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TAEHEE KIM

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The Effect of Direct Democracy on Political Efficacy: The Evidence from Panel Data Analysis

TAEHEE KIM
Graduate School of Law, Keio University, Japan
k.taehee.321@gmail.com

Abstract

Does direct democracy enhance political efficacy? This article examines the effect of direct democracy on political efficacy. Normative theorists have suggested that direct democracy has educative effects on citizens, such as promoting political efficacy. While a number of studies have examined the corresponding hypothesis, their empirical findings are not clear-cut. This study attributes the inconsistent results to two problems of the existing studies: the employment of cross-sectional data and the heterogeneity of popular vote issues. This study closes this gap by examining the effect of direct democracy in local politics on political efficacy in a more systematic and controlled way. More concretely, it utilizes the Japanese case: In the first decade of this century, more than 400 Japanese municipalities held a popular vote for the first time because the Japanese national government promoted municipal merger. Therefore, the Japanese case provides multiple popular votes on comparable substantive topics that can be conceived as an homogeneous treatment. By applying multilevel modeling to panel survey data, this study demonstrates the causal effect that the popular vote increases the level of internal political efficacy.

A controversy exists over whether direct democracy enhances the political efficacy of citizens. Earlier theorists of participatory democracy have suggested that direct democracy serves as a school of democracy and, therefore, has educative effects on citizens, such as promoting political efficacy (Macpherson, 1977; Pateman, 1970). Numerous empirical studies have investigated whether the popular vote, one of the

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representative forms of direct democracy, has an educative effect. Their results are, however, inconsistent. While many studies have found that popular vote procedures, such as initiative and referendum, increase political efficacy, interest, knowledge, and electoral turnout (Bowler and Donovan, 2002; Smith and Tolbert, 2004; Mendelsohn and Cutler, 2000; Stadelmann-Steffen and Vatter, 2012; Smith, 2002; Bowler and Donovan, 2000), some recent investigations have claimed that neither the causal mechanisms nor the empirical findings are convincing (Dyck and Lascher, 2009; Dyck, 2012; Seabrook *et al.*, 2014; Schlozman and Yohai, 2008).

What is behind the inconsistency of empirical findings? The inconsistent results can be attributed to at least two problems: employing cross-sectional data and the heterogeneity of the issues of the popular vote. First, the existing research ignores the heterogeneity of the substantive topic on which popular votes were held. If the effect of the substantive topic is not independent from that of direct democracy, its uncontrolled heterogeneity should lead at least to inefficient estimates of the interested causal effects. Second, most previous studies have utilized cross-sectional data rather than panel data. Consequently, one can never be sure about the causal direction of the effect, even in the case of a positive correlation.

This study closes this gap by examining the effect of direct democracy on political efficacy in a more systematic and controlled way. More concretely, it utilizes the Japanese case. In the first decade of this century, more than 400 Japanese municipalities held a popular vote for the first time since the Japanese national government promoted municipal merger. Therefore, the Japanese case provides multiple popular votes on comparable substantive topics that can be conceived of as an homogeneous treatment. To examine the causal effect, this study further employs panel data covering the corresponding period before and after the votes at stake.

The remainder of this article proceeds as follows. The next section outlines previous research on the relationship between direct democracy and political efficacy and carves out the problems of the research design. The subsequent section suggests an alternative research design and data that promise more rigid causal inference. The forth section first provides empirical evidence that our data fulfill the important assumptions of the research design, including as-if randomness. Subsequently, the main empirical results concerning the hypotheses are presented. In the final section, the article discusses the relevance of the empirical findings and possible future research directions.

Previous studies and hypotheses of this study

Political efficacy is defined as 'the feeling that individual political action does have, or can have, an impact on the political process' (Campbell *et al.*, 1954: 187). Many researchers have considered it one of the most important citizen perceptions that sustain and develop successful democratic systems (Macpherson, 1977; Pateman, 1970; Almond and Verba, 1963). It is generally acknowledged that political efficacy consists of two dimensions: (1) internal efficacy refers to those feelings of personal competence that permit one 'to understand and to participate effectively in politics' (Craig *et al.*, 1990:

290); (2) external efficacy refers to a belief in the responsiveness of political bodies and actors to citizen demands so that citizens may feel influential (Balch, 1974; Converse, 1972).[1]

Normative theorists have stressed that the process of direct participation in the decision-making process has educative effects that promote civic engagement, such as political efficacy. It has been argued that direct participation can increase an individual's self-confidence, cultivate the citizen skills and resources required to participate more effectively in politics, and give citizens a more positive regard for the political process (Pateman, 1970; Barber, 2003).

Further, scholars have suggested that direct democracy can increase internal efficacy by promoting the confidence of citizens in their ability to participate in the democratic process (e.g., Cronin, 1989; Bohnet and Frey, 1997; Bowler and Donovan, 2002). Bowler and Donovan (2002) have pointed out several concrete reasons. They have argued that exposure to direct democracy enhances internal efficacy, since it gives citizens a chance to decide on public policy without mediating representatives. Having the opportunity to participate in the policy-making process can promote more positive feelings about the efficacy of individual political activity. In addition, prior to a popular vote, active campaigns and media coverage are directed toward the policy issue at stake. Exposures to such an information environment make citizens feel more politically informed and efficacious. Moreover, the popular vote provides citizens with a chance to learn the skills needed for political participation, such as deliberating public affairs (Bowler and Donovan, 2002: 375).

While the studies discussed above refer to internal efficacy, other scholars have claimed that direct democracy can promote citizen external efficacy, as well (Smith and Tolbert, 2004; Bowler and Donovan, 2002; Hero and Tolbert, 2004). Participating in a ballot can make citizens more positive about government and the processes of the political system (Barber, 2003). Additionally, under direct democracy, voters can compel a local government to be more responsive to the needs of citizens (Smith and Tolbert, 2004: 74–5). Moreover, citizens can think that government will listen to their demands when they vote directly on issues (Bowler and Donovan, 2002). In addition, some scholars have maintained that these educational effects are valid, regardless of whether citizens actually participate (Bowler and Donovan, 2002; Smith and Tolbert, 2004). This means that even watching the processes of direct democracy in action will enhance citizen political efficacy.

However, some research has challenged the reasoning behind the hypothesis. For example, Dyck and Lascher (2009) have claimed that winning or losing an initiative may affect efficacy, since previous findings have suggested that efficacy is more sensitive to

[1] Although the two efficacy measures are correlated with each other, the psychological mechanism that constitutes each seems to be different. For instance, internal efficacy is often seen to correlate with education, political interest, civic engagement, whereas external efficacy is seen to correlate with political trust and evaluations of government competence (e.g., Craig *et al.*, 1990; Acock *et al.*, 1985; Niemi *et al.*, 1991).

winning than to participating (Clarke and Acock, 1989). In addition to these arguments, some scholars have pointed out that the use of direct democracy instruments does not always have the same effect on all citizens because direct democracy can result in a one-sided game. Members of constantly losing groups can forfeit their political efficacy. This is, for example, the case of minorities in a society (e.g., Gamble, 1997; Bell, 1978; Wenzel *et al.*, 1998).[2] Moreover, unlike ordinary citizens, well-funded interest groups can more frequently initiate direct democratic measures (Smith, 1998), which can lead to feelings of injustice and unfairness among citizens, thus resulting in a lower level of efficacy.

Methodological problems have also been suggested. Dyck and Lascher (2009) have focused on the problem of survey responses. According to them, it is hard to think that respondents recall their experiences of direct democracy when responding to a survey. In particular, when questions of political efficacy simply ask about 'government', without specifying whether the term refers to national or local government, most of the respondents will think of national government. This is more problematic for external efficacy items, since these items focus on measuring the responsiveness of government and not on citizen ability.

A number of studies have examined the hypothesis that direct participation via the popular vote (i.e. initiatives and referendums) increases the level of political efficacy; however, their empirical findings are not clear-cut. Some studies have found empirical evidence in favor of the hypothesis in terms of both dimensions of efficacy (Bowler and Donovan, 2002; Mendelsohn and Cutler, 2000) and external efficacy (Smith and Tolbert, 2004; Hero and Tolbert, 2004). Among them, Bowler and Donovan (2002), who have analyzed US data, have concluded that 'the effects of exposure to direct democracy on political efficacy rival the effects of formal education' (p. 371). However, some researchers have reported empirical results that reject the hypothesis (Dyck and Lascher, 2009; Schlozman and Yohai, 2008; Mendelsohn and Cutler, 2000). Among others, Dyck and Lascher (2009) have reported that extensive empirical tests, based on multiple surveys in the US, have failed to find the general effects of ballot initiative on both types of political efficacy.

As described above, the relationships between direct democracy and political efficacy remain controversial. Their contentious nature stems, in particular, from conflicting empirical findings that fail to provide firm evidence in favor of one of the mechanisms discussed above. In this regard, I argue that the research designs of previous studies contain several problems: the use of cross-sectional data and the substantive heterogeneity of the direct democracy at stake. First, most studies have used cross-sectional survey mainly due to data availability. However, cross-sectional data cannot capture the attitudinal 'changes' of individuals.[3] Therefore, we can never answer

[2] In contrast, some studies have argued that these arguments are overstated (Hajnal, *et al.*, 2002).

[3] A few recent studies have tried to confirm the causal mechanism of direct democracy. For example, Smith *et al.* (2010), using panel data, have claimed that referendums have positive impacts on political

the criticisms of some scholars that the causal direction could possibly be reversed (Bowler and Donovan, 2002; Tolbert *et al.*, 2009; Smith *et al.*, 2010). Second, individual popular votes can be held on different topics, issues, and constellations of political actors. Depending on the substantive issues at stake, they can have different effects on political efficacy (Biggers, 2011). As discussed above, when stable majority–minority relationships and/or well-funded interest groups are involved in the issues at stake, the effect on citizen political efficacy could be reversed. However, most previous studies have ignored the heterogeneity of issues, which may have led to the inconsistent findings of past research.

Given this situation, this article suggests a research design that overcomes the problems discussed above. In the next section, I will present the alternative research design and also the Japanese case that is suited to it.

Research design

In the last section, we identified two drawbacks in the research designs of previous studies that could result in contradictory empirical results. This article suggests an alternative design that overcomes the discussed problems. First, the design collects the popular votes on the same or similar issues to control for the effect of substantive heterogeneity on political efficacy. By controlling such heterogeneity, I expect to improve the efficiency of the estimated causal effect. Second, the design utilizes panel data with at least two waves, before and after the popular votes at stake. Furthermore, the panel survey's respondents can be divided into those who experienced a popular vote and those who did not. By comparing the two group's at the level of political efficacy, we can calculate the causal effect of the popular votes on political efficacy. Thus, this design employs a case that can be conceived as a natural experiment with popular votes as a treatment.

To apply the design, one should make several important assumptions. Among them, the assignment of respondents to the treatment and control group should be as-if random. Most importantly, both treatment and control groups must not significantly differ, on average, at the level of political efficacy before treatment (before popular votes). If this is not the case, the crucial variable is correlated with group assignment. In other words, disturbing factors exist. Further, Dunning (2012) has cautioned researchers to be careful about units' self-selection into treatment conditions. To be exact, the as-if random could be violated when units have information that they will be exposed to a treatment and have incentives or capacities to self-select into treatment.[4]

As a case that conforms to the suggested design, this article utilizes data from Japan. More specifically, residents in many (but not all) municipalities have experienced

knowledge and turnout. In addition, Schuck and De Vreese (2011) have examined the relationship between public support and referendums, using panel survey data and experimental methods.

[4] For more information on natural experiment studies in the field of political science, see also Gerber and Green (2008), Morton and Williams (2008, 2010).

popular votes on the merger of municipalities for a short time period. For the same time period, a panel survey was conducted; its dataset includes the measurement of political efficacy. In the following, I give details about the popular votes in Japan and the utilized panel data.

Until the 1990s, only a small number of Japanese municipalities had direct democratic institutions, except for recall. As a consequence, very small numbers of popular votes had been held.[5] However, the Japanese government's promotion of municipal mergers resulted in substantial change in the mode of participation in local politics. In the late 1990s, the Japanese government promoted the policy that encouraged municipal merger; it revised special merger laws that allowed residents to initiate popular votes on whether local governments should set up committees for mergers.[6] In addition, many local governments held local referendums in the process of municipal mergers. Thereafter, the number of municipalities drastically decreased from 3,299 to 1,730, and, during the process, more than 400 local governments held a popular vote for the first time.[7] Most of the popular votes occurred in the period from 2001 to 2005.[8]

In the course of municipality reform, some of the citizens experienced a popular vote for the first time, while others did not. This unique Japanese circumstance can be considered a natural experiment by regarding that popular vote as an as-if random assignment, as discussed above.

It should be noted that all of the popular votes were held over a substantively identical issue: municipal mergers. Therefore, this study can control the diverse issue problem that has plagued previous research. Moreover, the issue (municipal mergers) concerned most of the inhabitants. Consequently, it is less likely that there were strong and active interest groups on this issue that mobilized citizens and that can result in the other causal effect of the popular vote.

Moreover, concerning the existence of fixed minority groups, it is reasonable to assume that this problem has little relevance to the present case, since it is unlikely that proponents or opponents of mergers fell into the majority and minority groups of

[5] According to Imai (2000), among 3,299 numbers of municipalities, only 17 have direct participatory institutions that allow referendums. In addition, between 1979 and 2000, there were only 21 local referendums. For more information on the referendums and initiatives of Japan, see The Information Center of National and Local referendum, www.ref-info.net.

[6] Mergers that are based on the laws are called the Great Mergers of the Heisei Era.

[7] The numbers of mergers and referendums are based on the announcements of Japanese Ministry of Internal Affairs and Communications (hereafter MIA), 'Public Announcement of the Mergers of Heisei', www.soumu.go.jp/gapei/pdf/100311_1.pdf. See The Information Center of National and Local referendum, www.ref-info.net.

[8] Two types of popular votes were held in the process of municipal mergers in this period. The first type includes initiatives that were held under the special merger law that allows residents to have the initiative. The second type includes referendums held by the local governments under their own ordinances. In the process of municipal mergers, the second type of popular votes was commonly used. According to the announcement of the MIA, the numbers of the each type of referendum in the period 1999 to 2006 were 66 and 352, respectively.

municipalities.[9] In addition, most municipalities participated in popular votes for the first time; therefore, fixed minority groups could not have existed at the times of the popular vote.

This study examines the effect of the popular vote on political efficacy, using the combined data of the municipal aggregate data and individual panel survey data from the Japanese Election Study III (JES III).[10] The JES III data comprises ten survey panels that were conducted from 2001 to 2005, a period during which most of the municipal mergers and their referendums took place. Therefore, the JES III data are highly suitable for investigating the effects of popular votes.[11] As a result, this study, utilizing a panel design, is able to examine whether popular votes positively affect actual attitudinal change. Unfortunately, external efficacy items do not constantly appear, whereas internal efficacy items exist in four panels. In addition, Dyck and Lascher (2009) have pointed out that current external efficacy items, which do not refer to the exact government level in the survey questions, are not suitable for investigating the relationship between local-level direct participation.[12] External efficacy items in the JES III have the same limitation. For these reasons, this research focuses on the relationship between direct democracy and internal efficacy.[13]

Data and statistical models

As discussed above, this study employs a panel survey dataset from the JES III project. While the survey was conducted in ten waves, four waves contain internal efficacy items: Wave A, Wave D, Wave G, and Wave J. All four waves were conducted prior to the national elections. Wave A and Wave G were conducted prior to the Upper House elections (July 2001 and July 2004). Wave D and Wave J were conducted prior

[9] Moreover, conflicts related to race or minority ethnicity, representative minority groups, commonly referred to in the previous study, are relatively uncommon in Japan.

[10] The JES III data and the codebook are the result of the JES III Research Project (Participants: Ken'ichi Ikeda, University of Tokyo; Yoshiaki Kobayashi, Keio University; and Hiroshi Hirano, Gakushuin University), available at http://www.coe-ccc.keio.ac.jp/data_archive_en/data_archive_jesIII.html.

[11] Many studies have analyzed the process and effects of municipal mergers and local referendums in Japan (e.g., Shiozawa, 2008; Horiuchi, 2009; Yano *et al.*, 2005). Most of these studies have utilized aggregate data based on citizen behavior such as turnout. However, these studies do not directly observe citizen consciousness by analyzing individual data. Some studies have utilized survey data to confirm the effects; however, the survey data cover only some municipalities, and so it is hard to generalize the effects. Thus, the effects of direct democracy on political efficacy in Japan have not been sufficiently investigated thus far.

[12] I consider that it is less problematic for internal efficacy items, since they focus on the confidence and ability of citizens, whereas external efficacy measures the responsiveness of government. It is reasonable to assume that the ability gained from local-level democracy is reflected in national-level democracy. Moreover, this is not a problem for statistical analysis, even if these reflections have failed in some cases, since if we use local-level surveys, the identified effects should be larger than national-level surveys.

[13] I have also examined the effect on external efficacy with the same statistical model that I present in the next section. The external efficacy item used in the analysis is 'Politicians don't care much what people like me think.' The results showed that the popular vote did not have a significant effect on external efficacy. However, we cannot be sure about the result because of the intrinsic problem in external efficacy items as discussed above. The detailed result of the analysis is available upon request from the author.

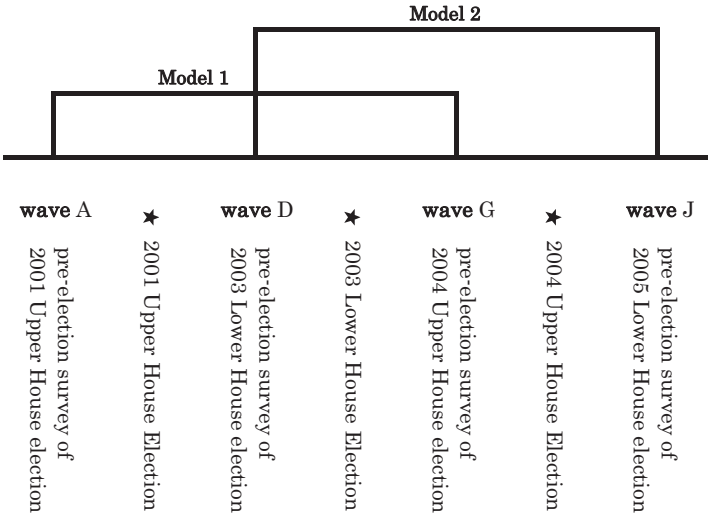

Figure 1. Data structure and the model

to the Lower House elections (November 2003 and August 2005). The different types of national elections can interact with the popular vote's effect on political efficacy; to minimize this uncontrolled influence, this study matches the waves that were based on the same types of elections: The first set of waves consist of Wave A and Wave G prior to the Upper House elections. The second set of waves consists of Wave D and Wave J prior to the Lower House elections (see Figure 1). By investigating both sets of waves, the hypothesis is, therefore, tested in a stricter way.

The dependent variable is the changes in the respondents' internal efficacy level between two waves, before and after popular votes. The internal efficacy variable, constructed by summing the two classical efficacy items, has been suggested by Campbell *et al.* (1954): (1) 'People like me don't have any say about what the government does' and (2) 'Sometimes politics and government seem so complicated that a person like me can't really understand what is going on'.[14] Both items are measured by using a 5-point Likert scale; hence, the measure of internal efficacy ranges from 2 to 10, with higher values indicating a higher level of efficacy. Since the dependent variable is the

[14] Controversies exist about the use of the first item, since it seems to reflect both internal and external efficacy (Mattei and Niemi 2005). Some previous studies have considered it as external efficacy (e.g., Niemi *et al.*, 1991; Morrell 2003) while others have regarded it as internal efficacy (e.g., Acock *et al.*, 1985; Clarke *et al.*, 2010). In this study, the first item is employed as internal efficacy because the statement of the item suits the original definition of internal efficacy. Moreover, the correlation coefficients of the item and the two items of external efficacy of this dataset are relatively low (0.15 and 0.12, respectively), whereas the correlations with the second item above are relatively high (0.40). The external efficacy items used in the analysis are 'Politicians don't care much what people like me think' and 'Generally speaking, Diet members lose touch with the people pretty quickly.'

change of the efficacy level, the differences in responses to internal efficacy between two waves ranges from −8 to 8.

As discussed above, the main independent variable is the usage of the popular vote in the municipality where respondents lived. This dummy-variable is measured at the municipality level, which indicates whether the respondent experienced a popular vote between the waves. The variable of popular vote is based on the sampling points (195 municipalities).[15] In total, 27 respondents in six municipalities experienced a popular vote in the period of Wave AG, and 59 respondents in nine municipalities experienced a popular vote in the period of Wave DJ. The number of observations in the treatment group is relatively small. However, this is not problematic, since it should result in a larger standard error, which, in turn, makes the significance test more conservative. Moreover, the hypothesis will be examined by two models covering different sets of waves, which should lead to more credible results.[16]

It should be noted that the dependent variable of this study is not the level of political efficacy, but the changes in individual respondents. Therefore, demographic variables, such as age, gender, and socio-economic variables, are not included in the model, since they seldom change over time or change in an equal way for individual subjects (in case of age).

In contrast, national-level elections between the two waves in each set are considered, since they may influence the attitudinal change between waves. The rationale is based on the argument of previous studies that voting for victorious candidates could increase the level of efficacy (Clarke and Acock, 1989). Correspondingly, the statistical models include the dummy variables of whether individual respondents voted for a winning or losing candidate in a national election between the corresponding waves.[17] Between Wave A and Wave G, there were two elections: the 2001 Upper House election and the 2003 Lower House election. Therefore, the corresponding two dummy variables are included. In the same way, Model 2 for

[15] To construct the variables of the popular vote, this study relies on the data of 'The Information Center of National and Local Referendum' (see http://www.ref-info.net/) and the data collected by Kenichi Shiozawa. I sincerely thank Prof. Shiozawa for sharing the data of the popular vote in Japan.

[16] On the municipality level, some municipalities experienced not only a popular vote but also a merger in the investigated period. However, the design of this study cannot evaluate the effect of merger itself. As a practical reason, we have only a much smaller number of respondents in a merged municipality than those with the experience of a popular vote. Further, a municipal merger results in a larger merged municipality, which in turn can result in a lower level of efficacy (Lassen and Serritzlew, 2011; Finifter and Abramson, 1975; Dahl and Tufte, 1973). Given this, a municipal merger is expected to decrease the internal efficacy level.

[17] The dummy variables are assigned a value of 1 to respondents who cast their vote for victorious candidates in their electoral districts during each national election (otherwise 0, including non-voters). In the Japanese Lower House election, each voter had two votes, one for a district candidate in the local constituency and one for a party list. This research utilized the former one, the district vote, to assess if a respondent won or lost the election. In the Upper House election, each voter has two votes, one for a candidate in the local constituency (prefectures) and the other for a party list or a candidate representing a party. The study used the former to measure a respondent's winning or losing in an election.

Table 1. *Assumption test (Model 1)*

	Estimate	Std. Error	t value
(Intercept)	4.70	0.10	48.18
Direct democracy (wave A - G)	− 0.66	0.55	− 1.20
Random effects:	Variance	Std.Dev.	
Municipalities (Intercept)	0.800	0.895	
Residual	4.163	2.040	
N	866		
N of Municipalities	195		

the set of waves (Wave D to Wave J) includes the dummy variable for the 2003 Lower House election and the 2004 Upper House election (see Figure 1).

The dependent variable is regressed on the independent variables by using a multilevel model. This is due to the multilevel structure of data, in which a unit of analysis (individuals) is nested within the other (municipalities). Both models' data include 195 municipalities at the group level. At the individual level, the data for Wave AG include 866 individuals and Model Wave DJ 1,126 individuals. By employing a multilevel model, potential unconsidered factors within each municipality can be better dealt with.

Results

Assumption tests

This study mimics an experimental research design, since the respondents are divided into treatment and control groups: the subjects in the treatment group are exposed to the popular vote and the other subjects are not. It is, however, not a genuine experimental design, since the respondents are not randomly assigned to the groups. If the assignment of respondents correlated with the dependent variable, the causal effect cannot be attributed to the treatment (popular vote) because of endogeneity. Therefore, the assumption tests must examine whether there is any systematic differences in the dependent variable (internal efficacy) among groups before treatment (popular vote).

More concretely, for each set of waves, we set up a linear model. The dependent variable is the level of internal efficacy in the first wave of each model (Wave A in Model 1 and Wave D in Model 2). The independent variable is the dummy variable for the existence of the popular vote during the period covered by each model. Since the respondents are clustered in municipalities, and the independent variable is measured at this level, we employ a multilevel model with random intercepts for municipalities.[18]

Tables 1 and 2 show the estimation results. Neither of the popular votes in both sets of waves shows significant effects on the level of internal efficacy in the first wave. Thus,

[18] The linear models without a multilevel structure have similar results.

Table 2. *Assumption test (Model 2)*

	Estimate	Std. Error	t value
(Intercept)	4.86	0.10	49.30
Direct democracy (wave D - J)	− 0.39	0.44	− 0.89
Random effects:	Variance	Std.Dev.	
Municipalities (Intercept)	0.862	0.928	
Residual	4.809	2.193	
N	1058		
N of Municipalities	195		

the inhabitants of municipalities who later experienced a popular vote and those who did not experience one have the same level of internal efficacy.[19] That is to say, one of the important as-if random assumption holds for the dataset. If significant difference exists in the attitudinal change between the treatment and control group, it can be attributed to the treatment.[20]

Additionally, this study also conducted a balance test of whether there are any systematic differences in basic demographic variables and political interest between treatment and control groups. Accordingly, there were no significant differences in age, gender, education, income, and political interest between both groups in both sets of waves (Table 3).

Direct democracy and internal efficacy

Having seen that the important assumption is fulfilled by data, we now evaluate the main hypothesis. The analysis of this study comprises two models, each dealing with different sets of waves. All the results are presented in Table 4 and 5.

Tables 4 and 5 reveal that the existence of a popular vote increases the level of internal efficacy in both sets of waves. Thus, when people experienced a popular vote, they were less likely to think 'people like me don't have any say about what the government does' or 'politics and government seem so complicated that a person like me can't really understand what is going on'. The effect of a popular vote seems to be robust, since both sets of periods have expected significant results.

However, the estimated size of effects has to be interpreted with caution, since the differences in size of both sets of waves are considerable. The estimated size of the effect is 1.54 in Wave AG and 0.81 in Wave DJ, respectively. Here, the effect in Wave AG is almost twice as high as that in Wave DJ. What is behind the difference of the effect size?

[19] This result also excludes further possible factors influencing the level of political efficacy, as, for example, the effects of deliberation over municipal mergers that occurred prior to the pre-treatment survey.

[20] Concerning Dunning's (2012) point that is discussed above, I cannot indeed exclude self-selecting respondents who moved to municipalities with popular votes; however, it is reasonable to assume that their numbers are negligible.

Table 3. *Balance test*

	Obs.	Control Group Mean	Treatment Group Mean	t-Stat
Model 1				
Age	866	56.25	55.78	0.16
Female	866	0.52	0.48	0.36
Education	866	2.15	2.37	− 1.18
Income	866	3.73	3.61	0.25
Political Interest	866	2.74	2.74	− 0.02
Model 2				
Age	1058	58.28	56.15	1.09
Female	1058	0.49	0.37	1.78
Education	1058	2.19	2.11	0.68
Income	1058	3.38	3.35	0.10
Political Interest	1058	2.83	2.81	0.15

Table 4. *The effect of direct democracy on internal efficacy (Model 1)*

	Estimate	Std. Error	t value
Model 1 (wave A and wave G)			
Direct democracy	1.54	0.68	2.25
Upper house winner (2001)	0.13	0.18	0.72
Lower house winner (2003)	0.00	0.18	0.02
(Intercept)	− 0.02	0.15	− 0.11
Random effects:	Variance	Std.Dev.	
Municipalities (Intercept)	1.272	1.128	
Residual	5.759	2.400	
N	866		
N of Municipalities	195		

Table 5. *The effect of direct democracy on internal efficacy (Model 2)*

	Estimate	Std. Error	t value
Model 2 (wave D and wave J)			
Direct democracy	0.81	0.37	2.15
Lower house winner (2003)	0.18	0.15	1.21
Upper house winner (2004)	0.22	0.15	1.43
(Intercept)	− 0.34	0.13	− 2.53
Random effects:	Variance	Std.Dev.	
Municipalities (Intercept)	0.316	0.562	
Residual	5.320	2.307	
N	1058		
N of Municipalities	195		

Several explanations are possible. First, the length of time after popular votes could change the effect size. It is reasonable to assume that the effect of experiencing direct participation decays in time because of the limited capacity of human memory. The average length between the popular vote and the second survey is 253 days (Wave AG) and 384 days (Wave DJ), respectively. These lengths are in line with the differences of estimates.

Further, the turnout rate at popular votes can be another reason. It can be an indicator for the level of the residents' interest in the popular vote. However, the average turnout rates in the two models are very similar: the average turnout rate of Wave AG is 57.47 and that of Wave DJ is 58.64. Thus, there is no empirical evidence that the turnout rate causes the differences of estimate size.

Finally, the size of the municipality could also influence the effect size. It is reasonable to assume that in a larger municipality it is more difficult for individual citizens to influence outcomes (Dahl and Tufte, 1973). The average population of a municipality with the popular vote is 78,045 for Wave AG and 93,010 for Wave DJ. This is in line with the expectation.

A further interesting result is that national election victories do not show any significant effects on the level of political efficacy. Some previous studies have suggested that the results of an election — winning or losing — are more likely to affect efficacy than the participatory activity itself (Clarke and Acock, 1989). The results of this study clearly contradict this seemingly reasonable argument. Furthermore, the results also show that it is irrelevant for political efficacy whether citizens participated in a popular vote. The possibility of participating in popular votes is enough to increase the level of political efficacy, as Smith and Tolbert (2004) have suggested.

Conclusion

This research contributes to the academic debate on the hypothesis that direct democracy enhances citizen political efficacy by overcoming the methodological deficits of existing empirical studies. In particular, it used the panel data collected during a number of popular votes to make inferences about the causal relationship between direct democracy and political efficacy. This design keeps the issues of popular votes (municipal mergers) constant over referenda. In addition, panel data enable it to investigate the attitudinal changes at the individual level.

The results of this study confirm the effects of the popular vote on internal efficacy. The finding can be considered as robust not only because of its research design but also because the effects of the popular vote were consistently confirmed in two models with different time periods.

However, this does not necessarily mean that the study's results can be generalized to all cases of direct democracy in the same way. In this research, the issues of the popular vote are controlled, and it is assumed that neither fixed minority problems nor active interest groups representing partial public interests existed. As previous studies have pointed out, direct democracy can lead not only to an inequality problem but also

enlarge gaps between citizens. Its success depends on how it is utilized. The positive effect on internal efficacy identified by this inquiry is based on the condition that there are no fixed minority or interest group problems. It is possible that if these problems are salient in the process of direct democracy, the positive effect of a direct democracy could be lost. Furthermore, municipal mergers were an important issue for most residents, since such mergers can affect all their everyday lives. When issues of the popular vote are not relatively important for many residents, it is possible that their effect would be small. Thus, future studies need to compare the effect of different issues in a systematic way.

Even with certain limitations, this study clearly identifies the positive effect of direct democracy on the internal efficacy of citizens. It has been said that Japan suffers from a relatively low level of political efficacy, especially in comparison to other established democracies. In addition, the direct democracy instruments in local politics have been quite limited. The results suggest that institutional change, particularly the introduction of direct democracy in local politics, can promote internal efficacy among citizens.

About the author

Taehee Kim is a Ph.D. Candidate at the Graduate School of Law at Keio University, Japan. Her research interests include diverse topics in comparative political psychology and political sociology, including public opinion, political attitudes, and political behavior.

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