Economy, Cabinet Approval, and LDP support*

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Abstract

Many studies indicate that recent Japanese prime ministers exert a greater influence on the electoral fortunes of governing party than their predecessors before the electoral and administrative reforms. However, this observation is mainly based on the period during the Koizumi cabinet. As Koizumi was very popular in his first year and the last year of his tenure, the general observation that prime ministers have a larger influence on public opinion than in the past may be unwarranted. This paper compares the impact of cabinet approval on the support for governing party before and after the two reforms by analyzing the monthly poll results published by the Yomiuri Shimbun.

Keywords: cabinet approval, party support, public opinion poll

Politicians in the both houses of the Japanese Diet are concerned about cabinet approval ratings reported in the mass media. In the recent LDP presidential elections, many LDP legislators make their decisions based on "how popular a new president will be," hoping his popularity brings electoral fortunes to the party. In choosing a party leader, sometimes the popularity of potential candidates reported in news papers exercise large influence (Kakizaki 2008). On the other hand, when approval rating is very low, the legislators in the governing party try to replace the incumbent prime minister. For example, Taro Aso won the LDP presidential election in 2008, as many LDP members believed that he was very popular among ordinary people, and expected that he would call a general election soon after his cabinet was installed. Despite mounting expectations, he did not call a general election due to various reasons. Further, unfolding political events then made him so unpopular that he could no longer choose a time for the general election. Those who enthusiastically supported him several months before then tried to force him to resign but no avail.

However, it is a recent phenomenon that the legislators in the governing party worry about approval ratings of the cabinet. For example, facing opposition from influential faction bosses within the LDP, the Prime Minister Kaifu stepped down in 1991, while he still had the

* This is apparently work in progress. I deeply apologize for being unable to include a few important published articles in Japanese in the reference. They will be included when this paper is updated next time. This paper has not been proof-read or edited. I also apologize for remaining errors both in substance and in grammar.

approval rating of 52.3% according to Yomiuri Shimbun (1991.9.27). As the last approval ratings of the very popular Prime Minister Koizumi was 53.0% in the Yomiuri Poll (2006.9.15), the example of Kaifu clearly indicates that cabinet approval rating was not the most important concern for the governing LDP in its golden days of factional politics.

Since then, political situation changed dramatically. Cabinet approval now seems to be a life line for the governing party. Even after the change of government in September 2009, the Prime Minister Hatoyama stepped down as his approval rating deteriorated as the 2010 Upper House approached. After Kan assumed premiership in June, many DPJ Upper House members strongly voiced to have an election as soon as possible while Kan's popularity was still afloat. Clearly, politicians in the 21st century take cabinet approval far more seriously than those in the last decades of the 20th century.

Against this backdrop, this paper has two broad objectives. First, I examine the dynamics of cabinet approval itself. Special attention will be paid to an impact of economy since many studies demonstrate the importance of economic condition on government approval in industrial democracies (e.g., Lewis-Beck 1988; Lewis-Beck and Stegmaier 2000). In the case of Japan, LDP once had a high reputation for economic management (Inoguchi 1990). Before its long ruling period was briefly interrupted by the non-LDP coalition government, people voted for the LDP even in the recession period as no other party seemed more capable than the LDP in handling economy. Thus, no systematic effect of economy on election outcomes is found when the aggregate election outcomes before 1993 are analyzed (e.g. Anderson and Ishii 1997). However, business condition may have exercised a large influence on cabinet approval because people could express their dissatisfaction against the incumbent cabinet while still keeping the LDP in power. Furthermore, after the mid 1990s, Japan's economy does not provide an advantage for the LDP as it entered a long period of recession.

The second, but no less important, objective is to assess the impact of cabinet approval rating on public support to the governing party. The introduction of the new electoral system in 1994 and the administrative reform in 1998 undoubtedly changed the structure of party politics in Japan (Takenaka 2006). As a consequence, it is believed that the prime ministers after the reform era can exercise far stronger political influence than their predecessors. That is the whole reason why Koizumi accomplished several reforms in various policy domains while facing opposition within the LDP. Mainly based on the observation on the Koizumi cabinet, both journalists and political scientists alike point out that the popularity of prime minister becomes more important in recent years (e.g., Krause and Nyblade 2005; Kakizaki 2008). Though not a small portion of the LDP legislators was actually unhappy with Koizumi's policy agenda, they kept Koizumi as their leader presumably because Koizumi succeeded in delivering a good election outcome to the LDP. Thus, it is important to examine how much impact cabinet approval has on partisanship and whether its impact increased after the two reforms in the 1990s. Before analyzing data, a few words on measuring cabinet approval are in order.

BETWEEN CABINET AND PRIME MINISTERIAL APPROVAL

Cabinet approval has been subject to little academic scrutiny until recently. While there are several descriptive studies using the published polling results in the past, an attempt to build a causal model to explain the movement of cabinet approval is a relatively recent intellectual endeavor (Miyake, Nishizawa, and Kohno. 2001; Burden 2008).

It should be also noted that the term "cabinet approval" is rarely used except in the field of Japanese political studies. In comparative politics, the term government popularity or government approval is used more frequently (e.g., Whiteley 1986; Price and Sanders 1993; Hellwig 2007). In the context of presidential system such as the U.S. and France, government popularity mostly refers to the job approval rating of incumbent presidents. For example, in the case of the U.S., government approval usually means presidential approval compiled from various sources such as Gallup (e.g., MacKuen, Erikson, and Stimson, 1989). On the other hand, for the parliamentary system, government approval usually refers to the answer to the question on hypothetical voting intention if the general election were being held on the next Sunday. It is assumed that those who intend to vote for the governing party are approving the government (e.g., Whiteley 1986; Price and Sanders 1993).

Though the notion of "cabinet support" is rarely employed, it does not mean that scholars overlook the role of prime ministers in public opinion. Indeed, prime ministerial popularity or party leader popularity in contemporary politics has gained certain scholarly attention. For example, in the case of United Kingdom, Clark and his colleagues argue that the popularity of the prime ministers in the recent years are far more consequential than the prime ministers in the 1950s and 1960s (Clarke et. al. 2004; 2009). As the importance of social class in voting decision declined, electoral fortunes of major parties depends more on short-term political dynamics. Among those short-term political forces, satisfaction with prime minister or popularity of opposition party leaders is very significant (Clarke, Ho, and Steward 2000; Clarke, Stewart, and Whiteley 2004).

The actual question that taps on people's evaluation of a prime minister in Britain is, for example, "Are you satisfied or dissatisfied with the incumbent as Prime Minister?" (cited in Hudson 1984, Clarke, Ho, and Stewart 2000). Or survey respondents are sometimes requested to compare leaders of major political parties. A typical question is, for example, "Who would make the best Prime Minister, Mr. A, Mr. B, or Mr. C?" in which the leaders of Conservative, Labor, and Liberal Democrats are compared (Clarke, Stewart, and Whiteley 2004). Clearly, these questions are more focused on the incumbent Prime Minister or the leader of the governing party than on a cabinet as collective entity. I am unaware of a British survey question that asks people to evaluate the cabinet as a whole.

In contrast, in Japan, survey respondents are nearly always invited to give their opinions on the incumbent cabinet. Actual questions on cabinet approval are more or less same across

various news agencies. People are probed with the question "Do you support the _Prime Minister's Name_ cabinet or not?" While this question asks people to evaluate the cabinet as a whole, an explicit reference to the name of the incumbent prime minister seems to drive people's attention to the prime minister himself.

Following the cabinet approval question, news agencies usually ask the reason why respondents support or do not support the cabinet. Available choices for the reason for support or lack of it also clearly indicates that a focus of attention is on the prime minister himself, not on the cabinet as a group of people. For example, in the case of Mainichi Shimbun, four choices are prepared for the reason for support question. Though those choices vary across the cabinets, in the case of the Abe cabinet, the following four choices are presented to survey respondents: (a) because the prime minister is from the LDP, (b) because people can count on the prime minister's leadership skills; (c) the prime minister is young and clean, and finally, (d) people can count on the prime minister's policy. While those choices are prepared by the survey unit in Mainichi Shimbun, it may not be too exaggerating to say that those choices largely reflect the way people think about the incumbent cabinet. The prevalent assumption regarding cabinet approval is that people mainly respond to the personality and the conduct of the prime minister himself. Even when a particular minister makes a gaffe or is accused for a scandal, it always bounces back to the prime minister as a failure in the exercise of his appointive power. Thus, it is safe to assume that cabinet approval largely reflect popularity of prime minister himself.

PREVIOUS STUDIES

The analyses of British aggregate public opinion data demonstrate the dynamics of prime ministerial popularity and party support. Several studies show that satisfaction with the incumbent prime minister influences support for the governing party (Hudson 1984; Lanoue and Headrick 1994; Clarke, Ho, and Stewart 2000, Clarke et al. 2009). These British studies specify that popularity of the governing party depends on the satisfaction with the prime minister. However, those studies concentrate their attention on how the popularity of prime minister affect the popularity of the governing party and pay only secondary attention to explaining prime ministerial popularity itself.

According to Nishizawa, very few scholarly works are published on cabinet approval before 2000 (Miyake, Nishizawa, and Kohno. 2001). Since then a couple of studies examined dynamics of cabinet approval. Nishizawa himself pioneered in analyzing cabinet approval in Japan using Box-Jenkins time-series approach. In analyzing cabinet approval from the Ikeda cabinet to the Miyazawa cabinet (1960 to 1993), Nishizawa finds that support for the LDP among the public significantly influence approval for the LDP cabinet. Subjective retrospective judgments on one's own economic life and on national economy also influence cabinet approval.

It is also demonstrated that cabinet approval jumps up in its first month and decays as time passes. This result is quite consistent with the study in the presidential approval in the U.S. (e.g., Kernell 1978; Newman 2002). In terms of analyzing cabinet approval in Japan, the study of U.S. presidential approval provides useful clues than the study of British prime ministerial approval.

However, Nishizawa does not go further to examine the impact of cabinet approval on party support. Rather, he assumes that the causal relationship runs from party support to cabinet approval but not vice versa. As he analyzes cabinet approval prior to the Koizumi cabinet, it is not surprising that he supposes that causal relation only runs from partisanship to cabinet approval. However, the instability of cabinet approval in recent years makes one question the validity of the assumed causal direction.

Closely following public opinion published in the news paper during the past several years, it seems to me that cabinet approval influence support for the governing party but the reverse is not true. The reason for this conjecture is that, at least in the past ten years, cabinet approval is far more volatile than party support. It is plausible that the variable with more variability induce changes in the variable with less variability. Also, in the case of parliamentary government, the top leadership of the majority party in parliament forms a cabinet. Thus, cabinet approval and support for the governing party necessarily overlap simply because people are giving their evaluation of the same government but from different angles. It should be also noted that political events related to the prime minister or cabinet bring about larger changes in people's evaluation than the rest of the governing party does. The news media report the events related to the prime minister and the other cabinet members more frequently than the events related to the rest of the governing party. Clearly, causal order between cabinet approval and LDP support should not be assumed but examined empirically. Indeed, in a recent unpublished study, Burden argues that cabinet approval cause changes in LDP support but LDP support does not cause changes in cabinet approval (Burden 2008).

DATA

I employ the Yomiuri Monthly public opinion series for this study. In the aggregate study of Japanese public opinion, the Jiji monthly poll is the de fact standard dataset. The longest time series from June 1960 to present (as of August 2010) undoubtedly make the Jiji polling data an attractive choice. Practically, there are very few studies that analyze public opinion using the data from the other news agencies. Thus, it is worthwhile to see if the results found in the past studies also show up with another dataset. More importantly, the previous studies also use economic indicators available from the Jiji monthly poll when they need to examine the impact of economy on cabinet approval and LDP support. Yet, unless one is interested in individual level analysis, there is no strong reason to use the multiple time series from the

same source. Indeed, in a snap-shot, the same people are responding to the both political and economic questions, the use of multiple time series from the single source may unnecessarily strengthen the relationship (Green, Palmquist, and Schickler 2004). In this paper, I use cabinet approval and party support from the Yomiuri monthly public opinion polls.[1] For evaluations of economic conditions, I use the Jiji public opinion data.

While the Yomiuri data covers a shorter time period than the Jiji, there is some advantage in using the Yomiuri data. Yomiuri Shimbun conducts and reports its public opinion polls since the 1950s. Up until the mid 1970s, no regular schedule had been enforced and the intervals between the two successive polls varied. However, beginning at January 1979 with the start of the Ohira Cabinet, Yomiuri Shimbun conducts and reports its public opinion polls on a monthly basis, while occasional missing months are still present.[2] The Yomiuri monthly poll uses face-to-face interviews to the respondents who are selected by stratified multi-stage random sampling. While Yomiuri Shimbun still conducts its opinion polls using the same method (as of August 2010), unfortunately, it terminated publishing cabinet approval and party support from its face-to-face survey. Instead, Yomiuri Shimbun switched to Random Digit Dialing Telephone surveys for cabinet approval and party support at the beginning of the Aso Cabinet in September 2008, presumably due to a high demand to quick reporting. However, the switch to RDD was made much later than the other newspapers,[3] and the Yomiuri Monthly opinion polls provide the second longest time-series for analyzing the dynamics of Japanese public opinion.

CABINET APPROVAL AND LDP SUPPORT AS TIME SERIES

Any serious statistical analysis should start with simple descriptive examination of data themselves. Figure 1 shows a time-series plot for cabinet approval and LDP support from January 1979 to September 2008 (N=357). To help interpretation, the two vertical lines are inserted. The first line is placed at September 1993 in which approval for the Hosokawa cabinet was first asked in the Yomiuri monthly poll. Another one is at January 2000 when the central government agencies were largely restructured.

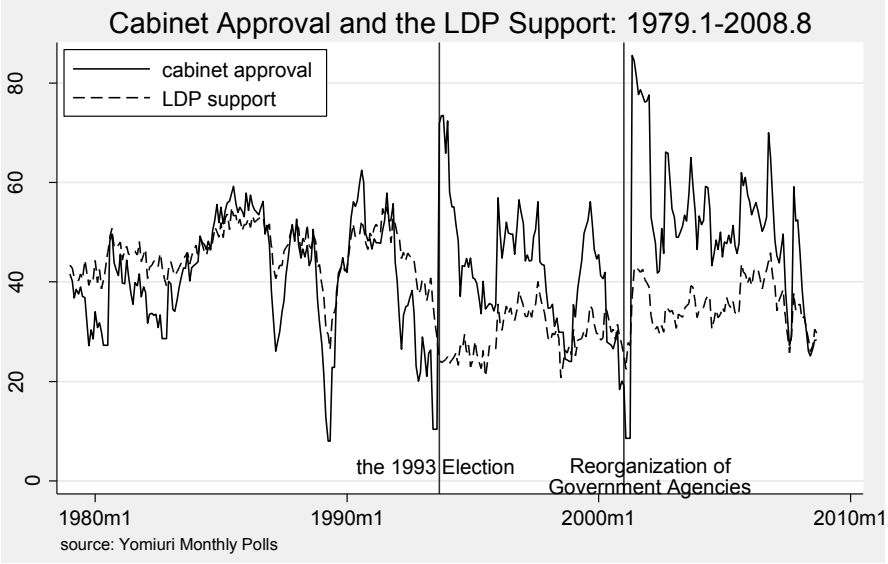
This visual presentation itself is informative, but a few elaborations might be worth a few paragraphs. First, the two series move in tandem before the 1993 general election. After the end of the one-party dominance and the introduction of the new electoral institutions, though

1) I compiled and organized the time series data from the paper bound version of Yomiuri Shimbun.

2) For missing values, I simply imputed the average between the value at time t-1 and the value t+1. This procedure is sufficient for party support. In the case of cabinet approval, sometimes it has missing values not because no survey is fielded but because prime minister expresses his intention to step down and the approval question is not asked. In those cases, I imputed the last approval rating for his remaining months.

3) Mainichi Shimbun switched to RDD in June 1997, Asahi and Kyoto switched to RDD in April 2001, and Nikkei switched to RDD in August 2002.

Figure 1



cabinet approval and LDP support still move in the same direction, there are large differences in their levels. The average LDP support before September 1993 is 45.8% while it becomes 32.5% for the rest of the period. In contrast, the average score for cabinet approval is 41.9% until the Miyazawa cabinet while it is 47.5% from the Hashimoto cabinet to Fukuda Yasuo cabinet.[4)]

Second, volatility seems to have increased for cabinet approval. For LDP support, it varies from 26.5% to 55.1% before the change of government in 1993 (s.d.=5.4). In contrast, it moves between 20.7% and 45.9% in the latter half of the sample period (s.d =5.5). Cabinet approval moves between 8% and 62.5% during the first half period (s.d.=11.4), while it moves between 8.6% and 85.5% (s.d.=14.2).[5)] While the range of LDP support decreased for the last half of the sample period, the range of cabinet approval increased. This limited examination suggests that cabinet approval is more sensitive in measuring people's political evaluation than party support is. As the prime minister is a focus of media report, it is easy for ordinary people to evaluate him based on his speeches and conducts. In contrast, political party is an organization with many members. One politician's speeches and acts are unlikely to have a large influence on its support rate unless he occupies top level party office such as secretary general. Support for political party does not fluctuate as widely as cabinet approval, presumably because political party is a far more diffused object of evaluation than an individual prime minister is.

As for people's evaluation of economy, the questions from the Jiji monthly polls are

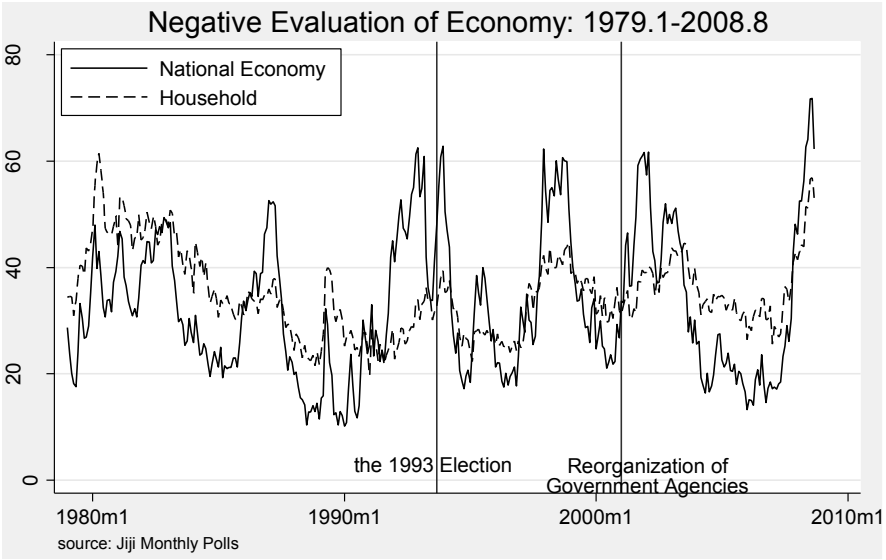
4) Including the Hosokawa, the Hata, and the Murayama cabinets does not make a difference. The average approval rating including the three cabinets mentioned above is also 47.5%.

5) The minimum and the maximum are unaffected even if the three Non-LDP prime minister cabinets are included.

typically used for analysis (The Japanese questions are given in Appendix). The first question is related to the current business condition in the Japanese economy. It asks"Do you think the current business condition is just as same as the last month, worse than the last month, or better than the last month?" The second question asks survey respondents to compare whether their current personal and household economic life has improved from one year ago. The question wording is "Do you think your (economic) life has gotten better or worse in comparison with the same month in the last year?" Therefore, these two questions correspond to sociotropic evaluation and pocketbook evaluation of economy (Kinder and Kiewiet 1979). However, my use of these questions is different from the previous studies in an important way. Each question presents five choices from positive to negative, and the middle being neutral. For each question, I use the sum of two negative answers as a score of economic evaluation rather than using the sum of the two positive answers. This is simply because negative evaluation provides more variability than positive evaluation does.[6] The time series of two economic evaluations from the Jiji monthly poll from January 1979 to September 2008 are displayed in Figure 2.

The ups and downs of these two indicators correspond to the economic history of the past few decades. These two indicators are naturally correlated as they measure different aspects of economic condition. However, correlation is far from perfect as their bivariate correlation is 0.55. Clearly, negative evaluation of national business condition is more volatile than that of household economy. Summary statistics of four time series, two from Yomiuri and the other two from Jiji, are given in Table 1.

Figure 2



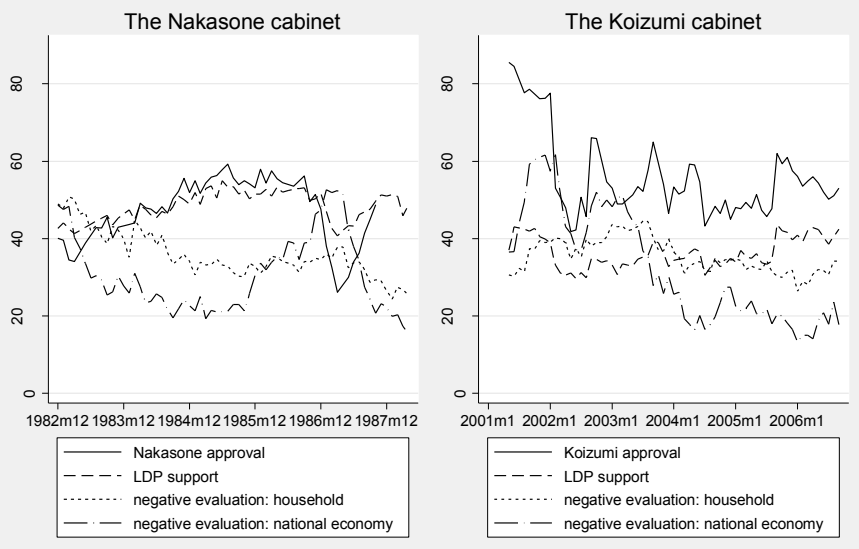
6) The standard deviation for positive evaluation of business condition is 4.8 while negative evaluation provides the standard deviation of 13.7. The same is true for household economy. The standard deviation for positive evaluation is 1.3 while it is 7.9 for negative evaluation.

Table 1 Discriptive Statistics

	Source	N	Mean	Std. Dev.	Min	Max
cabinet approval	Yomiuri	357	43.9	13.2	8.0	85.5
LDP support	Yomiuri	357	39.0	8.6	20.7	55.1
negative evaluation of national business condition	Jiji	357	32.8	13.7	10.2	71.8
negative evaluation of household economy	Jiji	357	35.1	7.9	19.7	61.5

Note: For missing values, please see the footnote 2.

Figure 3



The next task is to examine how much cabinet approval and LDP support appear to run parallel with these economic series. As having four series in the same graph over 30 years makes inspection difficult, I choose the Nakasone cabinet as an example from the pre-electoral reform period and the Koizumi cabinet from the post reform period respectively. The time-series plots for the Nakasone cabinet and the Koizumi cabinet are displayed in Figure 3.[7] Looking at the left graph for the Nakasone cabinet in Figure 3, LDP support and cabinet support move closely together, though cabinet approval dips steeply when Nakasone indicates the possibility of introducing consumption tax. The average score for Nakasone approval is 47.0 while the average LDP support during the Nakasone cabinet is 48.1. With regard to the relationship with economic evaluation, it appears that cabinet approval and LDP support move in the opposite direction to negative evaluation of national business condition. The relationship with negative evaluation of household economy is less clear from the graph.

7) To make the two graphs as comparable as possible, each horizontal axis spans for sixty-five months while Nakasone cabinet continued only for 59 months. That is why cabinet approval for Nakasone disappears before it reaches the right end of the graph.

The graph for the Koizumi cabinet in Figure 3 gives a different impression. The average score for Koizumi approval is 56.2 while the LDP support during the same period is 36.4. They are nearly twenty percentage points apart. Furthermore, it seems that negative evaluation of national business condition moves in tandem with cabinet approval. This is a very counter intuitive result as many empirical studies demonstrate that people punish their government when economy is in trouble (e.g., Lewis-Beck 1988; Lewis-Beck and Stegmaier 2000).

Table 2 shows bivariate correlation coefficients calculated separately for the Nakasone cabinet and the Koizumi cabinet. These correlation coefficients indicate that people's evaluation of government and economic condition are structured in very different ways during these two periods. First of all, the correlation between cabinet approval and LDP support is smaller for the Koizumi cabinet than for the Nakasone cabinet. This may not be surprising as Nakasone served as a prime minister during the period when compromise and cooperation between major factions were emphasized. Perhaps people do not see the difference between the cabinet and the LDP clearly when no contention is on surface within the majority party. On the other hand, Koizumi sometimes pursued his political agenda against many members of the LDP, and during his tenure, it was not unusual for him to criticize the members of his own party who were against his structural reform policies.

Table 2 Correlation between cabinet approval, LDP support, national business condition, and household economy

	During the Nakasone Cabinet (N=59)				During the Koizumi Cabinet (N=65)			
	Cabinet	LDP	National	Household	Cabinet	LDP	National	Household
Cabinet Approval	1				1			
LDP Support	0.921	1			0.642	1		
	(0.000)				(0.000)			
National Business Condition	−0.588	−0.431	1		0.442	-0.158	1	
Negative evaluation	(0.000)	(0.001)			(0.000)	(0.210)		
Household Economy	−0.524	−0.701	0.329	1	−0.053	−0.464	0.703	1
Negative evaluation	(0.000)	(0.000)	(0.011)		(0.677)	(0.000)	(0.000)	

Secondly, the relationship between evaluation of national business condition and cabinet approval shows statistically significant correlation but with the opposite signs. During the Nakasone era, as expected, negative evaluation of national business conditions are negatively correlated with both cabinet approval (-.588) and LDP support (-.431). The worse the economy, the lower the approval rating of the incumbent cabinet. Negative evaluation of household economy are also negatively correlated with both cabinet approval (-.524) and LDP support (-.701). Though there are debates whether people base their judgment on economy as a whole or on personal economic experience (Kinder and Kiewit 1979), in simple bivariate analyses, both sociotropic judgment (national business conditions) and pocketbook judgment (household economic conditions) are related to people's evaluation of the government in the 1980s.

The bivariate correlation coefficients calculated from the Koizumi period give a sharply different picture. To begin with, negative evaluation of national economic conditions is

"positively" correlated with approval for the Koizumi cabinet (.442). It is "negatively" correlated with LDP support, while it fails to reject the null hypothesis of $\rho = 0$. Furthermore, negative evaluation of household economy has practically no relationship with approval during more than five years of Koizumi's tenure. Negative evaluation of household economy is negatively correlated with LDP support (-.464). Hence, regarding the relationship between economic evaluation and political evaluation, only negative evaluation of household economy and LDP support are related in the same way in the 1980s and in the 2000s. There seems to be a large change in how economy influences public opinion during the past twenty years. And its consequence is not limited to public opinion per se as many suggest public opinion is far more influential in government decision-making processes than it used to be.

While any data analysis should start with checking data descriptively, it is also very difficult to assess the impact of economy on public opinion only through visual inspection and bivariate correlations. In particular, economy has its own dynamics such as business cycle, which has peaks and bottoms. When a new cabinet starts at the peak of business cycle, it may appear that approval rating drops as business condition deteriorates. Even when there exists no causal relationship between the two, if they happen to share the same patterns of change, it may be mistakenly concluded that economic evaluation influences cabinet approval.[8] In this sense, the positive correlation between negative evaluation of national business condition and cabinet approval during the Koizumi cabinet can be just a coincident and people may not form any cognitive link between the economy and the government. To take account of the dynamics inherent in time-series observations, a more complicated analysis is necessary.

DATA ANALYSIS

Statistical analysis of time-series data is a highly developed subfield among statisticians and econometricians. Political scientists also take advantage of those methods mainly developed by econometricians. There is a large pile of methodological literature on time series in political science, and a few different approaches, such as Box-Jenkins modeling, Vector Autoregression, and Error-Correction Models, are available. In this paper, following the previous studies on public opinion, in particular, those by Nishizawa (Miyake, Nishizawa, and Kohno 2001), I employ Box-Jenkins ARIMA (autoregressive integrated moving-average) approach here. Another reason for using ARIMA approach is the classic paper by MacKuen, Erikson and Stimson (1989), which provides a nice template to follow for the purpose of this paper, also uses ARIMA models for their analysis.

In ARIMA modeling, simply stated, time-series variables are expressed as a combination of autoregressive and moving average processes. For a simple case of the first order

8) This phenomenon is called "spurious regression" in the statistical literature (Morimune 1999).

autoregressive and the first order moving average process, which is denoted as ARMA (1,1), can be expressed as follows.

$$Y_t = \phi Y_{t-1} + \epsilon_t + \theta_1 \epsilon_{t-1} + \mu \qquad (1)$$

As shown in the equation (1) above, the value of Y at time t is expressed as a function of its value at time t-1, the weighted average of disturbances (ϵ) in time t and t-1, and a constant (μ : its long term mean). ϕ and θ are parameters to be estimated. When Y does not hover around its mean value over time, usually taking a first difference are used for the sake of statistical analysis. Informally speaking, first-differencing prevents one to conclude that two independent time-series are causally linked to each other.

In the following analysis, all time series variables are "prewhitened" by their respective ARIMA filters. Through several rounds of tries and errors, the first difference of each series is modeled as the first order autoregressive process, plus the twelfth order autoregressive process in order to take account for seasonality. After an adequate ARIMA model is specified for each series, residuals are calculated and used for the subsequent analysis. As residuals lack temporary dynamics, it may initially sound strange to those unfamiliar with time-series analysis. However, this is exactly the point. As many political and economic time series exhibit similar behavior over time, one cannot effectively analyze the relationship between variables without removing those temporal dynamics. As residuals of each series are free from the influence from the past values, it is possible to examine the relationship between variables without regard to time-dependent dynamics.

1) Economic evaluation to Cabinet Approval

Simple correlation coefficients between the four variables at time T and at time T-1 are displayed in Table 3. Different from an ordinary correlation matrix, all the off diagonal elements are relevant here as the variables in rows are at time T and variables in columns are at T-1.

Table 3 Correlation between variables at time T-1 and variables at time T

Dependent variable at time T	Independent Variable at time T-1			
	LDP support	Cabinet Approval	Household Economy	National Business Condition
LDP support	–	0.18	−0.06	−0.17
		(0.00)	(0.27)	(0.00)
Cabinet Approval	−0.07	–	0.00	−0.01
	(0.22)		(0.97)	(0.82)
Household Economy	−0.04	0.03	–	0.19
	(0.45)	(0.53)		(0.00)
National Business Condition	0.00	0.12	−0.07	-
	(0.98)	(0.02)	(0.19)	

Entries are correlation coefficients between the independent variable at time T-1 and the dependentvariable at time T. All variables are "prewhitened"- autoregressive moving average process has beenremoved - through ARIMA modeling. All variables are filtered with their respectiveARIMA(1,1,0)(1,0,0,12)s filters. P-values are in parentheses.

Looking at the correlation between cabinet approval (at T-1) and LDP support (at T), it is 0.18 and statistically significant. In contrast, the reverse is not true. The correlation between LDP support (at T-1) and cabinet approval (at T) is -0.07 and not statistically significant. These two results imply that cabinet approval at the previous months may influence LDP support in this month but not vice versa. For another example, the negative evaluation of national business condition (at T-1) influences the negative evaluation of household economy (at T) as correlation coefficient is 0.19 and significant. However, the reverse is not true.

Unfortunately, one pairs of correlation coefficients show "wrong" sign and are statistically significant. That is the relationship between cabinet approval and negative evaluation of national business condition. Reading the two pairs of correlation coefficients, it appears that cabinet approval at the one month past influence people's negative evaluation of national business condition in this month while the reverse is not true. Granger causality test with variables in the original scales also indicates that the past of cabinet approval are useful in predicting the present values of national business condition (r=0.12) while the reverse is not true (r = -0.01). Repeating several other specification of ARIMA process and conducting the same analysis also return similar results. At this moment, I will leave this problem here. But as negative evaluation has some distance from the real economy, taking account of the relationship between real economy and people's evaluation may solve this "problem."

In order to see the economic impact on cabinet approval clearly, these "prewhitened" series are subjected to regression analysis. As all time-dependent dynamics are removed, ordinary least square procedure is sufficient for estimation. The key independent variables here are "prewhitened" negative evaluation of national economy and "prewhitened" negative evaluation of household economy. As control variables, the dummy for the first month for a cabinet, the number of months since a cabinet is installed, the dummy for the period after the 1993 general election (it is coded 0 until August 1993 and coded 1 from September 1993 and after), the dummy for the non-LDP coalition government (Hosokawa and Hata), and the dummy for the Socialist Murayama cabinet are included. The selection of independent variables is very similar to the one employed by Nishizawa (Nishizawa et al ,2001). However, there are two important differences from the model proposed by Nishizawa. First, the analysis here takes the first difference of approval as dependent variable. Second, and more importantly, LDP support is not included in the model, as I believe, if there are any causal connection between these two series, it is a change of cabinet or behavior of prime minister that induce changes in LDP support.

In the first column in Table 4, the estimates for the simplest model are presented (the same analysis in the original (undifferenced) scale is shown in the third and fourth column for the sake of comparison). It is clear that an increase in negative evaluation of national business condition causes negative changes in cabinet approval. The coefficient for the first month dummy is very large as one can expect from stories in newspapers. On the other hand, negative evaluation of one's household economy does not exercise statistically significant

Table 4 The impact of economic evaluation on cabinet approval

	Δ approval		Approval in level	
National Business Condition*	−0.198	−0.154	−0.125	−0.098
	(0.087)	(0.094)	(0.086)	(0.092)
Household Economy*	−0.183	−0.05	−0.293	−0.163
	(0.149)	(0.158)	(0.147)	(0.155)
The First Month dummy	16.986	16.672	14.111	13.668
	(1.724)	(1.705)	(1.632)	(1.600)
The number of Months since the cabinet is installed	0.028	0.012	0.046	0.002
	(0.023)	(0.026)	(0.022)	(0.025)
The dummy for the post 1993 (after 1993m8)	0.146	−0.493	1.081	−0.561
	(0.714)	(0.851)	(0.695)	(0.822)
The dummy for the non-LDP coalition government	1.177	1.718	3.996	5.12
	(2.145)	(2.141)	(2.087)	(2.064)
The dummy for the Murayama cabinet	−0.686	−0.159	−1.805	−0.443
	(1.622)	(1.643)	(1.585)	(1.591)
The dummy for the Koizumi cabinet		1.311		3.94
		(1.182)		(1.141)
Interaction between National Business Consition and the Koizumi dummy		−0.216		−0.051
		(0.232)		(0.228)
Interaction between Household economy and the Koizumi dummy		−1.027		−0.97
		(0.420)		(0.406)
Constant	−1.342	−1.04	−2.059	−1.254
	(0.654)	(0.681)	(0.637)	(0.660)
Adjusted R2	0.248	0.268	0.224	0.259
Standar error of the regression	6.432	6.343	6.270	6.127
Durbin-Watson Statistics	1.886	1.875	1.692	1.706
N	356	356	357	357

Δ Approval = Approval(T)-Approval(T-1)

Evaluation of natinoal economy and evaluation of household economy are "prewhitened"- autoregressive moving averageprocess has been removed - through ARIMA modeling. They are filtered with their respective ARIMA(1,1,0)(1,0,0,12)s filters.For the analysis in the third or fourth column, economic evaluations are filtered through AR(1,0,0)(1,0,0,12)s filters.
Coeffcients signifacant at one-tailed test at 0.05 are in gray.

influence on cabinet approval.

In the second column, the interaction between the Koizumi cabinet and the two measures of economic evaluations are inserted to see if there is anything distinct about the Koizumi cabinet. The interaction with the Koizumi period and the negative evaluation of national economy is insignificant at the 0.05 level. Conducting F-test by restricting the slope during the Koizumi cabinet (-.154-.216=-.37) at zero also fail to reject the null hypothesis. Since the actual F-statistics (1, 345) is 3.05, whose p-value is 0.08, there are some ambiguity whether the impact of national economic condition worsened during the Koizumi cabinet, but the whole point is that, if something is different for Koizumi, he might have suffered more from the bad national economy than the other prime ministers, as the slope for him is much steeper than the others. Thus, it is not the case that Koizumi is helped by bad national economy.

It should be also noted that negative evaluation of household economy had a larger impact during the Koizumi period. It is not discernible if we treat the all cabinets equally, but the impact of negative household economy is very pronounced for Koizumi. Its slope is -.1.027. Thus one unit increase in the first difference of household economy from the previous period cause roughly about the same change in the first difference of cabinet approval.

2) Cabinet approval to LDP support

Having seen the impact of economy on cabinet approval, the next task is to examine the impact of cabinet approval on partisanship. In particular, it is interesting to see whether the impact of cabinet approval on LDP support increased during the post 1993 period. This inquiry is important, as many journalists and political scientists point out that the role of a prime minister becomes more influential than before (Krause and Nyblade 2005; Kakizaki 2008). As political affairs in the past few years eloquently demonstrate, many politicians believe that cabinet approval rating is a good predictor of election results.

The analytical strategy employed for cabinet approval is also employed for the analyzing the impact of cabinet approval on LDP support. The first column in Table 5 shows the estimate for the simple model in which LDP support is expressed as a linear function of cabinet approval, negative evaluation of national business condition, negative evaluation of household economy and the three dummy variables that are also include in analyzing cabinet approval. Each time series in its first difference is "prewhitened" through respective ARIMA filters. The immediate

Table 5 The Impact of cabinet approval on LDP support

	Δ LDP support		
Cabinet Approval*	0.174	0.181	0.345
	(0.016)	(0.021)	(0.038)
National Business Condition*	0.001	−0.027	−0.011
	(0.030)	(0.033)	(0.043)
Household Economy*	−0.133	−0.122	−0.062
	(0.051)	(0.055)	(0.066)
The dummy for the post 1993 (after 1993m8)	0.115	0.078	0.013
	(0.247)	(0.291)	(0.283)
The dummy for the non-LDP coalition government	−1.209	−1.245	−0.962
	(0.730)	(0.749)	(0.727)
The dummy for the Murayama cabinet	0.295	0.345	0.325
	(0.555)	(0.575)	(0.560)
The dummy for the Koizumi cabinet		0.174	0.177
		(0.365)	(0.355)
Interaction between cabinet approval and the Koizumi dummy		−0.007	
		(0.034)	
Interaction between National Business Consition and the Koizumi dummy		0.179	
		(0.082)	
Interaction between Household economy and the Koizumi dummy		−0.043	
		(0.151)	
Interaction between cabinet approval and the post 1993 dummy			−0.208
			(0.042)
Interaction between National Business Consition and the post 1993 dummy			0.036
			(0.059)
Interaction between Household economy and the post 1993 dummy			−0.116
			(0.101)
constant	−0.041	−0.04	−0.011
	(0.168)	(0.168)	(0.163)
Adjusted R2	0.275	0.278	0.318
Standar error of the regression	2.227	2.221	2.159
Durbin-Watson Statistics	2.200	2.219	2.244
N	356	356	356

Cabinet approval, evaluation of natinoal economy and evaluation of household economy are "prewhitened"- autoregressive moving average process has been removed - through ARIMA modeling.They are filtered with their respective ARIMA(1,1,0)(1,0,0,12)s filters.
Coeffcients signifacant at one-tailed test at 0.05 are in gray.

impact of cabinet approval and the impact of negative evaluation of household economy are statistically significant in the expected directions.

In the second column, the interactions between each time series with the Koizumi cabinet dummy are included in analysis. No substantive change happens except for the impact of negative evaluation of national business condition. Surprisingly, when negative evaluation of national economy increases, it induces a positive change in LDP support. Testing linear hypothesis that the slope for the Koizumi period (-0.027 + 0.179 = 0.152) is zero is rejected at 5 percent level (F (1, 345) = 4.08). The peculiar relation between national business condition and public opinion still shows up after taking account of temporal dynamics in time-series. I may have applied an wrong ARIMA filter to the time-series of negative evaluation of national economic condition and I simply stop the analysis here for the Koizumi period.

The third column shows the interaction between each time series with the period after the 1993 general election. There are a few noticeable changes in the coefficient estimates. First, the main effect of negative evaluation of household economy is no longer significant. The interaction terms with the post 1993 dummy is not significant either, but they are still significant as their sum -0.062-0.116 = 0.178 is significant at 5 % level (F(1, 344) = 5.04). Thus, actually, this means that the impact of negative evaluation of household economy on LDP support is discernible only after the 1993 general election. There does not appear any impact of national business condition on LDP support. The most interesting change appears, however, for the impact of cabinet approval on LDP support. The main effect of cabinet approval nearly doubled, while the magnitude of coefficient for the interaction term between the post 1993 dummy and cabinet approval ("prewhitened series of its first difference) is negative and substantial. The immediate impact of cabinet approval on LDP support is .345 before the 1993 election but reduced to 0.137 (0.345-0.208) afterwards while keeping its statistical significance. Thus, the impact of cabinet approval on LDP support is smaller in the recent years than in the past. This result is counter-intuitive as many argue that cabinet approval is more influential than it was in the past. However, as this analysis includes a brief period in which the LDP was opposition, it may obscure the impact of cabinet approval in the recent years. To see how a change in time horizon alters statistical result, more visual technique is employed in the next section.

3) The possibility of structural change

The data analysis so far uses all the time periods in estimation. Differences in time periods are only considered with a few dummy variables and interaction terms. In the following analysis, rather than using those period related variables, different time periods are used and analysis are repeated across the available time span. This technique is sometimes called rolling regression. When the same model is applied to different or moving time periods, coefficient estimates and standard errors are stored each time. Visually displaying how coefficient estimates change over time as a new time point comes in, it enables researchers to judge

informally when "structural break" happens for the phenomenon under study.

There are two methods to move the time period for analysis. One is called "recursive estimation," which starts with the initial sample size of k including the starting time period (thus 1 to k) and repeat estimation by adding one time period each time. So it initially starts with the first observations from 1 to k and repeat analysis sequentially adding a new observation (from 1 to k+1, 1 to k+2, …, 1 to N). Coefficient estimates will be visually examined to see whether a big break happens over time. The second method is called "rolling analysis." This method repeats estimation with a fixed sample size, but moves its sample period for each time. For example, initially, it estimates a model with the observations from 1 to k. Then it moves to the period from 2 to k+1, then 3 to k+2, 4 to k+3, until it comes to N-k+1 to N. These two methods allow one to see the stability of coefficient across the entire time period from slightly different angles (Morimune 1999).

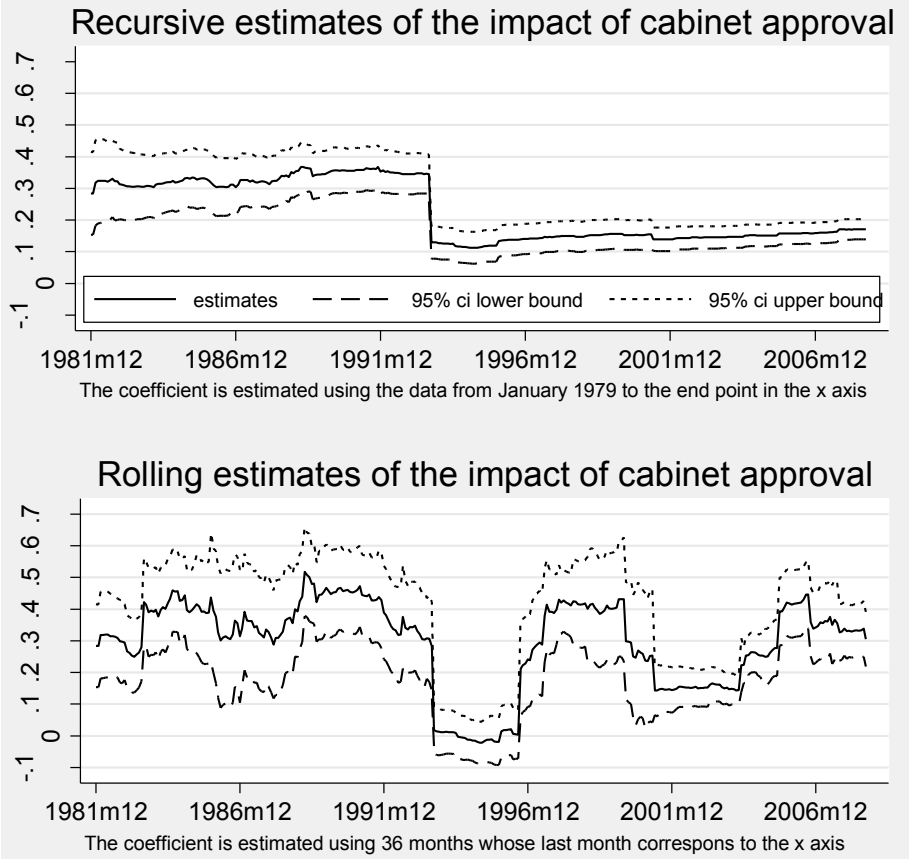
Because the same model must be applied across the entire sample period, it is impossible to have a dummy variable in estimation. If a dummy variable only has zero in its value, it cannot be included in the model. Hence, only cabinet approval, negative evaluation of national business condition, and negative evaluation of household economy are included as independent variables. Dependent variables are LDP support. All variables are actually their "prewhitened" first differenced series. The results of rolling analysis and recursive analysis are shown in Figure 4.

The upper part of Figure 4 displays how coefficient estimates (or the impact of cabinet approval on LDP support) evolved over as a new observation come in. The initial estimation uses thirty six observations from January 1979 to December 1981. Then each new observation is added while the starting point is fixed at January 1979. The coefficient of cabinet approval on LDP support hovers around 0.3 when the ending period moves from December 1981 (N=36) to August 1993 (N=141), but it suddenly dropped down to the less than the half when September 1993 was added in the sample. Clearly, losing power alter the dynamics between cabinet approval and LDP support. Though it is surprising to find just one observation causes such a large effect, the similar change is also reported in the study of British public opinion when John Major replaced Margaret Thatcher (Clarke, Ho and Stewart 2000). However, it is surprising not to find the impact of cabinet approval comes back again after the LDP regained power and placed Hashimoto as a prime minister. It stayed within the range between 0.11 and 0.17 until the sample periods extends to the end of Fukuda (Jr.) cabinet (September 2008, N=322). As non-LDP prime ministers served only 28 months, out of the entire period that stretches over 357 months, it is surprising if it completely undermined the relationship between cabinet approval and LDP support.[9)]

The bottom half of Figure 4 shows how regression coefficient changes as the data used for estimation move from one period to the next while the number of data points are fixed. Thirty-

9) In the context of linear regression, it is actually not surprising that small number of observations have a strong influence of the magnitude of regression coefficient. They are "influential" observations or outliers.

Figure 4



six observations are used for each calculation, and in total 322 regression coefficients are estimated. The initial set of 36 data points was from January 1979 to December 1981, and the last sample set was from October 2005 to September 2008.

Graphical representation of those rolling estimates gives a different picture regarding the impact of cabinet approval on LDP support. The impact of cabinet approval just disappears when the last sample period includes September 1993, but started to recover when the last time period is September 1996, nine months after the Hashimoto cabinet was installed. Then, gradually, as the more time points are included from the period during the LDP led cabinet, the impact of cabinet approval on LDP support recovered its magnitude before the 1993 election. However, the size of coefficients started to be depressed as the data from the Koizumi cabinet comes in. However, the magnitude of coefficient recovers when the sample data points are mainly from the last half of the Koizumi period, roughly speaking. Thus, though the brief period of non-LDP government in the mid 1990s effectively invalidates the causal relationship between cabinet approval and LDP support, this is not the sole reason why the impact of

cabinet approval on partisanship changed over time.

CONCLUDING DISCUSSIONS

In this paper I have demonstrated that, in general, the relationship between cabinet approval for the LDP led government and LDP support did not change much in the past several decades. It seems to be against the conventional wisdom that the prime minister is more influential than in the past. However, I do not think this is a contradiction. If there is a difference between the days of the 1955 system and those in the 2000s, that must be the speed at which cabinet approval changes and influence public support for the governing party. In recent years, the number of the public opinion polls reported in the mass media skyrocketed. In the 1980s, for example, Asahi Shimubun fielded face-to-face survey roughly once in two months. On the other hand, RDD method enables one to launch a survey nearly weekly as long as a budget permits. Indeed, in the 2000s, on average, Asahi Shimbun conducted opinion surveys once in three weeks, and in the most extreme year, it conducted twenty seven telephone surveys in 2007. All the other news agencies also conduct public opinion polls more frequently in these days than in the past, if not as much as Asahi Shimbun does. Thus, it is not the size of influence that has changed, but the frequencies at which one can observe the impact of cabinet approval on partisanship. Second, unsurprisingly, the brief interruption by the non-LDP government alters the relationship between Cabinet support and LDP support. However, this brief interruption is not an only cause of different dynamics between cabinet approval and the LDP support. The dynamics between cabinet approval and LDP support was also different during the Koizumi cabinet as shown in graphical presentation of rolling estimates in the bottom of Figure 4. Koizumi recorded approval rating beyond eighty, which implies that four in five Japanese citizens supported him. However, even when his popularity was around eighty percent, support for the LDP was around forty percent. This discrepancy between the two government approval ratings implies that cabinet approval had a large room to fluctuate in its own dynamics without much connection to support for the LDP. That is the reason why cabinet approval appears to lose influence on LDP support when Koizumi's popularity was enormously high. Thus, if he was successful in delivering good election outcomes to the LDP at all, it was through the independent effect of his personality and policy agendas, not through making the LDP more attractive to voters. In fact, the 2003 Lower House and the 2004 Upper House elections were not terribly successful for Koizumi nor for the LDP, which was held when his approval rating was around fifty percent. Thus, having a popular "presidential" prime minister may help the governing party in a short-run, but it may undermine the long-term viability of the party by discouraging ordinary day-to-day electoral and policy activities within the party.

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[Appendix] The questions on economy from the Jiji monthly polls.

【暮らし向き】
質　問〇あなたの暮らし向きは，昨年の今ごろと比べてどうですか．楽になっていますか，苦しくなっていますか．
選択肢◇大変楽になった　◇やや楽になった　◇変わりない　◇やや苦しくなった　◇大変苦しくなった　◇わからない

【世間の景気】
質　問〇世間の景気をどう見ますか。先月と変わらないと思いますか，悪くなってきたと思いますか，良くなってきたと思いますか．
選択肢◇確かに良くなってきたと思う　◇やや良くなってきたと思う　◇変わらないと思う　◇やや悪くなってきたと思う　◇確かに悪くなってきたと思う　◇わからない