Participatory budgeting and the pattern of local government spending: Evidence from South Korea

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ABSTRACT

We use a panel of Korean municipalities to examine the impact of participatory budgeting on local government expenditures. We find that participatory budgeting systematically alters the pattern of local spending. Municipalities using participatory budgeting reallocate resources toward more immediate and visible expenditures and away from long-term development expenditure. We also find evidence that participatory budgeting affects the municipal budget by a greater amount than the expenditures directly allocated through participatory budgeting. Our findings indicate that participatory budgeting leads to the reallocation of local public spending by increasing information flows between policymakers and service users.

1. Introduction

It is widely believed that participatory budgeting promotes an efficient allocation of public funds by allowing citizens to participate directly in budgetary decisions (Gonçalves 2014; Wampler 2012).[1]

Participatory budgeting leads to public spending allocations that closely match popular preferences by improving information flows between policymakers and service users (Gonçalves 2014; Boulding and Wampler 2010; Ebdon, 2002).[2] Intuitively, participatory budgeting gives policymakers access to better information about service users' preferences for public goods (Ebdon 2002; Gonçalves 2014). For instance, in a study of Brazilian municipalities, Gonçalves (2014) found that participatory budgeting increases spending on sanitation and health services, in line with the participatory meetings' demands. In a study of 220 Brazilian cities, Boulding and Wampler (2010) similarly found that the adoption of participatory budgeting redirects budget priorities toward health and education programs that matter for the poor majority.[3]

However, improved information flows may also lead to a shift toward more immediate and visible expenditures and away from long-term expenditures. Because participatory budgeting is a short-term exercise (one or two years), citizens' demands are often biased toward more immediate and visible programs (Cabannes 2004; Gonçalves 2014; Jeong and Kim 2014; Kim and Lee 2016; Kim 2017;

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[1] Since participatory budgeting was first introduced in Porto Alegre (Brazil) in 1989, over 1500 cities worldwide have adopted it in some form.

[2] It has also been argued that participatory budgeting makes the government more accountable by "functioning as a commitment device for the politicians as it stimulates more frequent checks on their (publicly promised) actions by the common citizens" (Gonçalves 2014). See also Brun-Martos and Lapsley, 2017; Kim and Lee 2016; Wampler 2004, 2012.

[3] Using data on Seoul (South Korea), Hong and Cho (2018) found that, relative to municipalities with bureaucratic budgeting practices, those with participatory budgeting allocate a larger budget for the installation of crime-monitoring surveillance cameras in lower-income neighborhoods. This implies that participatory budgeting results in more redistributive policy outcomes.

Lee and Kim 2011; Son and Kim 2017).[4] In addition, municipal executives have an incentive to reallocate resources toward more visible expenditures to increase their chance of reelections.[5] Thus, municipalities with limited resources for new programs shift resources away from other programs, such as expenditures for long-term development (Boulding and Wampler 2010; Cabannes 2004; Jeong and Kim 2014).

While researchers focused on the effect of participatory budgeting on a few specific expenditures, there is little research on the effect of participatory budgeting on the overall pattern of local expenditures.

Using data from 226 South Korean municipalities from 2002 to 2017, we examine the effect of participatory budgeting on the composition of local public spending. We find that participatory budgeting systematically alters the pattern of local public spending. Municipalities using participatory budgeting reallocate resources from long-term development expenditures (for instance, urban projects) toward more immediate and visible expenditures including welfare (for instance, public employment), health and sanitation (for instance, waste collection), and transport (for instance, road maintenance).

We also find evidence that participatory budgeting affects the municipal budget by a greater amount than the expenditure programs directly allocated through participatory budgeting process. Our findings support the view that participatory budgeting leads to spending allocations that match popular preferences by increasing information flows between policymakers and service users.

Note that South Korea (hereafter, Korea) provides an ideal setting for our research because nearly all municipalities have adopted participatory budgeting with sufficient time variance. The widespread adoption of participatory budgeting in Korea reflects the strong tradition of citizen participation, deeply rooted in the country's experience with military governments in the 1960s–1980s and the subsequent democratization through mass mobilizations (Byeon et al., 2018; Sintomer et al., 2012).

Participatory budgeting is implemented similarly across Korea. In most municipalities, participatory budgeting programs have similar structures and processes, rules for recruiting citizen representatives, methods of ranking proposed projects, and shares and categories of the municipal budget allocated through participatory budgeting. This allows us to effectively identify the effect of participatory budgeting on the pattern of local government spending (In Section 2, we provide a more detailed discussion of participatory budgeting programs in Korea.).

Our study is closely related to the large literature on direct democracy based on the experiences of Switzerland and the United States. This literature has found that classic forms of direct democracy, such as the referendum and initiative, move fiscal policy closer to the preferences of citizens, or the median voter (Feld and Kirchgässner 2001; Feld and Matsusaka 2003; Matsusaka 2018).[6] In particular, direct democracy restrains the spending bias of governments by requiring majority votes (Feld and Kirchgässner 2001, 2003; Feld and Matsusaka 2003; Matsusaka 1995; Schaltegger and Feld 2009).[7]

In representative democracies, the government may deviate from the preferences of the median voter for various reasons, including budget-maximizing bureaucracy, pressure groups, fiscal commons, and representatives' own policy preferences (Matsusaka 2018). Direct democracy allows citizens to control their representatives on specific policies, even during non-election periods (Feld and Kirchgässner 2001, 2003; Matsusaka and McCarthy 2001). In addition, direct democracy increases the information flow between representatives and their constituents (Matsusaka 1995).[8] If voters are fiscal conservatives, government spending should be lower in a direct democracy than in a representative democracy (Feld and Kirchgässner 2001a).

A number of studies find that the fiscal referendum effectively limits the size of government: spending and debt are lower in jurisdictions with direct democracy than in those with pure representative democracy where representatives have a monopoly power on legislation (Feld and Kirchgässner 1999, 2001, 2001a; Feld and Matsusaka 2003; Funk and Gathmann 2013; Matsusaka 2018; Schaltegger and Feld 2009).[9] Previous studies also find that the initiative is associated with less government spending in US states and Swiss cantons (e.g., Matsusaka 1995, 2018).

Similar to the referendum and initiative, participatory budgeting is a bottom-up process in which the initiative starts with the ordinary citizens (Feld and Kirchgässner 2001a). In both referendums and participatory budgeting, the fiscal outcome is influenced by the increased accountability of politicians to voters. Fiscal policy decisions are thus made by voters rather than by their representatives (see Matsusaka and McCarthy 2001).

The rest of this paper is organized as follows. Section 2 explains participatory budgeting and local public expenditures in Korea. Section 3 describes the data, and section 4 explains the empirical strategy. In section 5, we present the empirical findings. Section 6 concludes the paper.

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[4] Ordinary citizens lack relevant information about the short-term and long-term payoffs of local expenditure programs (Bardhan and Mookherjee 2006; Brett 2003; Mansuri and Rao 2012).

[5] See Akhmedov and Zhuravskaya (2004) and Vergne (2009) for related arguments in the political budget cycle literature.

[6] In fiscal referendums, voter approval is required for a policy proposal (e.g., new spending programs in most Swiss cantons and bond issues in many US states). In voter initiatives, citizens are allowed to propose new policies.

[7] Vote trading is limited in direct democracy (Matsusaka 1995).

[8] Uncertain of citizens' preferences, representatives may adopt policies that deviate from the preferences of the median voter (Feld and Kirchgässner 2003). Representatives may thus use referendums to avoid being punished at the polls (Matsusaka 1992). Using data from 871 California ballot propositions, Matsusaka (1992) finds that (citizen-initiated) direct legislation becomes more common in periods when representatives are unresponsive to the preferences of the electorate.

[9] See Matsusaka (2018) for a survey of the empirical literature on the effect of the referendum and initiative.

2. Participatory budgeting in Korea

2.1. Adoption

Participatory budgeting in Korea was introduced by mayors from the left-wing Democratic Labor Party (*Minju-Nodongdang*) in the early 2000s.[10] Its purpose was to hold civil servants accountable and shift budget priorities from local elites toward the working classes (Kwack 2007). Since the first adoption, participatory budgeting rapidly spread to other municipalities.[11] Fig. 1 presents the geographic evolution of the participatory budgeting experiences of all municipalities over time. Municipal boundaries are shown in gray, and the regional boundaries (shown in bold) define metropolitan and provincial regions.[12] Municipalities that adopted participatory budgeting in the earlier periods are indicated by darker shades on the map. Note that early adopters are concentrated in the southwest *Jeolla* region, which has a strong presence of left-wing parties.[13]

Participatory budgeting adoption received strong support from the national government. For instance, the Roh Moo Hyun (2003–2008) government considered participatory budgeting one of its key decentralization reforms (Kwack 2007; Kim and Schachter 2013).[14] By 2010, roughly 45 percent of all municipalities (i.e., 103 municipalities) had adopted participatory budgeting. Although the national government has been the main driver of adoption, the actual decision to adopt participatory budgeting depends on mayors who are subject to elections every four years (Choi 2010; Kim and Lee 2016). In 2011, the national government mandated the adoption of participatory budgeting for municipalities; by 2017, all but one have adopted participatory budgeting. Fig. 2 presents the share of municipalities with participatory budgeting over time. The substantial variation in the timing of adoption across municipalities allows us to isolate within-municipality variations in participatory budgeting adoption more effectively.

2.2. Operation

Participatory budgeting in Korea consists of three steps. First, citizens make proposals for projects through local meetings, surveys, and public hearings.[15] Each municipal department collects details of the proposed projects and submits a draft budgetary plan to the citizen budget committee (hereafter, committee). Next, the committee ranks demands (to allocate funds for the proposed projects) and votes on the submitted draft budget plan. Finally, the committee and the municipal executive draw up the finalized budget proposal, which is then passed to the municipal council (legislature) for approval (Hong and Cho 2018; Lim and Seo 2015).

Note that, unlike traditional budgeting practices, participatory budgeting allows citizens (or the committee) to set the agenda in the allocation of the budget (Hong and Cho 2018). To facilitate the participatory process, a typical committee has about five sub-committees, including general administration, culture and economy, health and welfare, construction and transportation, and urban planning. Subcommittee members rank proposed items in their relevant area, but all members of the committee vote on the final ranking. Fig. 3 presents the annual participatory budgeting process for a typical municipality.

On average, the committee has 33 members who are selected by open recruitment and recommendation. Open recruitment means that all residents are eligible to apply, but selection criteria takes the age, gender, residence area, and minority status into account. Other members are recommended by the municipal government, local councils, civil society organizations, politicians, and interest groups. Typical membership includes citizen members (both ordinary citizens and experts), representatives of civil society organizations, and municipal government officers (Hong 2015; Kim and Lee 2016).[16] About 50 percent of the members are allowed to serve two consecutive terms. Committee meetings are held, on average, more than three times a year.[17]

2.3. Municipal expenditures

Korea has a presidential form of government and a unicameral legislature at the national level. At the local level, there are municipal governments and councils.[18] The mayor of the municipality and members of the council are elected by majoritarian elections and serve 4-year terms. Political parties nominate candidates for the mayoral and municipal council elections. Although the

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[10] Its introduction was one of the Democratic Labor Party's local election pledges.

[11] Two first adopters are Buk-gu, Gwangju (located in the southwest Jeonla region) and Dong-gu, Ulsan (located in the southeast Gyeongsang region).

[12] The metropolitan and provincial regions (number of municipalities) include Seoul (25), Busan (16), Daegu (8), Incheon (10), Gwangju (5), Daejeon (5), Ulsan (5), Sejong (1), Gyeonggi (31), Gangwon (18), Chungbuk (11), Chungnam (15), Jeollabuk (14), Jeollanam (22), Gyeongbuk (23), and Gyongnam (18).

[13] For instance, 63 percent of municipalities in the southwest *Jeonla* region adopted participatory budgeting within three years after the first adoption in the region (between 2004 and 2006), while only 24 percent of municipalities in the southeast *Gyeongsang* region did so.
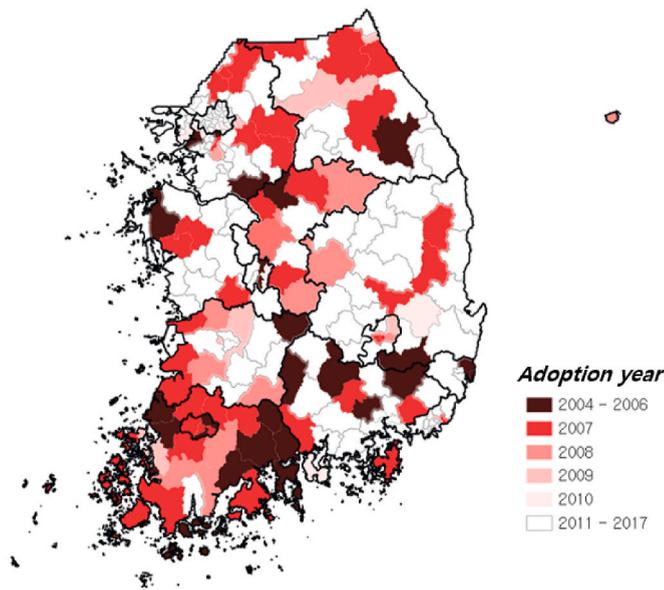
[14] The adoption of participatory budgeting significantly increased after the national government encouraged the adoption in 2006. Specifically, the Ministry of Public Administration and Security established standards for participatory budgeting ordinance for municipalities.

[15] Other channels include open forums, online bidding, and online bulletin boards.

[16] Selected members attend participatory budgeting schools to receive training and technical information.

[17] Some municipalities operate participatory budgeting without a committee. In these municipalities, participating citizens directly select and rank budgetary items, for instance, using online channels and a sticker vote system (Hong and Cho 2018).

[18] There are also higher-level local governments (metropolitan cities and provinces) but these mainly serve as intermediaries between the national government and municipalities.

Notes: Municipal boundaries are shown in gray, and regional boundaries (that define 16 metropolitan and provincial regions) are shown in bold.

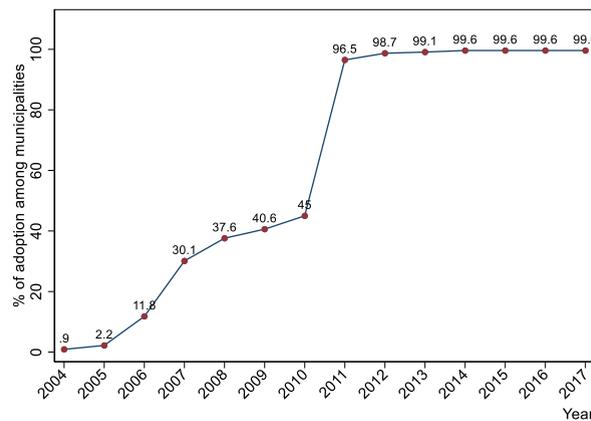**Fig. 1.** Evolution of participatory budgeting in Korea.

Fig. 2. Share of municipalities with participatory budgeting.

president (and the central government) can indirectly influence local budget expenditures through intergovernmental transfers, the mayor of the municipality is responsible for the allocation of local government budgets in the municipality.

Municipalities plan their own budget and collect local taxes, although the majority of municipalities rely on transfers from the central government (Kang 2015).[19] Municipalities deliver public services to residents through major spending categories: administration, education, health and sanitation, social welfare, land and regional development, agriculture, industry, transportation, and public order and safety. In 2017, municipal government spending accounted for about 35 percent of total public spending.

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[19] In 2017, intergovernmental transfers accounted for about 35.1 percent of local government revenue, with the rest financed by local taxes and user charges (*Local finance integrated open system*, http://lofin.mois.go.kr).
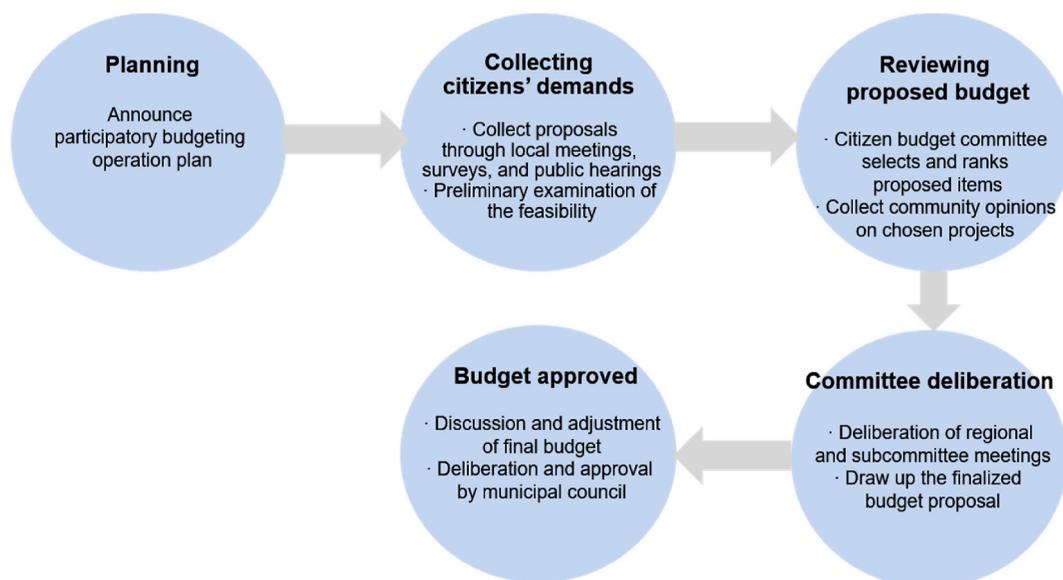
Fig. 3. Annual participatory budgeting process.

Participatory budget committees often prioritize transportation (e.g., road maintenance), welfare (e.g., public employment and daycare centers), and health and sanitation projects (e.g., water supplies and sewage facilities).[20] Note that participatory budgeting may reflect not only citizens' preferences but those of interest groups (Kim and Lee 2016; Wampler 2004). For instance, participatory budgeting often increases subsidies for civil society organizations and private local events and festivals (Jeong and Kim 2014).

Participants typically allocate about 2 percent of the municipal budget through proposed expenditure programs (Kwon 2005). However, participants (committees) also review and amend (i.e., input their opinions on) the allocation of the overall municipal budget.

3. Data

We collect data from 226 Korean municipalities for 2002–2017.[21] Municipalities include cities (*si*), counties (*gun*), and districts (*gu*). On average, a municipality has a population of 220,000 residents.[22]

The main dependent variables are the nine categories of municipal government expenditures: general administration (administration), education, health and sanitation (health), social welfare (welfare), regional development, agriculture, industry and SMEs (industry), transport, and public order and safety (public safety). In 2017, municipalities allocated more than half of their budget to major spending categories such as welfare (26.1 percent), health (11.0 percent), transport (10.3 percent), and regional development (7.2 percent).[23]

Municipalities adopted participatory budgeting with sufficient time variance, allowing the use of panel data. Roughly half adopted participatory budgeting voluntarily before it became mandatory in 2011; others adopted it in response to the mandate. No municipality has abolished participatory budgeting after introducing it.[24] In the robustness check section, we present the results of separating out voluntary adoption.

Control variables reflect the characteristics of municipalities and mayors' political orientation (Kim et al., 2020; Gonçalves 2014). Population controls for economies of scale in providing local services. Total expenditure is included to control for the scale effect as an increase in total expenditure leads to an increase in spending on each expenditure category (Kim and Lee 2021). To control for the

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[20] According to a nationwide survey of local governments, major expenditure categories influenced by participatory budgets (in terms of the amount covered by the participatory budgeting program) include social welfare, transportation, public order and safety, and land and local development (Kim and Lee 2016). This survey was conducted by the Korea Development Institute in 2015 using a face-to-face interview method. Respondents were asked to indicate three policy areas that their local government spent most on under participatory budgeting decisions.

[21] Several municipalities were divided or merged during the sample period. If two or more municipalities were merged, they were treated as one local district for the entire period. If a municipality was divided into two, they were treated as one municipality. Owing to its special status, *Jeju* Island is excluded from our sample as an outlier.

[22] Cities have a population greater than 50,000, and counties and districts are smaller units located within metropolitan areas and provinces.

[23] Local finance data were taken from the *Local finance integrated open system*, http://www. http://lofin.mois.go.kr.

[24] Data on participatory budgeting were taken from the *Local ordinances and regulations information system*, http://www. http://elis.go.kr.

political orientation of mayors, we include a dummy variable that takes 1 if the mayor is a member of left-wing political parties.[25] In some specifications, we also include the local tax revenue (a proxy variable for municipality income), intergovernmental transfer (a major source of municipal government finance), fiscal independence index, and Gross Regional Domestic Product. Table 1 presents summary statistics for the variables used in this study.

4. Empirical strategy

To test the impact of participatory budgeting on municipal expenditures, we consider the following panel data model:

$$y_{jit} = \beta_0 + \beta_1 PB_{it} + X'_{it}\Gamma + \theta_i + \mu_t + u_{it} \quad j = 1, 2, \ldots, J \tag{1}$$

where y_{jit} is the expenditure on good j in municipality i and year t, measured in per capita terms (1000 Korean Won (KRW)). PB_{it} is the dummy variable for the presence of participatory budgeting. X_{it} is a vector of control variables, including population (thousands), total municipal expenditure per capita (1000 KRW), the dummy variable for left-wing mayors, and region-specific time trends.

The dummy variable for left-wing mayors controls for the possibility that the political orientation of different mayors may be correlated with both participatory budgeting adoption and the preference for local public goods.[26] For instance, left-wing mayors are more likely to adopt participatory budgeting because it shifts budget priorities from the elites toward the working classes (the constituency of left-wing parties) and may also increase specific expenditure items such as social welfare (Gonçalves 2014). Region-specific time trends control for time-varying effects on municipal expenditures that are common within a specific region (Gonçalves 2014).[27] Vector θ_i is a set of municipality fixed effects. Year dummies μ_t control for changes in voters' preferences for expenditures, and u_{it} is the error term.

The coefficient on PB_{it} measures the impact of participatory budgeting on the composition of municipal expenditures. The identifying assumption is that the adoption of participatory budgeting is based on unobserved but fixed municipality heterogeneity. In Equation (1), the municipality fixed effects account for the possibility that municipalities have permanent unobservable characteristics that are likely to be correlated with both participatory budgeting adoption and the change in public goods provision.

The fixed effects estimates are subject to potential drawbacks from the endogenous adoption of participatory budgeting. For instance, an unobserved shock affecting a municipality's needs for certain spending projects could lead to a change in both the demand for participatory budgeting and citizens' preferences for specific expenditures.[28] This possibility is less likely in Korea, however, because the adoption of participatory budgeting is mainly driven by the national government.

5. Empirical results

5.1. Main results

Table 2 presents the results of estimating Equation (1) for nine categories of per capita municipal expenditures. Participatory budgeting has a robust positive impact on health, welfare, and transport, but a robust negative impact on regional development.[29] The estimates imply that, holding total expenditure constant, adoption of participatory budgeting would increase per capita spending on health by 28,000 KRW (about 9 percent of the sample mean), welfare by 18,000 KRW (about 3 percent), and transport by 36,000 KRW (about 22 percent). However, it would reduce per capita spending on regional development by 78,000 KRW (about 17 percent).

The main results indicate that municipalities using participatory budgeting tend to reallocate public resources toward more immediate and visible expenditures (e.g., waste collection, health check-ups, locality-specific welfare programs, and road maintenance) and away from long-term development expenditures (e.g., urban projects and river restoration). Intuitively, participatory budgeting increases the political influence of ordinary citizens who prefer more immediate and visible projects by increasing information flows between policymakers and service users (Gonçalves 2014).

Note that participatory budgeting in Korea was initially promoted by mayors from left-wing parties. Therefore, it is perhaps not surprising that participatory budgeting increases left-wing oriented policies, such as welfare and health expenditures, and decreases business-related expenditures on regional development. Although early adopters are concentrated in municipalities with left-wing mayors, participatory budgeting has nonetheless spread to nearly all municipalities regardless of political orientation, owing to

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[25] Left-wing parties include the Democratic Party (*Minjudang*), Democratic Labor Party (*Minju-Nodongdang*), Uri Party (*Yeollin-Ulidang*), and others that acted in coalition with any of the three parties during the sample period (Choi 2010; Lee and Kang 2006).

[26] Note that (1) the decision to adopt participatory budgeting depends on the mayor of the municipality and (2) public nominations for candidates in local elections are determined by the central political party (Boulding and Wampler 2010; Gonçalves 2014). We do not include the political orientation of municipal council members because municipal councils do not play an important role in the adoption of participatory budgeting in Korea (Lim and Seo 2015). In any case, the data for left-wing council members are not available for the whole sample period because party nominations for candidates in local council elections only began after 2006.

[27] Municipalities are located within 16 metropolitan and provincial regions.

[28] If residents of a municipality that has secured funds for particular projects (e.g., welfare programs and road maintenance) experience diminished marginal utility from these projects, they may be less likely to choose participatory budgeting (see Knight 2005 for a similar argument on committee membership).

[29] Standard errors are clustered at the municipal level because random disturbances are potentially correlated within municipality.

Table 1
Summary statistics.

	Obs.	Mean	SD	Min	Max
Administration expenditure (per capita, 1000 KRW)	3610	681.43	549.34	53.55	4069.42
Education (per capita, 1000 KRW)	3610	238.98	271.57	0.00	2482.18
Health (per capita, 1000 KRW)	3610	309.40	294.41	26.48	2472.68
Welfare (per capita, 1000 KRW)	3610	568.16	379.47	34.34	1942.57
Regional development (per capita, 1000 KRW)	3610	470.54	653.00	1.50	14175.30
Agriculture (per capita, 1000 KRW)	3610	513.91	679.52	0.00	4011.93
Industry (per capita, 1000 KRW)	3610	76.59	124.74	0.00	1595.73
Transportation (per capita, 1000 KRW)	3610	165.35	189.98	0.00	2344.28
Public safety (per capita, 1000 KRW)	3610	65.45	133.50	0.18	1524.87
Participatory budget dummy (PB)	3612	0.54	0.50	0.00	1.00
Total expenditure (per capita, 1000 KRW)	3610	3117.79	2644.12	226.04	19122.79
Left-wing mayor	3612	0.35	0.48	0.00	1.00
Population (in thousand)	3612	219.21	208.63	9.19	1200.00
Local tax revenue (per capita, 1000 KRW)	3612	331.23	230.36	26.52	2477.60
Intergovernmental transfer (per capita, 1000 KRW)	3612	2187.07	2395.78	0.00	16851.66
Fiscal independence (%)	3612	39.74	17.41	4.70	94.72
Gross Regional Domestic Product (100 million KRW)	3611	1,241,101	1,120,605	68833.05	4,261,729

Table 2
Participatory budgeting and the composition of municipal expenditure, Fixed effects.

Dep. Var. (per capita, 1,000KRW)	1	2	3	4	5	6	7	8	9
	admin	edu	health	welfare	regional develop	agriculture	industry	transport	Public safety
PB	−6.14	−1.14	28.11**	17.73***	−77.59**	15.29	−1.58	35.61**	−6.16
	(9.34)	(10.16)	(12.80)	(5.45)	(31.54)	(13.09)	(7.15)	(13.96)	(6.82)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226

Notes. PB is a dummy variable that takes 1 if participatory budgeting is present and 0 otherwise. Only the coefficient for PB is reported from the full equation. Control variables include total expenditure (per capita), population (thousands), left-wing mayor dummy, and region-specific time trends. All columns include municipality fixed effects and time fixed effects. Cluster-robust standard errors are reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

strong support from the national government. In addition, we controlled for the dummy variable for left-wing mayors so that our main findings will not be driven by the political orientation of the mayors.

The results also indicate that participatory budgeting affects the municipal budget by a greater amount than the expenditures *directly* allocated through participatory budget processes —typically about 2 percent of the municipal budget.[30]

5.2. Alternative specifications

To test the robustness of our main results, we consider a number of variations of the original model. Roughly half of municipalities adopted participatory budgeting involuntarily after it became mandatory in 2011. A potential concern is that the mandatory adoption policy is potentially correlated with the demand shocks for local public goods (e.g., social welfare programs). In addition, our empirical model is based on theoretical expectation that the decision to adopt participatory budgeting is voluntary. In Panel A of Table 3, we use a subsample of municipalities that adopted participatory budgeting voluntarily. The results are qualitatively similar to the main results in Table 2. Adoption of participatory budgeting leads to a shift in local government spending away from regional development and toward various local services including health, welfare, and transport.[31]

The effect of participatory budgeting on the pattern of public spending may depend on the municipality's location (e.g., metropolitan areas and large cities) which potentially affects residents' preferences for specific expenditures and may be associated with adoption. To examine whether the impact varies with the municipality's location, we split the participatory budgeting dummy variable into two: metropolitan areas and non-metropolitan areas. We also split the participatory budgeting dummy variable into two: large cities (with a population larger than 1 million people) and small cities (with a population less than 1 million people). The results are presented in Panels B and C. In both metropolitan and non-metropolitan areas and both larger and smaller cities, participatory

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[30] A back-of-the-envelope calculation suggests that, evaluated at the mean total expenditure, the adoption of participatory budgeting implies more than a 5 percent change in the total municipal budget. This implies that participatory budgeting has a direct impact of about 2 percent of the municipal budget (through direct allocation of expenditures) and an indirect impact of about 3 percent of the municipal budget (through increased responsiveness of policy to citizens' preferences).

[31] In addition, we took a different cut at the data and used a shorter panel (from 2002 to 2010) that excludes the mandatory adoption period. The results remain qualitatively unchanged.

Table 3

Alternative specifications, Fixed effects estimates.

Dep. Var. (per capita, 1,000KRW)	1	2	3	4	5	6	7	8	9
	admin	edu	health	welfare	regional develop	agriculture	industry	transport	public safety
Panel A. Voluntary adoption of participatory budgeting									
PB	8.05	11.06	30.29*	14.54*	−122.0**	15.92	6.81	42.18***	2.94
	(13.56)	(16.60)	(15.46)	(8.35)	(51.69)	(20.53)	(9.11)	(15.87)	(9.68)
No. observations	1664	1664	1664	1664	1664	1664	1664	1664	1664
No. municipalities	105	105	105	105	105	105	105	105	105
Panel B. Metropolitan and non-metropolitan areas									
PB-metropolitan	12.41	6.84	9.57	26.31***	−60.00**	−7.07	8.56	15.18	−15.37
	(7.81)	(7.27)	(8.08)	(6.38)	(30.27)	(11.70)	(5.46)	(14.41)	(10.62)
PB-nonmetropolitan	−13.94	−4.50	35.91**	14.12**	−84.99**	24.70	−5.84	44.20***	−2.29
	(12.49)	(12.97)	(16.78)	(6.74)	(37.66)	(16.42)	(9.22)	(16.50)	(8.26)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226
Panel C. Large and small cities									
PB-large	18.24**	5.87	12.41	27.16***	−78.53**	−0.13	7.59	17.53	−14.55
	(8.26)	(7.77)	(8.41)	(7.10)	(34.53)	(11.69)	(5.52)	(15.10)	(9.79)
PB-small	−17.04	−4.27	35.14**	13.51**	−77.17**	22.19	−5.67	43.70***	−2.41
	(12.36)	(12.86)	(16.62)	(6.84)	(37.30)	(16.31)	(9.13)	(16.53)	(8.15)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226
Panel D. Alternative dependent variables (expenditure as a share of total expenditure)									
PB	−0.20	−0.34	0.89***	0.31	−0.97**	0.13	−0.06	0.16	0.004
	(0.23)	(0.23)	(0.26)	(0.26)	(0.42)	(0.21)	(0.15)	(0.32)	(0.12)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226
Panel E. Controlling for local tax revenue									
PB	−6.00	−1.22	28.27**	18.12***	−78.14**	16.98	−1.81	33.72**	−5.86
	(9.31)	(10.17)	(12.85)	(5.47)	(31.64)	(13.11)	(7.20)	(13.77)	(6.79)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226
Panel F. Controlling for Intergovernmental transfer									
PB	−6.04	−1.14	28.11**	17.79***	−77.81**	15.45	−1.63	35.55***	−6.11
	(9.41)	(10.16)	(12.79)	(5.63)	(32.91)	(13.55)	(7.13)	(13.64)	(6.89)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226
Panel G. Controlling for fiscal independence index									
PB	−6.06	−1.09	28.19**	17.75***	−77.89**	15.30	−1.58	35.68**	−6.17
	(9.27)	(10.15)	(12.76)	(5.41)	(31.04)	(13.10)	(7.15)	(13.81)	(6.83)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226
Panel H. Controlling for Gross Regional Domestic Product									
PB	−7.48	−0.65	28.83**	17.62***	−78.61**	15.70	−1.20	35.78**	−5.74
	(9.37)	(10.19)	(12.90)	(5.47)	(31.59)	(13.15)	(7.19)	(13.93)	(6.80)
No. observations	3609	3609	3609	3609	3609	3609	3609	3609	3609
No. municipalities	226	226	226	226	226	226	226	226	226

Notes. See notes for Table 2. In Panel A, the sample includes municipalities that have voluntarily adopted participatory budgeting before 2011. In Panel B, PB-metropolitan (PB-nonmetropolitan) is a dummy variable that takes 1 if municipalities are located in metropolitan areas (non-metropolitan areas) and 0 otherwise. In panel C, PB-large (PB-small) is a dummy variable that takes 1 if municipalities are located in cities with more than 1 million residents (with less than 1 million residents) and 0 otherwise. In panel D, the dependent variable is the expenditure as a share of total expenditure. In Panel E, we control for local tax revenue as a proxy variable for municipality income. In Panel F, we control for intergovernmental transfer (per capita). In Panel G, we control for fiscal independence (%). In Panel H, we control for real Gross Regional Domestic Product (100 million KRW) in natural logs.

budgeting has a robust negative impact on regional development spending and a robust positive impact on welfare spending. (Participatory budgeting also increases health and transport expenditures in non-metropolitan areas and smaller cities.) Note that participatory budgeting affects more categories of expenditures in non-metropolitan areas and smaller cities relative to metropolitan areas and larger cities. A potential explanation is that participants in less-populated, non-metropolitan areas can better inform their municipal government of their preferences because they have a lower cost of aggregating demand among different groups.[32]

Panel D shows the results of using expenditure as a share of total expenditure as the dependent variable. Holding total expenditures fixed, this specification may intensify the substitution effect between expenditures. In Panel E, we control for local tax revenue, a proxy variable for municipality income, which may affect both residents' preferences for specific local expenditures and the mayor's incentive to adopt participatory budgeting. In Panel F, we add intergovernmental transfer from the central government, which is a major source of municipal government finance. In panel G, we control for the fiscal independence index because municipalities with low fiscal independence receive additional grants when fiscal needs arise (Kim et al., 2020).[33] Both intergovernmental transfers and fiscal independence potentially influence the composition of local government spending. In Panel H, we include Gross Regional Domestic Product to control for the level of economic development in the region where the municipality is located. Throughout the panels, our main results remain similar in that participatory budgeting is associated with a decrease in regional development spending and increases in various expenditures such as health, welfare, and agriculture.

The remaining concern is that the adoption of participatory budgeting (a choice until 2011) is potentially correlated with unobserved locality shocks and trends. To address this issue, we extend our difference-in-differences approach to the event study setting where pre-treatment trends become visible (Athey and Imbens 2022; Clake; Schythe 2021; Schmidheiny and Siegloch 2019).[34]

Fig. 4 plots the coefficients from the event study model for expenditures (health, welfare, transport, and regional development) surrounding the adoption of participatory budgeting (i.e., seven years before and seven years after the adoption).[35] Each dot (the coefficient estimate of the event-study indicator variable) measures the effect of the adoption on per capita expenditures relative to the excluded baseline period (i.e., the year before the adoption). The results suggest that treatment and control municipalities have a common underlying trend in health, welfare, regional development, and transportation. All the coefficients on the lag variables are insignificant at conventional levels, suggesting that there is little evidence of differential trends in expenditures before the adoption of participatory budgeting. By contrast, the event study plot provides evidence of significant increases in welfare, health, and transport expenditures and a significant reduction of regional development following the adoption of participatory budgeting.

In Table A1, we show the results using an IV estimation of Equation (1). The instrument is the share of neighboring municipalities that have adopted participatory budgeting within the same region (i.e., one of the 16 metropolitan and provincial regions). Our choice of instrument is motivated by the strong regionalism (i.e., loyalty to a distinct region) in Korea. Because political parties receive concentrated support from their home regions, local politicians including mayors are more likely to have been elected from their home regions, maintaining a strong region-based connection (Kang 2015; Kwon 2005). This implies that a mayor's decision to adopt an innovation (such as participatory budgeting) may be influenced by the decision of her hometown colleagues (other mayors) in her home region.[36] The results shown in Table A1 are qualitatively similar to the main results in Table 2.

We have shown that participatory budgeting has offsetting positive and negative effects on various local expenditures, for instance, by reallocating resources from regional development to health, welfare, and transport. This implies that participatory budgeting itself may not have a substantial effect on the overall size of municipal government expenditures. In Table 4, we present the results of estimating total expenditure per capita. The coefficients of participatory budgeting are small (about 0.33 and 0.38 percent of the sample mean) and statistically insignificant. The potential explanation is that increases in various expenditure items such as health and welfare are offset by the large reduction in regional development spending.

6. Conclusion

This study contributes to the ongoing discussion on how participatory democracy mechanisms can shape the allocation of public resources (Besley et al., 2005). Previous studies found that participatory budgeting leads to an increase in expenditure programs that closely match popular preferences, such as healthcare and sanitation. This implies that participatory budgeting has instrumental benefits for groups that participate in the budget process (e.g., the low-income group). However, given its short-term nature,

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[32] As a robustness check, we also excluded municipalities located in the Seoul Metropolitan Area. The municipalities in Seoul are large in population size, are fiscally independent, and are likely to have adopted participatory budgeting only after it became mandatory. The results are qualitatively similar to the main results (not reported).

[33] Fiscal independence index is constructed as (local tax revenue + nontax revenue)/(total expenditure – subsidy).

[34] Equation (1) is essentially the two-way fixed effects difference-in-differences estimation. The identifying assumption is that the time trends in local expenditures across treated and control groups (municipalities) would have been similar absent the participating budgeting, conditional on municipality unobserved heterogeneity and other set of controls. To check the validity of the common trends assumption, we conduct a panel event study of local expenditures surrounding the adoption of participatory budgeting. See Goodman-Bacon (2021) for the issues that arise with a causal interpretation of two-way fixed effects difference-in-differences estimates.

[35] We estimate the following event study model: $y_{jit} = \beta_0 + \sum_k^{-7} \gamma_k D_{it}^k + X_{it}' \Gamma + \theta_i + \mu_t + u_{it}$, where D_{it}^k is a set of dummy variables indicating an event (adoption) happening k periods away. We accumulate all periods beyond period −7 because adoption years differ across municipalities (Schmidheiny and Siegloch 2019). Results are robust to different event windows.

[36] The first-stage regression results (not shown) indicate that the coefficient on the neighborhood effect is positive and statistically significant at the 1 percent level and that the first-stage F-statistic (471.8) rules out the underidentification of the model.
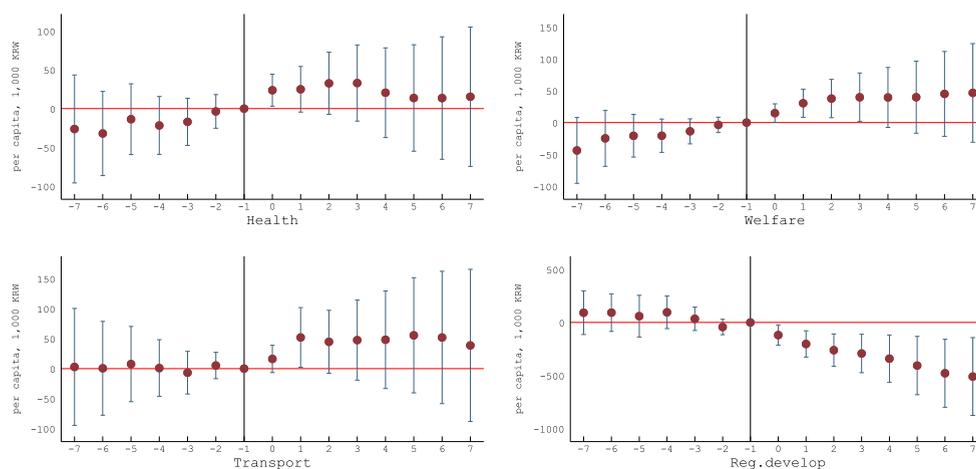
Notes: The figure plots event study estimates and corresponding 95 percent confidence intervals. Participatory budgeting is adopted in event year zero. Each plotted point represents the year before or after the adoption of participatory budgeting, excluding the base period (the year just before adoption indicated by the vertical line). The dependent variables are expenditure on health, welfare, transportation, and regional development. All regression models include total expenditure (per capita), population (thousands), left-wing mayor dummy, region-specific time trends, municipal fixed effects, and time fixed effects. Standard errors are clustered at the municipal level.

Fig. 4. Event study plots for participatory budgeting adoption.

Table 4
Participatory budgeting and total expenditure.

Dep. Var.	1	2
	Total expenditure (per capita, 1000 KRW)	Total expenditure (per capita, 1000 KRW)
PB	10.22	11.90
	(23.19)	(23.51)
Region-specific time trend	No	Yes
No. observations	3610	3610
No. municipalities	226	226

Notes. PB is a dummy variable that is 1 if participatory budgeting is present and 0 otherwise. Only the coefficient for PB is reported from the full equation. Control variables include intergovernmental transfer (per capita), population (thousands), left-wing mayor dummy. Both columns include municipality fixed effects and time fixed effects. Cluster-robust standard errors are reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

participatory budgeting may also shift public resources toward more immediate and visible expenditures and away from long-term expenditures.

We examine whether participatory budgeting systemically alters the composition of public expenditures. Using data from Korean municipalities, we demonstrate that municipalities using participatory budgeting tend to reallocate resources from long-term development investment to more immediate and visible expenditures.

We also find evidence that participatory budgeting affects the municipal budget by a larger amount than the expenditure programs directly allocated through the participatory budgeting process. Our findings indicate that participatory budgeting leads to the local public spending allocations by improving information flows between policymakers and citizens.

Conflict of interest and authorship conformation form

Please check the following as appropriate:

o All authors have participated in (a) conception and design, or analysis and interpretation of the data; (b) drafting the article or revising it critically for important intellectual content; and (c) approval of the final version.

o This manuscript has not been submitted to, nor is under review at, another journal or other publishing venue.

o The authors have no affiliation with any organization with a direct or indirect financial interest in the subject matter discussed in the manuscript.

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Data availability

Data will be made available on request.

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Appendix

Table A1
Participatory budgeting and the composition of municipal expenditure, IV estimates

Dep. Var. (per capita, 1,000KRW)	1	2	3	4	5	6	7	8	9
	admin	edu	health	welfare	regional develop	agriculture	industry	transport	public safety
PB	−6.58	19.83	45.62**	41.41***	−187.6***	47.23*	−8.66	43.28**	15.53
	(16.50)	(15.42)	(19.45)	(9.68)	(57.20)	(26.20)	(11.32)	(17.62)	(11.78)
No. observations	3610	3610	3610	3610	3610	3610	3610	3610	3610
No. municipalities	226	226	226	226	226	226	226	226	226

Notes. PB is a dummy variable that takes 1 if participatory budgeting is present and 0 otherwise. Only the coefficient for PB is reported from the full equation. The instrument for PB is the share of neighboring municipalities that have adopted PB within the same region. Control variables include total expenditure (per capita), population (thousands), left-wing mayor dummy, and region-specific time trends. All columns include municipality fixed effects and time fixed effects. Cluster-robust standard errors are reported in parentheses. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

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