NBER WORKING PAPER SERIES

ENDOGENOUS ELECTION TIMINGS AND POLITICAL BUSINESS CYCLES IN JAPAN

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Working Paper No. 3128

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
September 1989

Earlier research for this project was carried out as a joint project with Jin Hyuk Park, then a senior student at Harvard College when the author was a visiting Associate Professor at Harvard University. An initial set of empirical results were reported in Mr. Park's senior thesis, and its revisions were published in Economics Letters. The author of this paper regrets that Mr. Park could not participate after his graduation in continuation of the project, developing a theoretical part. The present author would like to take a full responsibility for errors of this paper, but Mr. Park shares credits in empirical parts of this paper. This author is grateful to a support given to this project by the Department of Economics, Harvard University. Discussions with David E. Bloom, Christopher Cavanough, Barry Eichengreen, Hidehiko Ichimura and Ken Wolpin have been helpful. This paper is part of NBER's research project in Financial Markets and Monetary Economics. Any opinions expressed are those of the author not those of the National Bureau of Economic Research.

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ABSTRACT

This paper constructs a theoretical model of political business cycles in a Parliamentary system and tests predictions and hypotheses of a theoretical model against the post-war Japanese data. Unlike in a presidential system, the timing of a general election is an endogenous policy variable in a parliamentary system. Thus, one of the interesting questions in a parliamentary system is whether elections cause business cycles or economic expansions trigger general elections.

Empirical analyses of the post-war Japanese experience strongly indicate that the Japanese government did not manipulate policies in anticipation of approaching elections as political business cycle theories in a presidential system indicate. Instead, general elections were usually held during times of autonomous economic expansion. In other words, the Japanese government opportunistically manipulated the timing of elections rather than the economy.

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I. Introduction

This paper constructs a theoretical model of political business cycles in a parliamentary system and tests against the postwar Japanese data predictions and hypotheses derived from the theoretical model. Unlike in a presidential system, the timing of a general election is an endogenous policy variable in a parliamentary system. Prime Minister in Japan may dissolve the House of Representatives anytime during its four-year term.[1] Thus, one of the interesting questions in a parliamentary system is whether elections cause business cycles or economic expansions trigger general elections.

Empirical analyses of the post-war Japanese experience strongly indicate that the Japanese government did not manipulate policies in anticipation of approaching elections as political business cycle theories in a presidential system could indicate. Instead, general elections were usually held during times of autonomous economic expansion. In other words, the Japanese government opportunistically manipulated the timing of elections rather than the economy.

Models of political business cycle theories with myopic voters start from the underlying premise that the electorate has preferences among economic outcomes that are reflected through its voting behavior. Low unemployment, low inflation and high output garner more votes for an incumbent party. However, voters are also presumed to be myopic: In evaluating the general state

of the economy, they take into account only recent past experiences without any future expectations. Politicians, only interested in winning elections without much regard for the welfare of the society, thus stimulate an economy before the election at the cost of post-election inflation. As politicians try to exploit the trade-off in the short-run Phillips curve every four years, business cycles are created.

The literature in this strand can be classified along two lines: The traditional theory by Nordhaus (1975) and Tufte (1978); and the partisan theory by Hibbs (1977, 1987), Beck (1982), and Alesina and Sachs (1988).[2] According to Nordhaus, an incumbent party generates expansions near elections and then induces contractions to control the overheated economy after the election. Hibbs and his followers, on the other hand, emphasizes the partisan nature of politics. He argues that parties with different core constituencies pursue different economic policies. The change in parties cause the change in social priorities.

Recently, models with rational voters have been developed, with two lines of thoughts. Cukierman and Meltzer (1986) and Rogoff adn Sibert (1988) considered a model in which political parties, whose objective is to maximize the probability of staying the power, faces rational voters who rationally expect how political parties possibly manipulates the economic policies for elections. Alesina (1987) and Alesina and Sachs (1988) investigated models with two parties with different social objec-

tives play repeated games and test against the U.S. postwar data.

Most of these works have been conducted in the framework of the U.S. presidential system, in which elections come once every four years. Careful applications of the idea to other countries, taking into account a different political system, are scarce. In fact, in the parliamentary system like one in Japan, the timing of elections is not fixed, but subject to a discretion of Prime Minister. Instead of manipulating an economy in an attempt to line up the peak of business cycles to the fixed election timing, the incumbent party may opportunistically wait for a business cycle peak which is generated by autonomous forces of private sectors.

An investigation on political business cycles in Japan is important in several aspects.[3] First, the Parliamentary nature of the Japanese government requires us to construct a model which allows for endogenous election timings. Although political business cycles in Britain, as a part of cross-country studies, have been investigated earlier, no rigorous theoretical framework for a parliamentary system was proposed. In section 3, I will propose a general model which describe interaction between election (timing) and business cycles.

Second, election timings are chosen by policy makers depending on the course of the economy, while the policy is conducted in expectation of elections. This implies that the simultaneity bias becomes a problem in estimating effects of

economic performance on election timing and effects of expected election on policy manipulation. We will empirically answer the question whether elections cause booms or booms trigger elections in Japan, correcting for the simultaneity bias. Inoguchi (1983) was the first to emphasize endogeneity of election timing in Japan. He concluded that it was more likely that the Japanese government seized the opportunity of good economic performances to call a general election. He attributed his finding in part to a strong bureaucratic system independent from political influences. Although his insight was novel, his conclusion was not based on rigorous estimation procedures and hypothesis testings.\4

Ito and Park (1988) devised an econometric test of the endogeneity of election timings. They investigated whether economic variables influenced the probability of election timings, given the time elapsed from the last election. They found a significant effect of unexpected better performance of the economy on the probability of election. They have also tested whether monetary and fiscal policies were manipulated in the expectation of elections. They did not find an evidence that economic policies were manipulated.

Cargill and Hutchison (1988) also investigated whehter the probability of elections was influenced by economic performances. They came down to an opposite conclusion from Ito and Park: "the incumbent party does not appear to systematically use generally

good economic conditions (or news of these conditions) in its decisions to call elections early." In the subsequent paper, Cargill and Hutchison (1989) examined whether the reaction function of monetary policy (captured by the interest rate or the money supply) of Bank of Japan was influenced by the election timings (dummy variable), and found that after 1975, the Bank of Japan a systematic downward shift in the interbank rate preceding Lower House elections. Moreover, the effect is tempered by the strength of the incumbent party.

The rest of this paper is organized as follows. Next section will make an informal observation at the relationship between the growth rate and the election timing. Section 3 will present a theoretical model in which the election timing is optimally chosen by the government. An empirical analysis of the traditional theory (effects of elections on policy manipulations) will be carried out in section 4. A hypothesis that election timing is endogenously chosen will be tested in section 5.

II. Casual Observations

Suppose, as uaual, that the government tries to call an election in a quarter with good economic performances, say, the growth rate. Then we should expect to find that the growth rate tends to be higher in election quarters. Now recall the Constitutional constraint that the general election has to be called before the end of four-year (16 quarter) term. Suppose also that the government cannot manipulate economic performances

with certainties. Under uncertainty, the government would call an election near the end of the four-year term even if the growth rate is only moderately high, because time may run out on the incumbent without a quarter of a very high econmic growth rate.

In sum, we expect that the probability of election tends to increase with growth rate and to increase as the number of quarters since last election (TSLE) increases. In other words, an election called relatively early in the term is accompanied by a very high economic growth rate and an election called near the end of the term may be accompanied by a moderately high economic growth rate.Hence, when we plot the growth rate of each election cycle (y-axis) against the number of quarters elapsed (x-axis), the end of election cycles (election timing) tend to be <u>downward sloping.</u>

Figure 1 (1955-1972) and Figure 2 (1973-1986) show relationship between the election timing as a function of the number of quarters since last election and the growth rate. Samples are divided into two periods, before and after the first oil crisis. Samples before 1955 are not used, because the formation of Liberal Democratic Party (LDP) via merging two parties in 1955 changed the political structure.

Insert Figures 1 and 2 here

In Figure 1, the downward-sloping election threshold is evident. Elections called between 10th and 11th quarters since

last elections are accompanied by growth rates exceeding 4 percent. When the term went into the 4 year (13th quarter), the election was called at the growth rate as low as 2 percent. However, in each case, the growth rate of each election quarter is higher than the preceding quarter. Moreover, the plot of election quarters (marked by dots and quarter identifications) show the downward-sloping property predicted in the earlier discussion in this section.

In Figure 2, the downward-sloping property is not evident. The first election cycle after the first oil crisis went to the full four-year term for the first time. It is likely that the government did not realize that the structural change had occurred so that the growth rate is permanently lower. The government waited for a high growth quarter, and waited. But it never came. In retrospect, the government should have called an election in the 10th quarter, when the growth rate was 2.4 percent, which was much lower than the election threshold of the pre-oil shock phase (Figure 1), but which turned out to be much higher than the subsequent quarters. The election cycle started in 1980:1 lasted only a half year. Clearly this was not a good time to have an election: it was a low growth rate and too early in the election cycle. However, this early dissolution was due to an "accidental" passage of the nonconfidence vote on the Ōhira cabinet. Hence, this election cycle is an outlier from our viewpoint of political business cycles.

III. Endogenous election timng: An Example

In the preceding section, an observation was made that an election was called at a lower growth rate if the number of quarter since last election was greater. In this section, I will develop an theoretical example in which an optimal decision of the government produces the choice of election timings with the observed characteristics.

Suppose that the full term of House of Representatives are four periods (years). The number of periods elapsed since last election is denoted by s. Suppose that the economic growth rate, g_s, is the only relevant variable for voters in the election, and there are only three possible states with regard to g, High growth, g^H, moderate growth, g^M, and low growth g^L, with an equal probability, 1/3, each. The growth rate at the time of last election is denoted by g_0.

Every period, the government observes the growth rate, g_s, and decides whether to call an election. If the government calles an election in a period with the growth rate g_s, the political value of the election is the expected value of being the power in the next election cycle. Let us denote by $V(g_s)$ the political value of calling an election in a period with growth rate g_s. The value will be calculated later as a value function of dynamic programing problem. An election in a high growth period will make an incumbent party to win with a wide margin, yielding the political value of h: $V(g^H)=h$. Elections in a

moderate growth rate would make an incumbent party to win with a small margin, yielding the political value of m: $V(g^M)=m$. If an election is held in a low growth period, the incumbent party is assumed to lose a majority, and the opposition takes over a government with a moderate margin. The fixed value, -k, represents the agony of defeat and the discounted sum of expected political values being as an opposition party: $V(g^L) = -k$.

If the incumbent party decides not to call an election, the party extracts political utility to be in the power, $b(g_0, s)$. The utility is a composite of psychic satisfaction and the financial donation from the private sector to the party. The utility is an increasing function of g_0 since the maintaining a wide margin gives an easy management of the govenment and the House of Representatives. The utility is decreasing function of s, because the returns to be in the power will deminish.

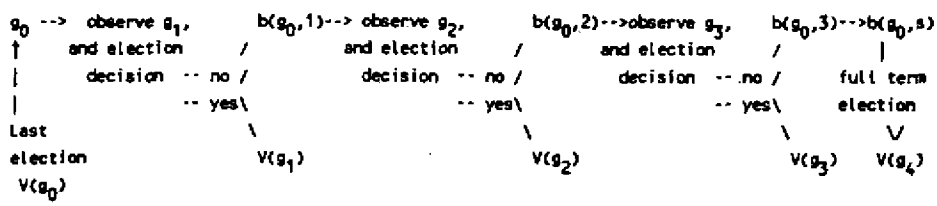
Thus, let us assume the utility of staying power in the s-period after the election is,

$b(g^H, s) = b^H/s$, $s= 1,2,3$; and $b(g^M, s) = b^M/s$, $s= 1,2,3$.

Note that the election with the low growth rate g^L implies the loss of majority. There is no b assigned for this case, since the fixed political value of election, -k, already takes into account the value being outside the power.

Now we are ready to describe the dynamic probraming program, summarized in Chart 1, which will solve the value function V(.).

Chart 1



Note: $V(g_s)$ = h, m, and -k, if $g_s = g^H$, g^M, and g^L, respectively.

Case 1: The last election at b^H

Suppose that the last election was held in a high growth period. We calculate the polical value of the last election by calculating the value backwards.

In the fourth period since the last election (s=4), another election must be held, so that the expected (period 3) value for the fourth period is

$$EV(g_0=g^H,\ s=4) = h/3 + m/3 - k/3 = (h+m-k)/3.$$

In the third period, if an election is not held, the utility of staying in power $b^H/3$ is earned in that period and the expect value $EV(g_4,\ h)$ is also earned: the sum being $(b^H+m+h-k)/3$. If an election is chosen, the political value of election V(.) is earned depending on the state of economy. The election decision is made. Let us assume, for example,

$$h > m > (b^H+h+m-k)/3 > -k. \qquad (1)$$

This implies that in the third period after election, the high or moderate economic growth would trigger an election. But the low growth will not. Given this condition, the expected value of the

third period is

$$EV(g_0=g^H,\ s=3) = h/3 + m/3 + (b^H+h-k)/9$$
$$= (b^H+4h+4m-k)/9$$

The second period decision problem is similar: Knowing g_2, the government calls an election if $V(g_2) > b^H/2 + EV(g_0=g^H,\ s=3)$. The right hand side of this inequality is the sum of the value of staying in power during the second period and the expected value of going into the third period. Let us assume, for example,

$$h > (11b^H + 8h + 8m - 2k)/18 > m > -k \qquad (2)$$

Then, an election option is chosen only if high growth is achieved in the boom in the second period. Moderate and low growth will make the incumbent government to wait and see, while the government enjoys commanding the power. The expected value is then

$$EV(g_0=g^H,\ s=2) = h/3 + (2/3)(11b^H + 8h + 8m - 2k)/18$$
$$= (11b^H + 17h + 8m - 2k)/27$$

The decision problem at the beginning of the first period is to compare $b^H + EV(g_0=g_H,\ s=2)$ with $V(g_1)$. Assume that

$$(38b^H + 17h + 8m - 2k)/27 > h \qquad (3)$$

Then, an election is not called even with high growth in the first period after the last election. Therefore, the expected value is

$$EV(g_0=g^H,\ s=1) = (38b^H + 17h + 8m - 2k)/27$$

Now the value of $V(g^H)=h$ is endogenously solved by equating the value of having an election (s=0) in a high growth period is the

expected value of this government in the future.

$$h = EV(g_0=g^H,\ s=1) - c$$
$$= (38b^H + 17h + 8m - 2k)/27 - c \qquad (4)$$

where c is the cost of election incurred by having an election.

Case 2: The last election at b^M

Suppose that the last election was held at a moderate growth period. The expected value for the fourth period is the same as Case 1:

$$EV(g_0=g^M,\ s=4) = h/3 + m/3 - k/3 = (h+m-k)/3.$$

In the third period, if an election is not carried out, the utility of staying in power $b^M/3$ and the expect value $EV(g_0=g^M, s=4)$ is also earned. Note that we assume $b^H > b^M$. If an election is carried out, the political value of election V(.) is earned. Observing g_t and comparing $V(g_t)$ with $(b^M+h+m-k)/3$, the election decision is made. Let us assume, for example,

$$h > m > (b^M+h+m-k)/3 > -k. \qquad (5)$$

This implies that in the third period after election, the high or moderate economic growth would trigger an election, as was in Case 1. With this decision rule being known, the expected value is

$$EV(g_0=g^M,\ s=3) = (b^M+4h+4m-k)/9.$$

In the second period, the no-election option would produce the value $b^M/2 + EV(g_0=g^M, s=3) = (11b^M + 8h + 8m - 2k)/18p$. Let us assume that

$$h > m > (11b^M + 8h + 8m - 2k)/18p > -k \quad (6)$$

Then in the second period, the election is called unless growth is in the low state. Then, the expected value is

$$EV(g_0=g^M, s=2) = h/3 + m/3 + (1/3)*(11b^M+8h+8m-2k)/18.$$
$$= (11/54)b^M + (13h+13m-k)/27$$

In the period 1, the value of no election is $b^M + EV(g_0=g^M, s=2)$. Let us assume

$$h > (65*b^M)/54 + (13h + 13m - k)/27 > m > -k \quad (7)$$

Therefore, if growth is high, an election is called even in the first period in Case 2 (unlike Case 1).

$$EV(g_0=g^M, s=1) = h/3 + (2/3)*(65b^M+26h+26m-2k)/54.$$
$$= (65/81)*b^M + (53h+26m-2k)/81.$$

Now the value of m is the expected sum of the future political values less the election cost c:

$$m = EV(g_0=g^M, s=1) - c$$
$$= (65/81)*b^M + (53h+26m-2k)/81- c. \quad (8)$$

Case 3: The last election at b^L

If an election is called in the low growth period, the party loses the majority, and the opposition party takes over as a moderate winner.

$$-k = -c + b^L p + m,$$

where P is the average length of staying as an opposition party, and b^L is the per period value of being an opposition party;

$$b^L < b^M. \quad (9)$$

Since P > 0, (9) would be satisfied if

$$b^M > 0 > -k+c-m \qquad (9')$$

Solution

The political values of calling an election in high and moderate are thus calculated endogenously and simultaneously by equations (1) to (9). The solution to the above problem is said to exist, if we find parameter values, b^H, b^M, b^L, h, m, k, and c, satisfying all inequalities (1)-(3), (5)-(7), and (9) and equalities (4) and (8).

A simulation program to find such a solution can be easily constructed by first assigning values to b^H, b^M, k, and c, and second, solve from (4) and (8) for h and m. Then check whether inequalities (1)-(3), (5)-(7), (9') are satisfied. For example, the following values satisfy all the conditions (1)-(8), and (9'):

c=5, k=30, b^H=20, b^M=10; then (4) and (8) are solved for h and m;

h = 258.373..., m = 252.3413.....

It is easily verified that inequalities (1)-(3), (5)-(7), (9') are satisfied.

Election decisions, solving an example of dynamic programing problem described above, are illustrated in Figure 1. Call an election (o) or No election (x) is indicated as a function of the growth rate g and the elapsed time since last election s. From this figure the following two properties in analogy of search theory are observed.

Insert Chart 2 about here

Property 1: [Reservation growth rate property of election timing]

In period s, if an election is called for g^s, then it would also call an election for any g which is larger than g^s.

Property 2: [Declining reservation growth rate property of election timing]

If an election is called for g^s in period s, then the election is also the choice for g^s in period s+1.

These properties were evident in Figures 1 and 2, especially the former. Now we have just shown that a simple theoretical model will yield the same properties. Of course, the above theoretical framework has a lot of simplifying assumptions. However, it remains my conjectures that these properties will hold in a generalized framework. It is a topic of future research.

Chart 2: Optimal Election Decision rule:

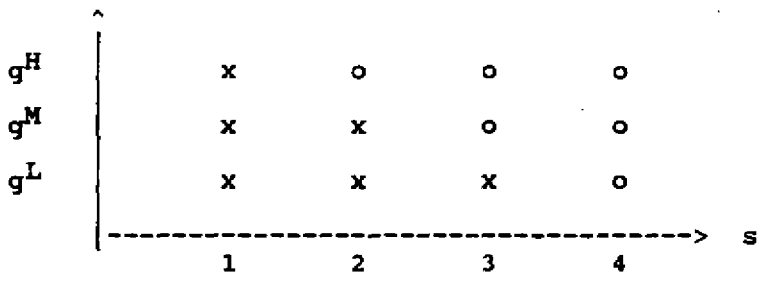
Assumption:

c=5, k=30, b^H=20, b^M=10; then (4) and (8) are solved for h and m;

h = 258.373..., m = 252.3413.....

Case 1 If the last election was called in a high growth period.

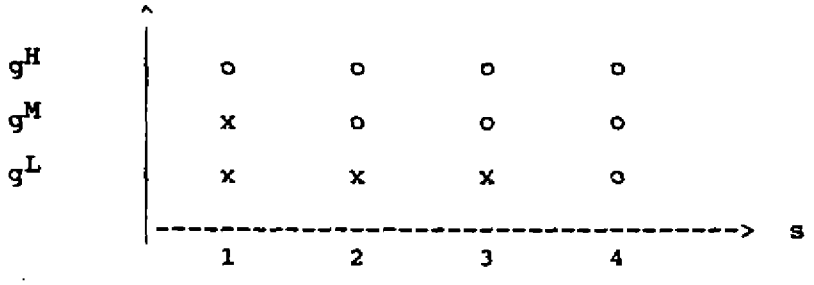
growth rate realization



o : Call an election
x : Not to call an election

Case 2 If the last election was called in a moderate growth period.

growth rate realization



o : Call an election
x : Not to call an election

IV. Empirical Results: Traditional Political Business Cycles

A. Popularity Function

The first step of traditional political business cycles theory is to find economic variables which voters are watching to judge the competence of the incumbent party. Natural candidates of relevant economic variables include, among others, the economic growth rate, and the inflation rate. The unemployment rate has been used in the U.S. study, but we do not use this variable, since the Japanese unemployment rate has been insensitive to business cycles. An additional dummy variable is used to distinguish House of Representatives elections that were held at the same time with House of Councillors elections. They were called the Dojitsu [same day] elections, or the double elections. It has been widely believed that a Dojitsu election helps the LDP draw its passive supporters to the polling place, because voters recongnize a higher significance and feel a greater satisfaction from voting, given the transaction costs to the poll.

Now, the popularity function is specified as a percentage of seats captured in a general election as a function of the GNP growth rate, g, and the inflation rate, p, and the Dojitsu dummy, D.[1]

$$v_t = a_1 + a_2 T + b_3 D_t + b_1 g_t + b_2 p_t + e_t^v$$

where v denotes the percentage of seats won by the incumbent party (LDP), and T denotes the trend. Theory predicts that b_1 is

positive and b_2 is negative. If voters' memory for policy evaluation is extremely short, then the use of quarter-to-quarter growth (and inflation) rate is appropriate. Cases with the one-year, two-year and three-year memory are also examined.

Table 1 about here

Results are shown in Table 1. All signs are consistent with priors and theory. There is a long-term decline in LDP support and the Dojitsu election really helps the LDP gaining votes. An influence of the GNP growth rate on votes is positive and significant in short-memory versions up to two years and an influence of Inflation rate on votes is always negatively and significant. These findings are consistent with a popular thesis of the traditional political business cycle theory (with myopic voters).

The horizon of voters' evaluation seems to be less than two years. Although we do not conduct a formal test of length of memory due to a lack in the degree of freedom, it is not inappropriate to assume that evaluation include variables in the past year only. The finding of short memory justifies the use of a theoretical model in the preceding section.

B. Policy manipulation

In this section we examine whether any visible changes (beyond seasonal and demand factors) exist in monetary and fiscal policy occurred around the election time. An idea is to test

whether an election would cause the government to conduct expansionary monetary and fiscal policies.

As policy tools, we selected the money supply (M2+CD) growth rate, and the ratios of government consumption and expenditures to GNP. The choice of M2+CD is natural, because Bank of Japan watches M2+CD as opposed to M1 as an important monetary aggregate after 1975 (See Ito (1988)). The dummy variable for the regime change will be introduced.

The government consumption or investment represents a fiscal side of government discretion. Political favors in Japan often take a form of bringing public projects for constituents. Moreover, government transfers, which have been used in the literature, are a difficult figure to obtain in Japan, since many relevant transfers are done in the local level rather than the central government level. The Japanese government investment share of GNP is much higher than the United States, and it is an important policy variable. The tax burden and transfer payments do not adequately reflect the fiscal policy being pursued. Hence, only government investment (GI) and consumption expenditures (GC) are included in our fiscal reaction functions. The GI/GNP or GC/GNP ratio is adopted as the fiscal measure.

First, a naive approach of including an election dummy on the right hand side will be estimated. If the election quarter is exogenously determined and perfectly known to the monetary and fiscal authorities, then the use of election dummy variable is

justified. If there is a lag between policy manipulation to the result of an economy, then manipulation may occur in the period preceding to the election quarter. Hence, the election dummy, ELEC(t) or ELEC(t-1) is used in the estimation.

However, the naive approach of using an election dummy would suffer from the simultaneity problem, if the (result of) manipulation affect the election timing. The simultaneity bias can be avoided if we use exogenous variables which would predict the (unconditional) probability of elections. Namely, the time (in number of quarters) elapsed since last election (TSLE) can be used for this purpose. Alternatively, the ex post probability distribution of post-war elections (PREL) as a function of TSLE can be used, when voters are assumed to have a knowledge of such a probability distribution.

(i) Monetary policy

The monetary policy is specified as follows:

$$m_t = \sum a_i D_i + a_6 REGIME_t + \sum b_{1j} m_{t-j} + b_2 p_{t-1} + b_3 g_{t-1} + b_4 E_t + e_t^m$$

where m_t is the quarterly growth rate of M2+CD money supply, D is a vector, (constant, trend, 2nd qtr dummy, 3rd qtr dummy, and 4th qtr dummy); and REGIME is a dummy for regime changes described above (1 after 1975:1)); p_{t-1} is the annual inflation rate for four quarters, g_{t-1} is the one-year moving average of the quarter-to-quarter GNP growth rate; and E_t is a election variable, namely $ELEC_t$, $ELEC_{t+1}$, $TSLE_t$, or $PREL_t$, and e_t^m is the disturbance term.

Estimation results are summarized in Table 2, panel A. For any of the four election variables, an election variable has an insignificant coefficient. The table reveals no evidence for manipulation of monetary or fiscal policies in expectation of upcoming elections. It does not provide us with any support for the traditional line of political business cycle theory. In other words, the insignificant coefficient of the value of election dummy, E, casts a doubt on monetary manipulation in Japan.

Table 2 about here

(ii) Fiscal Policy

The fiscal policy in Japan has gone through a significant regime change just as the monetary policy did. The Japanese government pursued balanced budget principle until 1965. Although deficit financing became legal in 1965, it was not until the mid-1970s that the debt-GNP ratio had skyrocketed in an attempt to combat contractions due to the first oil crisis. Yet, the government budget share of national income remained at a relatively low level compared to those of other countries. We will introduce a dummy variable after the first oil crisis in part to capture the structural change in debt policy in the mid-1970s. The fiscal policy manipulation is specified as

$$f_t = \sum a_i D_i + a_6 OIL + b_1 f_{t-1} + b_2 g_{t-1} + b_3 E_t$$

where f_t is a measure of fiscal policy: GI/GNP or GC/GNP; OIL is

the first oil crisis dummy (1 after 1974:1); and other right-hand-side variables are the same as the monetary manipulation equation.

The estimation results are summarized in Table 2, panels B. Again, there is no evidence to the hypothesis that the probability of an upcoming election, represented by ELEC, TSLE or PRE1, influenced the government consumption or investment.

In sum, we do not detect any influences of election (probabilities) perceived by a function of the elapsed time since last election on the conduct of either monetary or fiscal policy in Japan.

V. Opportunistic Government Hypothesis

Section 2 and 3 provided the casual observation and a simple theoretical model for a hypothesis that election timings are endogenous, or, to put simply, booms trigger elections, while the evidence in section 4 suggests us that the traditional causality in the literature, namely election causes booms, is not detected in Japan. In this section, we will develop an econometric test to nest the two hypotheses in the same equation.

A. Preliminary Investigation

It is our hypothesis that an election timing depends on economic growth, g, inflation, p, and the number of quarters elapsed since last election, TSLE. However, due to the possible missing variables, such as political events, the relationship

between an election timing and the three variables is not deterministic. In this section, The election probability is estimated as a function of the three variables:

$PE_t = a + b_1 g_t + b_2 p_t + b_3 TSLE_t + e^e_t$,

where PE_t is the probability of election; and e^e_t is the distrubance term due to the missing observation, which are assumed to be independent of economic variables and TSLE.

The estimation resuts, using LOGIT and PROBIT, are shown in Table 3, panel A. The positive and significant coefficient on economic growth implies that economic booms trigger an election. An inflation tends to lower the probability of election.

Insert Table 3 about here

So far, it has been shown that economic conditions influence the probability of election. When combined with the results in Section 4 (that is policies are not responding to the anticipation of elections), it shows that booms cause elections, and not vice versa. However, it may be desirable to nest two hypotheses in one equation.

B. Econometric Test[5]

In order to clarify what I mean by a elections-cause-booms hypothesis and a booms-trigger-elections hypothesis, the following two hypotheses are introduced.

First, the manipulative cabinet hypothesis. The election timings are determined in advance by (non-economic) political

reasons, which econometricians do not know. Although the length of election cycle in a parliamentary system does vary, it works like the presidential system if the timing is known to the government in advance. The government manipulates the economy through monetary and fiscal policies in an attempt to cause a boom without inflation at the time of election.

Second, the opportunistic cabinet hypothesis. The incumbent government does not use monetary or fiscal policy in order to influence the economy, just because of an election. The incumbent waits for a timing in that some non-government sector shocks cause high growth and low inflation. The Japanese incumbent cabinet has four years to grab a right moment. The threshold of calling an election as a function of economic performance would change as the full term approaches.

The proposed test of manipulative vs. opportunistic government requires the econometrician to decompose growth and inflation into policy-induced parts and non-government sector shocks. We assume that the former is captured by the expected component of actual growth and inflation, while the latter is captured by the unexpected part. Each of the growth and inflation equations is regressed on the constant, trend, money growth (1 to 6 lags), government consumption and government investment. (Results are not reported here.) Then the fitted values, as the effect of growth and inflation due to policy manipulations, and residuals, as the effect of non-government

Footnotes

1. A general election could be called in three different reasons. First, a general election must be held, if not earlier, at the end of a four-year term of Lower House members. Second, an election can be called if Prime Minister voluntarily dissolves the Lower House. Prime Minister could find some excuses to dissolve the Lower House if he thinks that the timing is politically advantageous. Third, if the Lower House passes a non-confidence resolution against the cabinet, then the Prime Minister has to either disesolve the Lower House or resign. If the latter, the Lower House elects new Prime Minister without a general election.

The Japanese Parliament or the Diet, which closely resembles the British system, is divided into two houses; the House of Representatives (Lower House) and the House of Councilors (Upper House). The head of the government, Prime Minister, is elected by the election among the member of the Lower House. Traditionally, the head of a majority party (or a coalition of parties) becomes Prime Minister. Also a majority of Cabinet members are required to be selected from the Lower House. On occasions when the two houses are in conflict, the Lower House usually commands more power. Therefore, the Lower House carries more political power than the Upper House. The election of the Lower House members, the general election, is the most important political event.

The Liberal Democratic Party (LDP) has dominated both houses since its creation by merging the Liberal and Democratic parties in 1955. The ruling party has an incentive not only to achieve the majority but also maximize the number of seats in the House, since the management of the House is much easier with a wider margin. Therefore, although the LDP has maintained a majority most of the time, it is reasonable to assume that the party has pursued an objective of maximizing the seats in the House.

2. Golden and Poterba (1980) and Frey and Schneider (1978) have estimated the so-called popularity function in order to test whether the President's popularity depends on economic conditions. Golden and Poterba also models how the government uses fiscal and monetary instruments to produce political business cycles and rejects Nordhaus' theory. Similarly, McCallum (1978) finds no support for the hypothesis. MacRae (1977) enalyzes whether the electorate is myopic or not. To examine the welfare consequences of the traditional hypothesis, Chappell and Keech (1983) construct a complete macroeconomic model and concludes that the six-year presidential term generally entails less social welfare loss.

3. Japan is an excellent testing ground for the theory of political business cycles, since the business and government are said to enjoy much closer relationship than in the United States. Management of business cycles (either creating one or taming one) is presumably easier in Japan than the United States.

sector shocks, from these equations are used in the probit and logit equations of election timings. If the manipulative cabinet hypothesis is the case, then the coefficients on the policy-induced growth and inflation are significant; if the opportunistic government hypothesis is correct, then the coefficients on the non-government sector shocks are significant. Results of this test is reported in Table 3, panel B. The results strongly suggest that the demand and supply shocks, independent from policy, tend to trigger elections. In particular, there is more likely to be an election (i) when the surprise growth rate is higher; (ii) when the surprise inflation rate is lower; and (iii) as the number of quarters elapsed since last elections increases.

In sum, the Japanese government opportunistically chose the election timings rather than manipulated the economy. This result signals a warning against any simple-minded applications of presidential-system models to a parliamentary system country.

6. Concluding Remarks

The starting point of this research was a point that the election timing is endogenous in a parliamentary system. A boom may trigger an election. In this paper, how endogenous election timings can be investigated theoretically and empirically. We found that the Japanese government (the LDP) has chosen the timing of elections at or near the local peak of business cycles.

An influence of election anticipation on the monetary and fiscal policies was not in general detected. In sum, the Japanese government was found to be opportunistic in choosing the timing of election, rather than to be actively creating policy-induced booms just for elections.

As concluding remarks, some social welfare implications may be discussed. If a manipulation of an economy is harmful and if the government is induced to exercize a power, the presidential system gives a wrong incentive from the viewpoint of smoothing business cycles. Instead, by allowing the government to choose a timing of elections, the government's incentive to distort a business cycle is mitigated.

However, the opportunistic hypothesis, as modeled in this paper, has a different danger. The incumbent's right to choose election timings tend to perpetuate the popularity of the incumbent party, other things being equal. Moreover, the incumbent would prefer to have a business cycle more volatile than otherwise if the voters' memory is short, and prefer to have a shorter cycle to insure that the peak arrives within the four years. Of course, these arguments can be denied if voters are fully rational and capable of seeing through how much of business cycles are policy-induced and how much are exogenous shocks. However, constructing a model with fully rational (forward-looking) voters in a parliamentarly sytem is out of the scope of this paper and left for future research.

Some researchers, however, might question at an outset the applicability of political business cycles in Japan, claiming the following points. First, there was practically one party that ruled the post-war Japan. The Liberal Democratic Party (LDP) would not have an incentive to boost an economy, if they knew that they would get a majority anyway. Second, it is well-known that the Japanese economy had a low and inflexible unemployment rate. Inflation rate was also very stable until the first oil crisis. There is no way of applying the Nordhaus-type model which relies on the Phillips curve.

The first point is not valid. Even if there was a high probability of getting a majority, the LDP had every incentive to pursue a maximization of seats in the House. The larger the margin, the earsier the management of Parliament. However, the one-party domiance basically eliminates the applicability of the partisan theory (unless a research successfully identifies a leftist and rightist factions withing the LDP). The second point is valid, but it only means that we have to look for other variables which reflect voters' concern.

4. Inoguchi (1983; chapter 5) analyzed how the policy (captured by the change in the official discount rate) responded to economic variables and policy variable (Table 5-5), and how the popularity (captured by the surveyed approval ratio of the cabinet) responded to economic and policy variables (Table 5-6).

Policy decision regressions (Table 5-5) suffered from extremely low Durbin-Watson statistics and sample-selection. Moreover, his insight that the government does not manipulate economic policies is not based on any econometric regressions or hypothesis testing. This paper can be regarded as one to develop a theoretical model and econometric tests of Inoguchi's insight.

5. Contents of this section was reported in a letter journal, see Ito and Park (1988).

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Table 1: Voters Preference

$$v_t = a_1 + a_2 T_t + a_3 D_t + b_1 g_t + b_2 p_t$$

Sample: t = election quarters only, including the 1980 election.
1955:1 - 1986:4, #OBS = 12

	Const.	Trend	Dojitsu	Growth	Infl.	Rbarsq	DW
1. Q-mem.							
coeff.	63.39	-0.11	9.28	0.26	-0.40	0.94	2.01
t-stat.	26.18	-6.96	6.72	2.19	-3.47		
2. Y-mem.							
coeff.	64.00	-0.11	7.42	0.42	-0.70	0.86	2.16
t-stat	31.88	-5.12	3.70	2.78	-3.26		
3. 2Y-mem.							
coeff.	63.55	-0.11	6.99	0.54	-0.74	0.84	1.64
t-stat	18.83	-4.81	3.28	2.14	-2.58		
4. 3Y-mem.							
coeff.	69.85	-0.14	5.82	-0.06	-0.48	0.72	1.30
t-stat	18.47	-4.37	1.96	-0.53	-1.67		

Variables:
v :Percentages of Seats won by the LDP members.
T :Trend, t
D :Dojitsu dummy. = 1,if elections held with that of H of Councilors
= 0, otherwise
g :growth rate.
p :inflation rate.

Cases:
1. Q-mem. Quarter-long memory: g and p are quarter-to-quarter rates.
2. Y-mem. Year-long memory: g and p are changes over past 4 qtrs.
3. 2Y-mem. Two-year memory: g and p are changes over past 8 qtrs.
4. 3Y-mem. Three-year memory: g and p are changes over past 12 qtrs.
(Y-mem. 2Y-mem. and 3Y-mem. are annualized rates.)

Table 2: Policy Manipulations,

A. Monetary Policy Manipulation 1956:2 - 1986:4. (#OBS = 123)

$$m_t = a_1+a_2T+a_3D2+a_4D3+a_5D4+a_6REGIME+ \geq b_{1j}m_{t-j} +b_2p_{t-1}+b_3g_{t-1}+b_4EL_t$$

ONE LAG

	m_{t-1}	p_{t-1}	g_{t-1}	EL_t	Rbarsq	D.W.
1. E = ELEC(t)						
coeff.	0.24	-0.04	0.01	-0.16	0.84	1.95
t-stat.	2.57	-0.50	0.38	-0.39		
2. E = ELEC(t+1)						
coeff.	0.24	-0.03	0.01	-0.17	0.84	1.94
t-stat.	2.63	-0.41	0.38	-0.38		
3. E = TSLE(t)						
coeff.	0.23	-0.04	0.01	0.01	0.84	1.95
t-stat.	2.53	-0.47	0.39	0.24		
4. E = PREL(t)						
coeff.	0.23	-0.04	0.01	0.12	0.84	1.95
t-stat.	2.55	-0.46	0.38	0.08		

FOUR LAGS

	m_{t-1}	m_{t-2}	m_{t-3}	m_{t-4}	p_{t-1}	g_{t-1}	EL_t	R^2	D.W.
1. E = ELEC(t)									
coeff.	0.24	-0.12	0.06	0.33	-0.07	0.02	-0.02	0.86	1.88
t-stat.	2.75	-1.24	0.71	3.80	-0.88	1.17	-0.04		
2. E = ELEC(t+1)									
coeff.	0.26	-0.13	0.06	0.33	-0.62	0.02	-0.31	0.86	1.89
t-stat.	2.91	-1.37	0.66	3.87	-0.80	1.20	-0.78		
3. E = TSLE(t)									
coeff.	0.24	-0.12	0.06	0.33	-0.07	0.02	0.01	0.86	1.89
t-stat.	2.73	-1.31	0.73	3.78	-0.87	1.19	0.30		
4. E = PREL(t)									
coeff.	0.25	-0.12	0.06	0.33	-0.07	0.02	-0.42	0.86	1.89
t-stat.	2.78	-1.27	0.71	3.82	-0.91	1.16	-0.32		

Coefficients on a constant, the trend, the seasonal dummies, and the monetary regime dummy are not reported.

T: TREND
Di: i-th quarter dummy, i = 2,3,4.
REGIME: Bank of Japan, policy regime change: = 1, after 1975:1
m: Quarter-to-Quarter growth rate of M2(+CD) outstanding end of qtr.
g: Quarter-to-Quarter growth rate of real GNP.
p: Quarter-to-Quarter growth rate of CPI.
EL: Election variable, Case 1 = ELECtion dummy for t (excl 1980 elec)
Case 2 = ELECtion dummy for t+1.
Case 3 = TSLE, # of qtrs. since last election
Case 4 = PREL, fitted prob. of election as a function of TSLE.

B. Fiscal Policy Manipulation: 1957:2 - 1986:4. (#OBS = 119)

$$f_t = a_1 + a_2T + a_3D2 + a_4D3 + a_5D4 + a_6OIL + b_1f_{t-1} + b_2g_{t-1} + b_3E_t$$

B. Dependent variable = Government Consumption: f = GC

	GC_{t-1}	g	E	Rbarsq	DW
1. E = ELEC(t)					
coef.	0.91	-.82 xE-3	-.18 xE-2	0.89	1.95
t-stat.	23.62	-1.68	-0.75		
2. E = ELEC(t+1)					
coeff.	0.92	-.82 xE-3	-.95 xE-3	0.89	1.99
t-stat	23.80	-1.68	-0.40		
3. E = TSLE(t)					
coef.	0.91	-.83 xE-3	-.48 xE-4	0.89	1.95
t-st.	23.26	-1.68	-0.28		
4. E = PREL(t)					
coef.	0.91	-.81 xE-3	-.38 xE-2	0.89	1.96
t-stat.	23.51	-1.66	-0.48		

C. Dependent variable = Government Investment: f = GI

	GI_{t-1}	g	E	Rbarsq	DW
1. E = ELEC(t)					
coef.	0.96	-.66 xE-3	-.10 xE-2	0.96	1.97
t-stat.	35.84	-1.68	-0.52		
2. E = ELEC(t+1)					
coeff.	0.96	-.70 xE-3	-.21 xE-2	0.96	2.02
t-stat.	35.13	-1.23	-1.05		
3. E = TSLE					
coef.	0.97	-.69 xE-3	-.11 xE-3	0.96	1.97
t-stat.	35.75	-1.75	-0.80		
4. E = PREL					
coef.	0.97	-.65 xE-3	-.70 xE-2	0.96	1.99
t-st.	36.00	-1.67	-1.10		

GC = government consumption/ GNP ratio, available after 1957,1
GI = government investment/ GNP ratio, available after 1957,1
T: TREND
Di: i-th quarter dummy, i=2,3,4
OIL = oil crisis dummy, = 1 after 1974:1
E: Election variable, Case 1 = ELECtion dummy for t (ex 1980 elec)
Case 2 = ELECtion dummy for t+1,
Case 3 = TSLE, # of qtrs. since last election
Case 4 = PREL, fitted prob. of election as a function of TSLE.

Table 3: Hypothesis Testings

A. Preliminary investigation: 1957:1 - 1986:4, #OBS = 120

$PE_t = a + b_1 g_t + b_2 p_t + b_3 TSLE_t$

PE = probability of election taking place
g = quarter-to-quarter GNP growth rate. (Annualized %)
p = quarter-to-quarter INFLation rate. (Annualized %)

	Const.	g	p	TSLE	Log like. = -12.18
PROBIT					Avr like. = 0.90
coef.	-12.26	0.18	-0.20	0.93	
t-stat	-4.07	1.40	-2.17	3.61	
LOGIT					Log like. = -12.23
coef.	-21.72	0.33	-0.35	1.63	Avr like. = 0.90
t-stat	-3.18	2.55	-2.20	3.10	

B. Hypothesis Testing: 1957:1 - 1986:4, #OBS = 120

$PE_t = a + b_1 Eg_t + b_2 Ep_t + b_3 RESg_t + b_5 RESp_t$

Eg = Fitted values of GNP growth regressed on policy variables
RESg = Residuals of GNP growth regressed on policy variables
Ep = Fitted values of INFLation regressed on policy variables
RESp = Residuals of INFLation regressed on policy variables

	Const.	Eg	Ep	RESg	RESp	TSLE	LL = -10.72
PROBIT							Avr L = 0.91
coef.	-12.24	-0.00	-0.22	0.27	-0.16	1.02	
t-stat	-3.00	-0.19	-1.51	2.83	-1.50	3.15	
LOGIT							LL = -10.89
coef.	-21.32	-0.00	-0.40	0.47	-0.29	1.79	Avr L = 0.91
t-stat	-2.85	-0.01	-1.54	2.68	-1.54	2.93	

Manipulative Government hypothesis: $b_1 \neq b_2 \neq 0$

Test H_m: $b_1 = b_2 = 0$, PROBIT LR test, chisq(2) = 2.88 signif.= 0.237
LOGIT LR test, chisq(2) = 3.04 signif.= 0.219
Failing to reject H_m inconsistent with the Manipulative hypo.

Opportunistic Government hypothesis: $b_3 \neq b_4 \neq 0$

Test H_o: $b_3 = b_4 = 0$, PROBIT LR test, chisq(2) = 15.58 signif.= 0.0004
LOGIT LR test, chisq(2) = 16.27 signif.= 0.0003
Rejecting H_o supports the Opportunistic gov't hypothesis.

Figure 1: Election Cycles

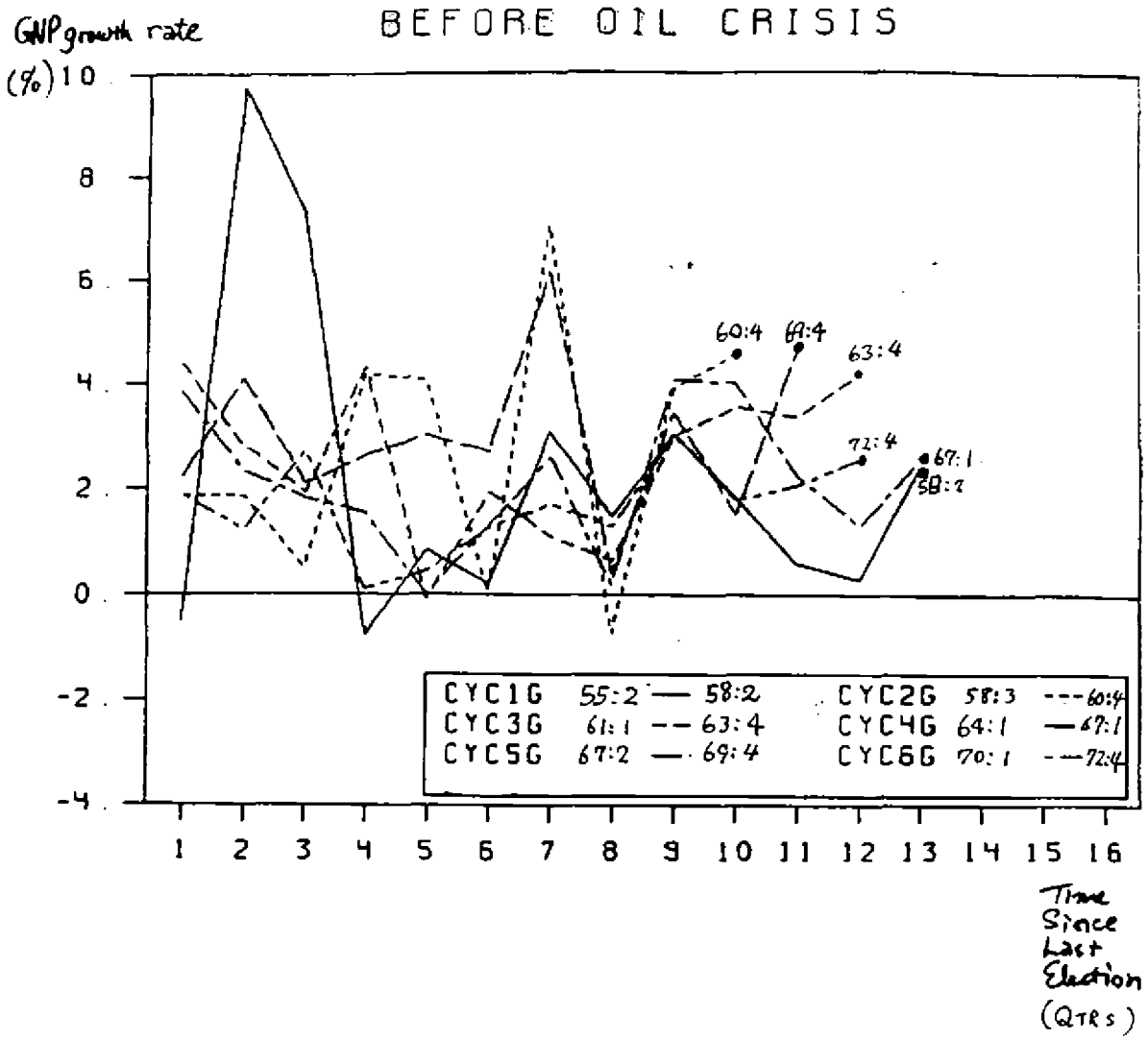

Figure 2: Election cycles