected signs, and only the first U had the right sign with 10 percent significance. On the other hand, both samples showed a cyclical pattern, like in Alesina's work. In terms of RADM, unlike in Alesina's work, M1 was statistically significant at the 1 percent level, confirming that there tends to be a lower money growth rate during Republican administrations. This was apparent in both samples. The difference in the results might be due to financial innovations and deregulation, which have changed the money demand, particularly since the beginning of the 1980s. In addition, the high instability in money velocity is very likely a reason for such results.

Table 4. Partisan Theory: Rate of Growth of Money (M)

Independent variables	Coefficient (t-statistics)			
	1970-2005 sample (N = 144)		1970-1982 sample (N = 52)	
	M0	M1	M0	M1
Constant	1.12 (1.79)	6.1 (9.43)	3.08 (2.99)	9.03 (7.93)
U (-1)	0.16 (1.76)*	-0.06 (0.54)	-0.55 (0.77)	-0.22 (2.12)**
M0 (-1)	0.76 (3.89)***	—	0.83 (5.47)***	—
M0 (-2)	-0.04 (0.42)	—	-0.17 (1.21)	—
M1 (-1)	—	0.36 (4.47)***	—	0.06 (0.46)
M1 (-2)	—	-0.02 (0.21)	—	-0.01 (0.07)
RADM (-2)	-0.16 (1.23)	-0.69 (4.60)***	-0.26 (2.17)**	-0.69 (4.30)***
R ²	0.59	0.44	0.73	0.41

* 10% confidence level

** 5% confidence level

*** More than 1% confidence level

With statistically significant results on political variables, it is safe to conclude that the two parties have different effects on the money supply when they are in office—money growth rates are lower under Republican administrations.

Interest Rates and Partisan Effect

In monetary policy, interest rates are used in open market operations to change the money supply to maintain a certain level of interest rates. We used the level of the relevant interest rate, following Alesina's work. The interest rate (i) was divided into four different rates as follows: short-term interest rates, including the federal funds rate and the three-month Treasury bill rate, and long-term rates, including the discount rate and the ten-year Treasury note rate. The federal funds rate and the discount rate are effectively under the Federal Reserve's control, while the three-month Treasury bill rate and the ten-year Treasury note rate are mainly determined by the market. In theory, if monetary policy is systematically more expansionary during Democratic administrations, we can expect higher inflation rates and higher short- and long-term nominal interest rates during these administrations than during Republican ones (Alesina 1997, 99).

Alesina's results were consistent with his theory, since the coefficient on the partisan dummy RADM (-2) has a negative sign and is statistically significant at the 5 per-

Table 5. Partisan Theory: Interest Rate (i)

Independent variables	Coefficient (t-statistics)			
	(1)		(2)	
	Federal funds rate	Discount rate	3-month Treasury bill	10-year Treasury note
Constant	0.29 (1.30)	0.2 (1.57)	0.21 (1.02)	0.19 (1.00)
i (-1)	1.2 (10.06)***	1.28 (15.24)***	1.16 (10.05)***	1.23 (10.80)***
i (-2)	-0.43 (2.71)**	-0.32 (2.95)**	-0.43 (2.05)**	-0.3 (1.75)*
i (-3)	0.19 (1.29)	0.02 (1.18)	0.23 (1.32)	0.04 (0.37)
RADM (-2)	-0.13 (1.69)*	-0.74 (1.36)	-0.09 (1.25)	-0.01 (0.16)
R ²	0.91	0.96	0.92	0.95

N = 144

* 10% confidence level

** 5% confidence level

*** More than 1% confidence level

Autocorrelation was found with the discount rate and three-month Treasury bill. Heteroskedacity was found for the federal funds rate and ten-year Treasury note. Both were corrected using Newey West and White adjustments.

cent level. Table 5 presents the results of the tests on interest rates and, as mentioned before, uses four different short- and long-term interest rates.

As expected, our results also had negative signs for RADM (-2), which implies that under Republican (Democratic) administrations, interest rates are lower. However, all the t-values were insignificant, except for the federal funds rate at 10 percent significance level, which differs from Alesina's results. In addition, the correct signs on the coefficients showed the procyclical nature of the interest rates. Therefore, Republican administrations produce lower interest rates, and our results uphold Alesina's, except for the fact that ours were not as statistically significant as his.

POLITICAL CYCLES IN FISCAL POLICY

Fiscal policy is relatively easy for government to manipulate, and the results are likely to affect the voters directly and quickly (Rogoff 1990, 6). Here we consider budget deficit (based on taxation and spending) and transfer payments. The advantage of using fiscal policy is that it is more visible and thus could attract more voters.

According to Tufté (1978), fiscal policy is the most robust empirical aspect of the political business cycle. Partisan theory implies that Democratic administrations are likely to conduct a greater amount of deficit spending than Republican ones. However, in order for a government to increase its spending, it requires a budget that enables it to spend, and there is some evidence confirming higher tax rates in Democratic administrations (Alesina 1997, 103).

Government Budget Deficits, Elections, and the Partisan Effect

We began investigating fiscal deficits by using the same model as Alesina. For fiscal deficits, we used Barro's (1979) tax-smoothing model. According to the model, when there is a negative transitory output shock (such as a recession) or a positive transitory spending shock (as in the case of a war), it is optimal to maintain tax rates approximately constant, run a fiscal deficit, and build up the stock of public debt. Deficits and debt are then injected into the economy and create an economic boom. Below is Barro's model for regression.

$$db_t = a_0 + a_1 db_{t-1} + a_2 (b_{t-1} \pi_t^e) + a_3 YVAR_t + a_4 GVAR_t + \alpha_5 PDUM_t + e_t \quad (5.1)$$

Fiscal policy data (Alesina 1997, 104) include budget deficits (*db*): the change in the stock of public debt held by the public as a share of GDP; after dividing the debt by GDP,

$$db_t = \frac{db_t - db_{t-4}}{db_{t-4}} \times 100\%$$

Inflation ($b\pi^e$) was formulated to capture the effects of expected inflation (π^e) on the public-debt-to-GDP ratio (b) where π^e was generated as a forecast (predict π that) after regressing inflation on two lags of inflation and lagged monetary growth (MO). We added the unemployment rate (UR), the deviation of the unemployment rate from its trend value. The trend value was measured by regressing the unemployment rate against time. Government spending (GS) was the deviation of government spending (as a share of GDP) from its trend value. We included PDUM (political dummy) such as partisan effect and election dummies. For political orientation of administration, the RADM variable was introduced.

Table 6 presents the results of regression on quarterly budget deficits data for 1970-2004. Column A is a regression without PDUM:⁷ deficits are not persistent over time,

Table 6. Political Effects on Budget Deficits (% of GDP)

Independent variables	Coefficient (t-statistics)				
	A	B	C	D	E
Constant	0.22 (0.44)	0.33 (0.67)	0.38 (0.92)	0.51 (1.25)	-0.73 (0.47)
db (-1)	0.88 (22.40)***	0.88 (22.27)***	0.83 (23.92)***	0.83 (22.48)***	0.81 (10.94)***
b (-1) π^e	0.38 (1.45)	0.39 (1.58)	0.36 (1.46)	0.37 (1.62)	1.31 (2.04)*
UR	-0.37 (2.91)**	-0.36 (3.11)***	-0.35 (3.21)***	-0.35 (3.42)***	-0.21 (0.97)
GS	-0.68 (0.05)	-1.14 (0.08)	-9.63 (0.73)	-10.31 (0.78)	38.78 (0.62)
NRD4	-	-0.47 (1.41)	-	-0.51 (1.58)	-
RADM (-1)	-		0.44 (3.52)***	0.45 (3.58)***	0.38 (1.38)
R ²	0.89	0.89	0.90	0.90	0.81

* 10% confidence level
 ** 5% confidence level
 *** more than 1% confidence level

Newey West adjustment took place for all five regressions. See Figure 2 in the Appendix.

7. Barro's regression (1979).

as the difference between constant and lagged deficits is huge, inflation does not play an important role in this regression, deficits are cyclical (UR coefficient), and government spending (GS) does have the same sign as in Alesina's work but is not statistically significant. The results seem to be very different from those of Alesina, since the deficit was statistically very significant and had positive signs whereas the deficit was not significant at all and had negative values.

We introduced the opportunistic model dummy variable (NRD4) to Column B, and we obtained an insignificant effect of NRD4, but the sign implied that deficits are lower in the election years. In columns C and D, we added a partisan dummy variable of RADM, first without NRD4 and then with it. Both regressions presented statistically significant t-values at the 1 percent level. The dummy variable implies that fiscal deficits are higher under Republican administrations and lower under Democratic administrations.

In order to test whether this result was reflected entirely by Republican administrations, column E was created and we regressed the model up to 1981. Then the significance of RADM dropped; therefore, we can conclude that fiscal deficits do not differ based on what party is in office. Drazen (2005) generalized, "There is evidence of pre-electoral increases in transfers and other fiscal policy instruments in a number of countries. In the U.S., this appears strongest prior to 1980 (Drazen 2000, 23)." This generalization did not, however, apply to our findings.

Transfer Payments

A ratio of personal transfers (TR) was used, calculated by subtracting personal contributions to social insurance from total federal transfers to U.S. citizens divided by seasonally adjusted GNP. Then two autoregressive terms were added to capture the persistence of the variables, trend variable and seasonal dummies (Alesina 1997, 105). A new political dummy variable called EV was created; it was coded as +1 in the quarter before and the quarter of the presidential elections and as -1 in the two quarters following the presidential elections.

Overall, none of the PDUM variables were significant, and the coefficients were too small to observe any systematic pattern (see Table 7). This suggests that the government cannot easily manipulate transfer payments in the short term. Our results were similar to Alesina's, but a few had different signs.

Table 7. Political Effects on Transfer Payments (TR)⁸

Independent variables	Coefficient (t-statistics)		
	A	B	C
Constant	0.0002 (1.34)	0.0003 (1.57)	0.0003 (1.49)
TR (-1)	0.66 (7.86)***	0.67 (3.82)***	0.7 (7.88)***
TR (-2)	0.33 (3.87)***	0.33 (3.82)***	0.33 (3.83)***
Trend	0 (0.80)	0 (0.82)	0 (0.84)
LR	-0.00002 (2.25)**	-0.00002 (2.2)**	-0.0001 (2.98)**
RADM	0.00004 (0.80)	-	-
NRD4	-	0.00001 (0.11)	-
EV			0.000079 (0.61)
R ²	0.78	0.81	0.82

* 10% confidence level

** 5% confidence level

*** More than 1% confidence level

CONCLUSIONS

This analysis provided substantial empirical evidence for Alesina's rational partisan model. In a previous paper, we found that the output growth rate increased temporarily, which is generally accepted in many other studies. The unemployment rate provided convincing results, too. However, the rate of inflation did not show strong evidence for the partisan model.

With monetary policy, money growth rates are lower under Republican administrations than when a Democrat is in office, showing a difference in money supply policy. Regarding interest rates, it cannot be conclusively said that Republican administrations impose lower interest rates than Democrats. Although Alesina found that the rates

8. See Figure 3 in the Appendix.

were statistically significant, our findings only showed significance at the 10 percent level in the federal funds rate; the other interest rates did not demonstrate a partisan effect. With regard to fiscal policy, the fiscal deficit seemed to show a large partisan effect with significance, but when we estimated the model up to 1981, the effect disappeared and showed the same effect as in Alesina's work. Transfer payments did not show any favor for either the opportunistic or partisan model. Even though there was evidence of a pre-electoral increase in government transfers (such as food stamps, social security, and other cash payments) and other fiscal policy spending, it appeared strongest before 1980.

For future research, the models of political business cycles should be examined and reviewed in greater depth. Alesina et al. (1997) empirically tested the rational partisan theory in industrial economies, eighteen OECD countries, from 1960 to 1993. They found that the rate of output growth of the OECD countries was consistent with the findings on U.S data. That is, a change in government to the right (or left) leads to a transitory fall (or increase) in output growth. However, the coefficients on the political dummy and t-statistics of those countries that have either a pure two-party system or at least more clearly identifiable left and right coalitions—such as UK, Australia, and Canada—had a higher and more significant partisan effect than other countries.

Alesina et al.'s (1997) work, however, did not include countries that have joined the OECD since 1993. Therefore, it will be interesting to add Korea and other countries such as Mexico and the Czech Republic to the analysis of rational partisan theory and to test whether the theory holds in newly developed countries as well.

Regarding the case of Korea, the political business cycle theory might be an interesting idea to consider. This is due to a strong link between the incumbent party of the president and the presidential election. However, the partisan effect might not be evident in Korea because its party system is different from that in the United States, especially in that it is not a two-party system. Therefore, polarization of parties in monetary and fiscal policy will be hard to observe. In addition, Korea has a single-term system, unlike the United States where the possibility of re-election exists. Nevertheless, if we include the Korean model in the work of Alesina et al. (1997) for the comparison of the OECD countries in a panel data set, we will be able to see the partisan effect in Korea. Updating the panel data set of Alesina et al. (1997) will also be extremely useful in further research.

In addition, it will be worthwhile to investigate the relationship between stock market gains and elections, as stock markets have historically performed best in the third year of a president's term. The stock markets are also a good indicator of financial market confidence in the incumbent president's party, and once the incumbent parties are re-elected, stock markets tend to be more stable and perform better.

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APPENDIX

Figure 1. M0 and M1

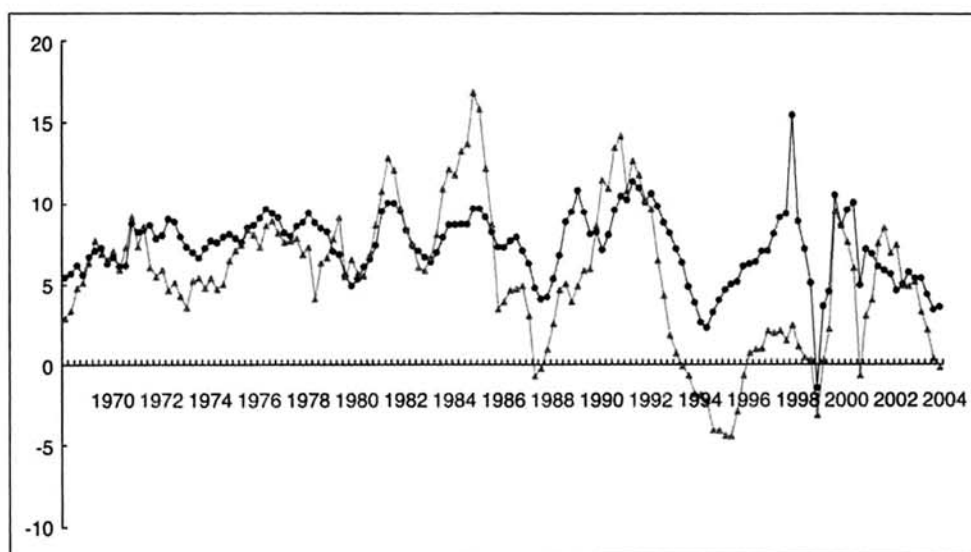


Figure 2. Budget Deficits (% GDP)

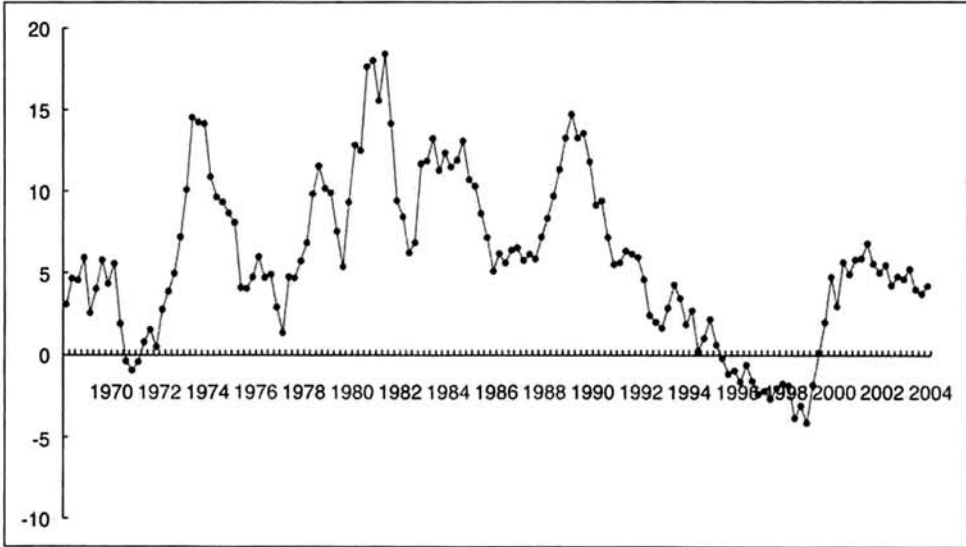


Figure 3. Personal Transfers (% GDP)

