An Empirical Discourse on Pork Barrel Politics, the Japanese Style :

Exploring Cases of a Systematic Difference between the ‘Desperado’
and ‘Relaxed’ Incumbents*

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· **Keyword:** incumbency advantage, pork barrel politics, electoral politics, central government spending, Japan

【ABSTRACT】

How does pork barrel politics actually work in Japan? Around the elections, the media bombards us with stories of disgruntled voters, but their dissatisfaction is over the kind of ‘bacons’ that their representative brought home, not over the fact that s/he did bring some bundle of goodies. Why, then, do incumbents even try to get a larger chunk of the central government money sent to their districts? They do so largely because their chances of getting reelected are at stake and by taking advantage of their incumbency. Along with this unsubstantiated causal relationship, we often assume that the amount of the central money somehow determines the constituency’s willingness to cast a vote. Yet such an endeavor sheds little insight into how we can systematically explain this dirty but needy business of electoral politics. Contrarily, the academic researchers focus on exploring the precise nature of the relationship between central government spending in the regions and the

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electoral outcome of incumbents willing to take a claim on such spending. Such an inquiry, however, carries any notable significance only after it is somehow proven that any meaningful relationship does exist between spending and electoral outcome. In this paper, I will first show that population growth does not fully explain the change in central government spending in regions. Second, I intend to build an argument that there is some intervening factor that strongly influences the amount of money spent in regions, other than a need to accommodate the change in physical size of regions. In doing so, I will show that economic affordability does not necessarily explain patterns in central government spending.

I. Introduction

In the world of scarcity, more is better whether it is material or otherwise. Yet there comes a point in which an additional consumption does not bring in as much satisfaction as before, i.e. the principle of marginal utility sets in. Nonetheless, the fact stands that more is still better, only at a decreasing rate. The same often applies to pork barrel politics. It appears that the question is not whether incumbents should bring bacon home or not. What is at stake is how much of pork is sufficient to draw a positive constituent response that is beneficial to incumbents.¹⁾ But journalists often depict a simplified dichotomous relationship between pork and electoral returns. They build their main argument on an unsubstantiated claim that pork either contributes to boosting the reelection success or does nothing of the sort. In fact, the second claim finds a leeway in a cynical rebuttal that any sign of pork sickens constituents, who may vote for other candidates as protest or abstain from voting at all. That is, pork may actually damage incumbents' chances of reelection.

How, then, does pork barrel politics actually work? The journalistic account floods us with stories of incumbents who strive to 'bring bacons' to their constituencies and of voters who demand more. Around the elections, the media features stories of disgruntled voters, but their dissatisfaction is over the kind of 'bacons' that their representative brought home, not over the fact that s/he did bring some bundle of goodies. Why do incumbents even try to get a larger chunk of the central government

1) Fukui, Haruhiro and Shigeko Fukai, 1996. "Pork Barrel Politics, Networks, and Local Economic Development in Contemporary Japan," *Asian Survey* 36(3), p.268.

money sent to their districts? A unanimous answer is because they care about their chances of getting reelected.²⁾ Being rational, they take advantage of their incumbency to access such resources and claim their endeavor loudly, if not clearly. Complementing this unsubstantiated causal relationship is the assumption that the amount of the central money somehow determines the constituency's willingness to cast a vote. However it gives us little insight into how we can systematically explain this dirty but needy business of electoral politics.

Unlike the journalistic circle, the academic researchers focus on exploring the precise nature of the relationship between central government spending in the regions and the electoral outcome of incumbents who are willing to take a claim on such spending. However, such an inquiry carries any notable significance only after they can establish the fact that any meaningful relationship does exist between spending and electoral outcome. First, I will show that population growth does not fully explain the change in central government spending in regions. In so doing, I intend to build an argument that there is some intervening factor that strongly influences the amount of money spent in regions, other than a need to accommodate the change in physical size of regions. Second, I will show that economic affordability does not explain thoroughly patterns in central government spending. I intend to dispute a conventional wisdom that economic needs justify political needs by squeezing in a room for a significant intervening factor, that is, a political variable.³⁾

II. Selective Previous Works on Incumbency Advantage

Even though there is no crystal clear yardstick that dictates precisely which spending constitutes pork in the central government money sent to the local government, that does not deter researchers and journalists from categorizing expenditure items into pork and non-pork. Levitt and Snyder divide the grants in aid into 'low-variation' and 'high-variation' programs, the latter constituting pork.⁴⁾ They argue that benefits from

2) "...the role and performance of Diet members in pork barrel politics *made or broke their political careers...*" (*Ibid*, p.269).

3) One reviewer suggested that this argument should be self-evident by now, I am in total agreement; yet for the sake of building an argument and substantiating it in a systematic explanatory model, I felt it necessary to show its validity before attempting any empirical analysis. In addition, many economists and scholars of public administration still find it relevant to argue that socioeconomic and demographic characteristics of administrative units matter the most along with macro-level economic and budgetary conditions.

high-variation programs are geographically restricted such that they are more liable to political noise and easier for incumbents to claim credit for the benefits. Their primary concern does not lie in the distinction between pork and non-pork *per se* within a particular region, but the variation across regions. Precisely because non-pork spending items are non-discretionary, they do not affect the interregional variation in pork programs. If their argument is valid, the total amount of the central money reflects mostly the change in pork among different regions. In other words, if this arbitrary distinction between pork and non-pork is blurry, the central money in itself represents pork. Then, using the total amount of central money has an advantage of capturing the effect of political noise in a wholesome way. Accordingly, I use the total amount of national disbursement in order to explore whether pork matters in electoral politics.

Why should it be political? Notably, there appears a disturbing chasm between spending and environmental factors, which varies widely from region to region. Levitt and Snyder Jr. argue that incumbents who are faced with a fierce competition exert greater effort in driving central money into their district.⁵⁾ However, the perception of a fierce competition is purely subjective and the measurement of the ensuing effort by incumbents is a daunting task. In order to devise a variable that captures such an effort, I will use an election outcome in the prior election year in this paper. If the electoral outcome in the previous election was a close call, an incumbent should be more prone to pork barrel politics than others who secured a safe margin last time.⁶⁾ In this paper, I intend to explain why some incumbents are more devoted in obtaining a larger central government spending for their constituencies than others. However, it is only a half of the picture I had described about electoral politics. The remaining half comes from a perspective of constituency who casts a vote in election. Do voters recognize and respond to the incumbent's claim on bringing pork to them? In this paper, I will restrict the range of analysis to the first model, namely the incumbent's logic behind 'bringing pork home.'

4) Levitt, Steven and James Snyder, Jr. 1997. "The Impact of Federal Spending on House Election Outcomes." *Journal of Political Economy* 105(1), pp.34-6.

5) *Ibid*, p.38.

6) See Alesina, Alberto, Nouriel Roubini and Gerald Cohen, 1994. "Political Cycles in Industrial Economics," and "Political Parties, Institutions, and Budget Deficits." In *Political Cycles and the Macroeconomy* (Cambridge: MIT Press), Inman, Robert and Michael Fitts, 1990. "Political Institutions and Fiscal Policy: Evidence from the U.S. Historical Record." *Journal of Law, Economics and Organization* 6(supplement): 79-132, and Rivers, Douglas and Morris Fiorina, 1989. "Constituency Service, Reputation, and the Incumbency Advantage." In *Home Style and Washington Work: Studies of Congressional Politics*, eds. by Morris Fiorina and David Rohde. Ann Arbor: University of Michigan Press.

The remaining sections of the paper consist of 1) data source and research design, 2) descriptive analysis: background, 3) OLS analysis, 4) comparison of logit and OLS analysis, and 5) conclusion.

III. Data Source and Research Design

I will use the prefecture-level data in Japan for the period between 1960 and 1993 when the last election was held under the SNTV (Single Non-transferable Vote) system. From the mid-1950s to the early 1990s, pork barrel politics (*rieki-yudo seiji*) often degenerated into money politics (*kinken seiji*), if not outright political corruption. Behind such politics, however, laid the very real needs of Japanese localities for 'porks.' Therefore, not only informal politics of representation matters, but also formal politics of representation does make meaningful differences.⁷⁾ The multi-member SNTV system provided such opportunities, thus I will focus on the postwar period through the 1994 electoral reform. The dependent variable is the national disbursement in each prefecture in 1990 constant thousand yen. I will use GDP deflators from *International Financial Statistics Yearbook* to convert the current price into the constant price. I will exclude Okinawa from the analysis because the U. S. returned it to Japan only recently. All the data are from *Chiho Zaisei Tokei Nenpo (Local Financial Statistics Yearbook)*.

The independent variables are the economic status of prefecture, the physical size of prefecture and the electoral outcome in the previous election. GDP of prefecture shows how prosperous a prefecture is. Population of prefecture conveys the size of financial burden to a prefecture. Vote percentage of LDP (Liberal Democrat Party) in the previous election is an instrument to capture the extent to which incumbents perceive the chance of preserving their seat in the assembly and exert efforts to drive central spending into the prefecture. I will examine only LDP incumbents because LDP was a majority party in the Lower House during the years between 1960 and 1993. During these years, LDP representatives took almost all the committee chairmen and a majority of membership in nearly all committees.⁸⁾ I will also examine only the results of the Lower House

7) Christensen, Ray, 1998, "The Effects of Electoral Reforms on Campaign Practices in Japan," *Asian Survey* 38(10), p.987; Horiuchi, Yusaku and Jun Saito, 2003, "Reapportionment and Redistribution: Consequences of Electoral Reform in Japan," *American Journal of Political Science* 47(4): p.671.

8) See Inoguchi, Takashi, 1987, "The Political Economy of Conservative Resurgence under Recession: Public Policies and Political Support in Japan, 1977-1983," in Pempel, T.J. ed. *Uncommon Democracies: The One-Party Dominant Regimes*. Cornell: Cornell University Press.

elections because the Upper House plays no pivotal role in budget decision-making.⁹⁾ The data for GDP and population of prefecture are from *Kenmin Shichosonmin Shotoku Tokei (Statistics on Earnings by Prefecture, City, and County)*. GDP data are adjusted into 1990 constant yen with GDP deflators. The data for election results are printed materials I obtained from the Bureau of Statistics in the Office of Prime Minister.

In the OLS analysis, the data are given to me and my task is to search for a vector of parameters that minimize the sum of squared errors. In the meantime, in the logit analysis, the probability function is given to me and my task is to search for a vector of parameters that maximize the configuration of (y_i, x_i) . In the perfect world of normality, marginal rate is the same anywhere in the probability distribution. However, when the dependent variable is dichotomous, the effect of a unit change in an explanatory variable on the probability of $y_i=1$ is not constant.¹⁰⁾ In this paper, I design a model to reflect this non-normality assumption so as to deduce a set of meaningful inferences about the population. In other words, the effect of an explanatory variable on the probability of the event should be valid in terms of the likelihood that I can observe a particular set of (y_i, x_i) . To explicate the relationship between the response probability and the explanatory variable, I code the dependent variable of election outcome into a dichotomous variable.¹¹⁾

9) Abe, Hitoshi, Funeyuki Shindo, and Sadafumi Kawato. 1990/2001. "Sangiin no Yakuwari (The Role of the House of Councillors)," in *Gendai Nihon no Seiji (Politics of Modern Japan)*. Tokyo: Tokyo University Press.

10) Thus, if $x\beta$ is near ∞ , and the estimated probability is near 1, then the effect is (close to 1)* $\{1/(\text{close to } \infty)\}*\beta \approx 0$. If $x\beta$ is near 0, and the estimated probability is near $\frac{1}{2}$, then the effect is (close to $\frac{1}{2}$)* $\{1/(\text{close to } 2)\}*\beta \approx (1/4)*\beta$.

11) 0 for the LDP incumbent(s)' failure to get reelected and 1 for the LDP incumbent(s)' success to get reelected.

IV. Descriptive Analysis: Background

Table 1 Average spending and population in prefecture

year	National disbursement ¹	General construction ²	Total population
1960	1249798687	346039970	93418428 ³
1963	2229926094	787361572	93418428
1966	2166557975	791455054	98258229
1969	3617010141	1540932144	100674563
1972	4979662276	2324793533	101921223
1976	6107296695	2333927872	112146194
1979	7666328247	3539676030	115058120
1980	7897738850	3591631787	115880095
1983	7846684959	3298298344	118108983
1986	7293015516	2926747985	120160312
1989	7031224669	2441799526	121512478
1993	8551631627	3963559476	124693611

1. The price is in 1990 constant thousand yen.
2. The price is in 1990 constant thousand yen.
3. Population data both for 1960 and 1963 are based on the same Census Report in 1963.

Figure 1. Obligatory education expense and school-age population

Table 1 illustrates the change in aggregate national disbursement, total general construction expense, and total population between 1960 and 1993. While the population grows at a steady rate, spending does not necessarily reflect such a smooth growth in population. A similar discrepancy is seen between the obligatory education spending and the school-age population that the spending is targeting at, or between the children protection expense and the younger population. Figure 1 and 2 illustrate this mismatch between the population growth and the change in expenditure. If population grows, the expenditure responds to such a growth pattern. Figure 1 and 2 show that I cannot explain the expenditure change fully by relying on population growth alone.

Figure 2. Children protection expense and school-age population

While Table 1, Figure 1, and Figure 2 illustrate that the change in spending does not always go hand in hand with the population growth, Table 2 shows that such a deviation is not consistent from prefecture to prefecture. A certain prefecture gets the largest national disbursement per capita year after year while another seems to be stuck with the smallest share. Journalists clamor over stories of who represents such prefectures. When a powerful LDP faction leader such as Takeshita happens to represent Shimane, journalists regard their findings as hitting a gold mine. As a consequence, they extend their logic into all the other prefectures. Although it may be interesting to improvise a story of personal connection, such an anecdotal account does not explain why I find a

divergent pattern in distribution of spending among prefectures throughout different periods. Regardless of who happen to be a representative in a certain prefecture, I can easily notice that some prefectures get a disproportionately large amount of central government spending than others. My task, then, is how to devise a model that systematically incorporates this diversion without adding $n-1$ dummy variables.

Table 2. National disbursement per capita

Year	Mean ²	Maximum ² Prefecture	Minimum ² Prefecture	Standard deviation ²
1960	15630.45	42163.13 (4.03) ¹ Yamanishi	5801.93 (1.49) Osaka	6589.01
1963	26436.41	51013.31 (3.28) Fukui	12296.68 (1.68) Osaka	7487.18
1966	25804.29	45404.33 (2.31) Kochi	9626.16 (1.91) Osaka	8468.3
1969 ³	43946.52	122022.9 (4.33) Fukuoka	15471.82 (1.58) Kanagawa	18025.15
1972	63253.27	128622.9 (2.84) Shimane	19409.19 (1.91) Kanagawa	22981.37
1976	71064.66	163629.7 (3.13) Kochi	21567.24 (1.67) Kanagawa	29602.36
1979	86029.39	159929 (2.18) Kochi	26881.93 (1.74) Kanagawa	33908.84
1980	88111.2	163749.7 (2.22) Shimane	27923.19 (1.76) Kanagawa	34104.62
1983	86091.46	179911.8 (2.8) Shimane	28060.39 (1.73) Kanagawa	33487.49
1986	78566.42	173483.6 (3.13) Shimane	25714.86 (1.75) Kanagawa	30277.74
1989	74909.93	160205.6 (2.96) Shimane	28060.39 (1.75) Kanagawa	28852.77
1993	90520.92	182302.1 (2.5) Shimane	29000.03 (1.67) Kanagawa	36769

1. Figures in parentheses are the number of standard deviation between the value (either maximum or minimum) and the mean.

2. The price is in 1990 constant yen.

3. Starting from 1967, national disbursement includes three additional items that were not included in previous years.

If the amount of national disbursement is not necessarily proportional to the population size, which other factors influence its distribution pattern? One formidable

variable is economy that provides the base of affordability. Widavsky argues that more predictability is possible when the economy grows in a fairly fast and steady manner while the contracting economy creates a strenuous conflict among competing demands for resources.¹²⁾ Table 3 shows that the change in national disbursement generally follows the expansion and contraction in economy. However, GDP growth does not indicate any predictable pattern in spending even when the economy grows in a fast and steady manner. For example, national disbursement grows at the half level of GDP between 1963 and 1965, even when the economy should afford a much larger spending. On the contrary, during 1986 through 1988 when the economy grows far more slowly at 2.2 percent than at the average rate of 16.11 percent, national disbursement expands by four times at 8.71 percent, a lot closer to the average rate of 11.66 percent. Although economic affordability generally binds expenditure within a certain range, there is a significantly lax room for other factors to intervene until spending is possible. The next task is to identify this influential interference in the business of spending decision.

Table 3. GDP growth and national disbursement growth

Year ¹	%GDP ²	%ND ³	Year ¹	%GDP	%ND
1958–1959	35.07	36.93	1976–1978	16.63	20.56
1960–1962	17.93	20.94	1979–1980 ⁴	14.53	12.79
1963–1965	28.96	10.51	1980–1982	8.28	4.45
1966–1968	28.99	36.77	1983–1985	8.46	1.51
1969–1971	23.79	32.09	1986–1988	2.2	8.71
1972–1975	2.56	2.03	1989–1992	5.95	10.33

1. Election years are 1960, 1963, 1966, 1969, 1972, 1976, 1979, 1980, 1983, 1986, 1989, and 1993.

2. Average GDP growth rate = $[(GDP_t - GDP_{t-1}) / GDP_{t-1}] * 100$
of years between elections

3. Average ND growth rate = $[(ND_t - ND_{t-1}) / ND_{t-1}] * 100$
of years between elections

4. Because there are two elections in a row, I include 1980 in both periods.

Kobayashi labels such interference as ‘political noise,’ which is too evasive to measure in a systematic way.¹³⁾ Downsian politicians, however, provide a clue to this ‘political’ murkiness. Self-interest of politicians centers on reelection.¹⁴⁾ As long as s/he intends to

12) See Wildavsky, Aaron. 1975. “Should the Economic Tail Wag the Political Dog? Political Foundations of Program Budgeting,” in *Budgeting: A Comparative Theory of Budgetary Processes*. Boston: Little, Brown and Company, p.315.

13) See Kobayashi, Yoshiaki. 1997. *Gendai Nihon no Seiji Katei* (Politics in Japan, 1955–1993). Tokyo: Tokyo University Press, pp.46–68.

14) See Johannes, John and John McAdams. 1981. “The Congressional Incumbency Effect: Is It Casework, Policy Compatibility, or Something Else? An Examination of the 1978 Election.”

preserve her/his seat in the legislature, s/he will strive to enhance her/his chances of getting reelected. Whether inside the legislative office or in the appropriate government bureau that decides the actual allocation of central government money, self-interested politicians will try to exert their influences to earmark a certain amount to their region and claim credit on their endeavor. If all the politicians exert their efforts into this endeavor and their zeal is more or less the same, the pattern of spending distribution theoretically lacks variation across time and space when environmental and economic variables are held constant.¹⁵⁾ As I mentioned in details above, I find a wide variation in the allocational pattern of spending. My next task is how to operationalize this 'political' interference by incumbents.

V. OLS analysis

How do we measure one's perception of peril and compare it across time and space? There is one thing common among all incumbents: the previous election outcome. I argue that those who won the previous electoral competition on a narrow margin should be on alert so as to strive more strenuously for obtaining central government money than those who had a luxury of a comfortable margin. The more willing incumbents are to race for central government money, the more national disbursement their region gets. However, the success of getting central government money depends on the party locomotive that incumbents are riding in. Unlike their counterparts in the Congress, representatives in the Lower House do not enjoy autonomous power. Furthermore, various ministries and bureaus initiate twice more legislation as individual representatives do.¹⁶⁾ This does not necessarily mean that bureaucrats are more powerful than politicians. Precisely because bureaucrats know that politicians will decide the fate of legislation, they often coordinate politicians' demands in the process.¹⁷⁾ Even when

American Journal of Political Science 25(3), pp.512-42, and Patterson, Dennis. 1994. "Electoral Influence and Economic Policy: Political Origins of Financial Aid to Small Business in Japan," *Comparative Political Studies* 27(3), pp.425-47.

15) See Feldman, Paul and Jame Jondrow. 1984. "Congressional Elections and Local Federal Spending," *American Journal of Political Science* 28(1), pp.147-64 and Fiorina, Morris. 1981. "Some Problems in Studying the Effects of Resource Allocation in Congressional Elections," *American Journal of Political Science* 25(3), pp.543-67.

16) See Abe, Hitoshi, Funeyuki Shindo, and Sadafumi Kawato. 1990/2001. *Gendai Nihon no Seiji* (Politics of Modern Japan). Tokyo: Tokyo University Press.

17) See Campbell, John Creighton. 1977/1980. *Contemporary Japanese Budget Politics*. Berkeley: University of California Press, pp.172-199.

encountering with bureaucrats, incumbents enjoy little autonomy and ride on the party label. Consequently, their perception of peril is directly related with how well their party fared in the previous election.

Until 1993, Japan had a multi-member SNTV system. Politicians often compete with candidates from the same party so that they depend on their own separate support group for funds and votes.¹⁸⁾ Even though candidates from the same LDP contend for seats in the same district, their influence on bringing central government money depends on the partisan appeal in the prefecture. It is particularly pertinent to consider the party label as a driving force behind individual representative's self-interest because the party discipline is strong in Japan.¹⁹⁾ Like it or not, they are in the same boat. By using the prefecture-level data, I define the political interference variable as partisan candidates' perception of peril in their prefecture. Incorporating this argument, I formulate the following political management model of spending:

$$ND_t = \alpha P_t^{\beta_2} E_t^{\beta_3} M_{t-1}^{\beta_4} e^\varepsilon$$

Where ND_t : national disbursement of year t

P_t : population of the region, prefecture in this case

E_t : GDP in 1990 constant yen of the region

M_{t-1} : vote percentage of LDP candidates in the previous election

$\ln ND_t = \beta_1 + \beta_2 \ln P_t + \beta_3 \ln E_t + \beta_4 \ln M_{t-1} + \varepsilon$ (linear normal model)

where $\beta_1 = \ln \alpha$

I use the log-linear model because the coefficients, β_2 , β_3 , β_4 , are elasticities in that they show how responsive a dependent variable is to a change in explanatory variables.²⁰⁾ I am especially interested in finding out how much the perception of peril in a prefecture drives incumbents of the same party to race for central government money and whether the greedy zeal consistently explains ups and downs in national disbursement after environmental and economic influences are counted. I anticipate that $\beta_2 > 0$, $\beta_4 > 0$, and β_3 be unclear.

18) See Curtis, Gerald, 1988, *Japanese Way of Politics*. New York: Columbia University Press.

19) See Sakakibara, Eisuke, 1991, "The Japanese Politico-Economic System and the Public Sector." In Samuel Kernell ed, *Parallel Politics: Economic Policymaking in the United States and Japan*. Washington, D.C.: Brookings.

20) That is, $(\partial \ln ND_t) / (\partial \ln X_t)$ where X_t is P_t , E_t , M_{t-1} .

Table 4. National disbursement, population, GDP, and perception of peril

year	$\ln P_t$ (t-stat)	$\ln E_t$ (t-stat)	$\ln M_{t-1}$ (t-stat)
1960	.5837* (2.0559)	-0.0822 (.3576)	-0.9988* (2.7735)
1963	1.1827* (5.1883)	-0.3677* (2.0554)	.0632 (.6646)
1966	1.3463* (4.4919)	-0.6343* (2.5216)	-0.3063 (.8593)
1969	.4737* (2.2509)	.0809 (.4477)	.0117 (.0433)
1972	1.2895* (4.6736)	-0.5771* (2.4322)	.3367 (1.3598)
1976	1.1003* (3.2559)	-0.5363 (1.8126)	.0336 (.1460)
1979	1.2125* (3.7273)	-0.5621* (2.0255)	.2700 (1.5326)
1980	1.1771* (3.7839)	-0.5144 (1.9546)	.3097 (1.7328)
1983	1.1905* (4.1678)	-0.5468* (2.2724)	.2437 (1.1264)
1986	1.1542* (4.4423)	-0.4697* (2.1519)	.3861* (2.1890)
1989	1.1862* (4.7912)	-0.5185* (2.5078)	.2943 (1.5084)
1993	.6464* (2.6616)	-0.1449 (.6818)	.0891 (1.3151)

* significant at 95 % confidence level

Table 4 shows the result of regression analysis, using the above linear normal model.²¹⁾ If there is any significant relationship between explanatory variables and a dependent variable, its significance should stand one election after another. If the sign of a coefficient changes from negative to positive, then theoretical validity of the concerned variable is not empirically substantiated to a satisfactory degree. Population is consistently significant and has the correct sign as anticipated. Specifically, I can say with 95 percent of confidence that an increase of 1,000 residents in one prefecture would lead to, on average, an increase of 3,604.72 yen ($=e^{\ln 1000 * 1.1862}$)—1990 price—in 1989 national disbursement. That is, national disbursement is very elastic with regards to changes in population. The political vulnerability index has the correct sign in most occasions, although it is not statistically significant at 95 percent confidence level.²²⁾ Yet t-statistics at the 95 percent confidence level provides me with a rough idea that the political interference variable should be statistically significant, especially since 1972 when LDP politicians start to get involved in budgeting.²³⁾

When I compare the impact of political interference with that of population size, the mere magnitude may transmit an erroneous implication about the intensity of influence. An additional 5% margin in the previous election would bring in a mere increase of 1.61 yen ($=e^{\ln 5 * .2943}$) in 1989 national disbursement. In other words, national disbursement is

21) Figures in parentheses are t-statistics.

22) Due to time constraint, I did not analyze the data by using 90 percent confidence level.

23) Campbell (1977/1980), p.80.

very inelastic with regards to changes in the partisan perception of peril. No matter 'safe' an electoral margin is in the previous election, incumbents do not feel content and secure. Thus, they still will head for the appropriate bureaus and push for more central government money. However, this variable reveals little about the variation in the outcome of such an ordeal. Economic prosperity is statistically significant and shows that spending decision is often irrelevant to one's economy once a country exceeded a certain threshold of affluence.

The intervening political variable does not capture why I find a variation in the allocational pattern of central government money. I argued that Japanese incumbents would perceive sense of peril through their partisan performance in the previous election. However, Japanese incumbents may work autonomously just like the American counterpart. The analysis outcome since 1972 suggests that the autonomy of incumbents may be valid. Instead of riding in a party bandwagon, LDP incumbents find their way inside the legislature, committees, for instance. In order to verify this alternative account, I may need to gather the data for individual politicians, which is left for a future research.²⁴⁾

VI. Comparison of OLS and Logit Analysis

I first set up a simple model in which the national disbursement is the only explanatory variable.²⁵⁾ Table 5 is the result of the logit analysis in comparison with the OLS estimation as in the following:

Table 5. Comparison of logit and OLS analysis : model 1

year	Logit	OLS
Intercept	-25.68(2.93)	5.31(.45)
ln(national disbursement)	1.37*(.16)	-0.26*(.03)

n=552

Figures in parentheses are standard errors.

*p<.05

National disbursement contributes positively to the likelihood of successful bidding to reelection, and its effect is statistically significant. If I plug the mean value of the

24) Only after I analyze such data, I can illuminate how differential efforts of incumbents contribute to differential distribution of central government spending.

25) That is, model 1 is $\log\{p/(1-p)\} = \alpha + \beta^*x$ where x is a 1×1 vector of explanatory variable, $p = \Pr(Y=1|x)$, α is the intercept parameter, and β is the 1×1 vector of slope parameters.

explanatory variable to find out the marginal effect of national disbursement on the probability of success, I have $1.37 \cdot (1 + \exp^{-(25.68 + 1.37 \cdot 18.35)})^{-1} \cdot (1 + \exp^{-25.68 + 1.37 \cdot 18.35})^{-1} = .32$ when the mean value of the natural log of national disbursement is 18.34. That is, one unit increase in national disbursement promotes the possibility of reelection by 32 percent when the additional unit change occurs around the mean value of national disbursement. In comparison, the OLS estimators convey that the probability of success goes down by 26 percent for an additional unit of national disbursement. If I plug in the mean value of 18.34, the estimated probability is $5.31 - (.26 \cdot 18.34) = .54$, a convoluted contribution credited to national disbursement.

What is at stake is that the OLS estimation result depicts a uniform marginal effect of national disbursement because it assumes normal probability distribution. However, the equivalent unit change in national disbursement near the lower boundary does not contribute to the probability of reelection by the same magnitude with that when the increase occurs around the upper boundary, not to speak of around the mean value of national disbursement. In other words, this marginal effect does not portray the typical impact of change in national disbursement away from the mean value, especially when the range of national disbursement is quite large. I cannot make an accurate inference about population on the basis of the OLS estimation, even though the standard errors of estimates are small enough. For example, the estimated probability of the response is .89 when national disbursement is at the maximum—20.94. The estimated probability of the response drops to .67 when national disbursement decreases by one unit. When national disbursement is at the minimum—16.26, the estimated probability of the response is .03. A unit increase will bring in .08. Thus, the same unit change results in 22 percent around the maximum value of national disbursement whereas it yields 5 percent increment around the minimum. Figure 3 illustrates this variable rate of change, depending on the location of national disbursement.

However, it is hard to assume that national disbursement alone influences the likelihood of probability that reelection is successful. My second model incorporates the dichotomous explanatory variable of the previous election outcome.²⁶⁾ I suspect that the effect of explanatory variable is systematically different between the 'desperado' and the 'relaxed' incumbents. Although this additional explanatory variable is dichotomous, it is not mutually exclusive. The coding itself is arbitrary in that no one knows for sure when and where incumbents feel truly unscathed from the constituent surveillance.

26) 0 is for failure to capture the LDP majority and 1 is for success to sweep the particular prefecture in the previous election.

Figure 3. The effect of national disbursement on the probability of successful reelection bid

Thus, I am not susceptible to the kind of erroneous interpretation when the mutually categorical variable, such as sex, is involved. Nonetheless, I would like to find out whether the incumbents' desperateness makes the marginal effect of national disbursement on the probability of successful reelection different from those who do not perceive themselves as hanging to the cliff. Table 6 provides the comparison of the logit and the OLS estimation results:

Table 6. Comparison of logit and OLS analysis : model 2

	Logit	OLS
Intercept	-23.91(2.98)	4.88(.47)
$\ln(\text{national disbursement})=x_1$	1.29*(.16)	-0.24*(.03)
Desperado= x_2	-0.57*(.2)	.12*(.04)

n=552

Figures in parentheses are standard errors.

*p<.05

While national disbursement has a positive effect on the likelihood of successful reelection, the electoral success in winning the previous election contributes negatively to the likelihood of the upcoming reelection bid. Both effects are statistically significant, although the negative effect is about half of the positive effect. If I plug the mean value of explanatory variables into the derivative method, I have $1.29 * (1 + \exp^{-(-23.91 + 1.29 * 18.34 - .57 * .5)})^{-1} = .30$. That is, one unit change in national disbursement produces a shift in the likelihood of the successful reelection bid by 30 percent, provided that the incumbents are neither desperate nor relaxed with regards to their chances of

reelection. The LR (likelihood ratio) test statistic is 101.35 with 1 degree of freedom, which is larger than the critical value of 5.99 at $p < .05$. Model 2 is fit for any inference about population. For comparison, I plug in the mean value of explanatory variables into the OLS estimator and $4.88 + (-.24 * 18.34) + (.12 * .5) = .54$. Again, the OLS estimation yields an overrated attribution to national disbursement in bringing the successful bid in reelection.

I am more interested in the typical effect of national disbursement on the probability of successful reelection bid. Thus, I set up a table to compare how the typical effect differs depending on the location of its occurrence. Table 7 illustrates this comparison in the following:

Table 7. Comparison of the marginal effect

Explanatory variable ¹	Other x at mean-1 s.d. ²	Other x at mean ³	Other x at mean+1 s.d. ⁴
$\Delta x_1 = 17.26 - 16.26$	.11	.09	.07
$\Delta x_1 = 19.34 - 18.34$	.30	.31	.31
$\Delta x_1 = 20.94 - 19.94$	.10	.12	.15
$\Delta x_2 = .5 - 0$	-.04	-.06	-.07
$\Delta x_2 = 1 - .5$	-.04	-.06	-.07
$\Delta x_2 = 1 - 0$	-.08	-.12	-.13

1. Values of explanatory variables are taken from the minimum, the mean, and the maximum. The sample size is 552.
2. The mean of national disbursement (x_1) is 18.34 and the mean of desperado (x_2) is set at .5. The standard deviation (s.d.) for x_1 is .77 while that for x_2 is close to .5. The figures in the second column are first difference of probability at different locations of the concerned explanatory variable. That is, x_2 is set at 0 for the first three cells, and x_1 is set at $18.34 - .77 = 17.57$ for the remaining three cells.
3. By the same method, the figures in the third column are first difference of probability at different values of the concerned explanatory variable. For instance, let $p_0 = \Pr(Y=1|x_1=17.26, x_2 \text{ is fixed at } .5)$ and $p_1 = \Pr(Y=1|x_1=16.26, x_2 \text{ is fixed at } .5)$. Then, $p_1 - p_0 = .09$, the very figure in the first cell of the third column. Throughout the third column, x_2 is set at .5 for the first three cells, and x_1 is set at 18.34 for the remaining three cells.
4. The same logic applies to the fourth column in which x_2 is set at 1 for the first three cells, and x_1 is set at $18.34 + .77 = 19.11$ for the remaining three cells.

From Table 7, I can easily reiterate that the marginal effect of .3 is not typical when the values of explanatory variables deviate from the mean. For instance, the third row illustrates how a unit change in national disbursement affects the likelihood of the successful reelection bid around the mean value of national disbursement. However, the same unit change in national disbursement contributes to the probability of success by a far smaller magnitude as the national disbursement value is far away from its mean. In both cases of extreme occurrences at the far ends of range, the effect of the same unit change in national disbursement on the probability of success is one third of that

around the mean value of national disbursement.

A more interesting finding is about the desperado variable. When national disbursement is set at its mean value of 18.34, one unit change in the desperado means switching to a status of the much-coveted relaxed incumbent. Albeit its arbitrariness, the negative sign of the desperado variable indicates that the level of perceived job security has a negative effect on the likelihood of successful reelection bid. The more the incumbent perceives his/her position to be secure, the less it contributes to the likelihood of his/her winning reelection.²⁷⁾ A more troubling finding is that the marginal effect of .3 is not found even when national disbursement is fixed at its mean value, i.e. in the lower three cells of the third column of Table 7. Although I argued earlier that this desperado variable is vaguely dichotomous, this not-so-vague finding indicates that there is indeed no such thing as halfway in between. Simply because this explanatory variable is dichotomous, I have to evaluate the effect of national disbursement for prefectures with the desperate incumbent(s) and those with the relaxed one(s) separately. Table 8 provides the coefficients—and their standard errors—for the prefectures with the relaxed incumbent(s) and for those with the desperate one(s) in the following:

Table 8. Comparison of marginal effect between the desperado and the relaxed

	Relaxed incumbent(s)	Desperate incumbent(s)
Intercept	-21.14(4.72)	-26.2(3.84)
Ln(national disbursement)	1.14*(.25)	1.38*(.21)
Sample size	212	340
χ^2 for covariates	24.05	60.96

*p<.05

Figures in parentheses are standard errors.

27) See Rivers, Douglas and Morris Fiorina, 1989, "Constituency Service, Reputation, and the Incumbency Advantage." In *Home Style and Washington Work: Studies of Congressional Politics*, eds. by Morris Fiorina and David Rohde, Ann Arbor: University of Michigan Press and Stein, Robert and Kenneth Bickers, 1994, "Congressional Elections and the Pork Barrel," *Journal of Politics* 56(3), pp.377-99

Figure 4. Comparison of effect between the desperado and the relaxed

As I suspected, national disbursement has a stronger positive effect on the likelihood of the successful reelection in prefectures with the desperate incumbent(s) than in prefectures with the relaxed incumbent(s). The marginal effect of national disbursement for the relaxed incumbent(s)' prefecture is $1.14 \cdot (1 + \exp(-21.14 + 1.14 \cdot 18.2))^{-1} \cdot (1 + \exp(-21.14 + 1.14 \cdot 18.2))^{-1} = .37$ when the mean value of national disbursement is 18.2, while the marginal effect for the desperate incumbent(s)' prefecture is $1.38 \cdot (1 + \exp(-26.2 + 1.38 \cdot 18.59))^{-1} \cdot (1 + \exp(-26.2 + 1.38 \cdot 18.59))^{-1} = .40$ when the mean value of national disbursement is 18.59.

The desperado among incumbents are strongly related with the amount of national disbursement. One unit change in national disbursement boosts the likelihood of successful reelection bid by 40 percent, 3 percent more than the equivalent unit change in national disbursement of the prefecture with the relaxed incumbent(s). Yet this marginal effect is not always the typical effect found at different values of national disbursement. Figure 4 provides different effect of national disbursement on the probability of success.²⁸⁾ The marginal effect around various values of national disbursement is the vertical distance between two plots.

The effect of national disbursement is almost always larger in the desperate incumbent(s)' prefectures than in the relaxed incumbent(s)' prefectures. The comparison in first difference conveys an interesting finding. When the level of national disbursement is below its mean value, the typical marginal effect of national disbursement is larger in the desperado regions. However, as national disbursement

28) Line R is for the relaxed incumbent(s)' prefectures and Line D is for the desperate incumbent(s)' prefectures.

exceeds its mean value, one unit increase in national disbursement yields a larger positive impact in the seemingly secure regions than in the desperado ones. Table 9 provides this oddity in the following.

Table 9. Comparison of first difference between the desperado and the relaxed

First difference	The desperado	χ^2	The relaxed
$p_1 - p_0$ for $x_1=17.2$ and $x_0=16.2$	.18-.06=.12	>	.08-.02=.06
$p_1 - p_0$ for $x_1=18.2$ and $x_0=17.2$	.40-.18=.22	>	.25-.08=.17
$p_1 - p_0$ for $x_1=19.2$ and $x_0=18.2$	.68-.40=.28	<	.57-.25=.32
$p_1 - p_0$ for $x_1=20.2$ and $x_0=19.2$	.87-.68=.19	<	.84-.57=.27
Size of sample	212	☺	340

The mean value of national disbursement is 18.34.

1. The magnitude symbol stands for the comparison of marginal effect between the desperado and the relaxed.

How can I explain this rather strange pattern? The maximum value of national disbursement for the relaxed incumbent's prefecture is 20.26 while the mean value is 18.2. That is, the maximum value is $(20.26 - 18.2) / .77 = 2.68$ standard deviations away from the mean. It is a clear case of outlier influencing the pattern of probability. The mode for the relaxed incumbent(s)'s prefectures is 17.6 such that the distribution of national disbursement is rather skewed toward handful large values. Therefore, any inference about population is misleading, if not misinforming, on the basis of these atypical values of national disbursement associated with the relaxed incumbent(s).

The next logical step is to find out who these supposedly relaxed incumbents are and why they seem to go against the desperado assumption. I found 9 atypical cases over the three election years in a row, 1972, 1976, and 1979 elections. The concerned prefectures are Aomori, Saitama, Kanagawa, Gifu, Mie, Kyoto, Nara, Shimane, and Kagawa. What do these prefectures have in common? Their population ranges from 700,000 to 2.5 million, small to medium-size prefectures. Their GDP ranges from 1.71 billion yen to 45.91 billion yen in 1990 price. In terms of the economic welfare, all prefectures are not far off from their mean GDP at 2.63 billion yen except for Shimane. The economic performance in these 8 prefectures is a bit below or close to the national average. Why Shimane stands out is something of a case study that is beyond the purpose of this paper.

Then, what is the common feature in these prefectures? They all have unusually high amount of national disbursement earmarked at one point of time.²⁹⁾ In this paper,

29) See Michio, Muramatsu, 1997. *Local Power in the Japanese State*. Trans. By Betsey Scheiner and James White. Berkeley: University of California Press and Reed, Steven, 1981.

national disbursement is treated as an exogenous variable that is randomly assigned. However, the peculiar findings from Table 9 suggest that it is not so. National disbursement is arguably subject to the assignment process in which other predetermined exogenous variables influence the amount of national disbursement to a significant extent.³⁰⁾ It may be the case that the impact of political noise and other predetermined explanatory variables is already present in the assignment of national disbursement to various prefectures. Thus, it is misleading to make inferences from any model that presumes that the sample is withdrawn randomly.

VII. Conclusion

During the years between 1960 and 1993, Japan had 12 elections for the House of Representatives. Under a parliamentary system, the incumbent prime minister and his cabinet—not to speak of his faction—do attempt to turn political business to their benefit. Yet remarkably, elections did occur fairly regularly every three years or so, except for the neck-to-neck elections of 1979 and 1980. Given the seemingly regular elections, politicians are aware that they have to face their constituency in next election on a more or less regular basis. Are the all the politicians under the pressure to the same extent? If some of them feel more pressured than others do, how can I measure such a differential across incumbents and explain it?

Before the electoral reform in 1994, the electoral system in Japan was the combination of multi-member plurality and party-list PR called the SNTV. This means that candidates from the same party will have to compete against each other in the same district. Personal appeal may be a deciding factor, yet it also relies on the party appeal within a particular prefecture. As Pempel argues, nearly all the Japanese credit the governing Liberal Democratic Party (LDP) for the twenty-year high economic growth.³¹⁾ Thus, individual incumbent will be on the lookout for the party acceptance in a particular prefecture, beyond his/her own district but bounded within the prefecture.

A proper hypothesis should consist of two-stage argument: electoral impact on central money sent to prefectures and electoral consequences from central money brought home by incumbents. In this paper, however, I concentrated on the first relationship between

"Gubernatorial Elections in Japan." In John C. Campbell ed. *Parties, Candidates, and Voters in Japan: Six Quantitative Studies* (Ann Arbor: University of Michigan Press).

30) Budget Bureau of Ministry of Finance. 1987. *The Japanese Budget in Brief*. Tokyo.

31) Kobayashi (1997), p.186.

previous election outcomes and the amount of central money sent to prefectures. Incumbents get the cue from the electoral outcome from the previous election and choose to exert more or less of their energy in procuring more money from the central government. Their effort may make difference, but the physical size of a prefecture and the level of economic status determine the general framework of prefectural needs to a large extent as well. Yet it is well known that politicians prioritize political needs over economics ones, even at the cost of economic efficiency. The question is by how much their effort makes a difference in the amount of central money sent to their prefecture vis-à-vis to other incumbents' contribution to their respective prefecture.

This paper is one of such endeavor to explore the way to explain the relationship between the electoral payoff and this differentiated effort from incumbents. Moreover, using data from Japan, I examine whether representation bias causes policy bias in the distribution of public expenditure, take the similar methodological approach and reach the similar conclusion as Levitt and Snyder. Thus my empirical analysis, despite its shortcoming and deficiency, advances our understanding that representation matters in representative democracies even though they differ in political/electoral incentives, socioeconomic and demographic characteristics, and cultural backgrounds.

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