The Economic and Political Effects of Participatory Budgeting

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Abstract

What are the effects of Brazilian participatory budgeting? Most studies answer this question using selected case studies. This paper propose an empirical analysis of the political and fiscal effects of participatory budgeting. Focusing on all the cities that have a population greater than 50000 inhabitants between the years 1996 and 2008 it extends significantly the scope and understanding of previous empirical work. The results show that participatory budgeting does not alter the composition of public spending. The effect of PB on spending seems to be limited to health care. The percentage of resources devoted to health care is higher in cities adopting participatory budgeting. To the contrary of previous anecdotal evidence participatory budgeting, in this sample, has no significant effects on revenues. Finally participatory budgeting significantly increases the probability of reelection of the party of the mayor. The latter result could help explain the widespread adoption of participatory budgeting.

1. Motivation

There are a number of arguments to support a more deliberative and participatory form of democracy. The World Bank[1] claims that many of the key components of participatory and deliberative[2] democracy are capable of inducing better local governance; deliberative and participatory procedures, they argue, can improve tax revenue and economic development, reduce corruption and in the long run may induce a more equitable distribution of income.

From an empirical standpoint there are many different experiences in local institutions, some along participatory lines, some deliberative, some combining both. Most of these experiments, like the Neighborhoods Councils in Italy or the New England town meeting, seem to be incapable of maintaining a high level of participation in the long run. However, in the 1990s some Brazilian cities began to implement a new form of budgeting based on participation and deliberation that in some instances has been capable of inducing and sustaining high levels of participation. Over 350 Brazilian municipalities with a population larger than 50000 initiated a participatory budgeting (PB) process between 1989 and 2008, some of these processes failed in one or two years, some other are still implemented (e.g, Porto Alegre). In 2008, overall, 201 cities were implementing some form of participatory budgeting[3] and more than half of the Brazilian population (around 90 million of people) was living in a municipality that was implementing some form of participatory and deliberative democracy through participatory budgeting. This characterizes the Brazilian experience as the most successful and long lasting experiment of participatory and deliberative democracy yet developed.

The literature on participatory budgeting is mostly composed by case studies. The majority of these case studies have been conducted in Porto Alegre, a city of 1.4 million of inhabitants in the southern state of Rio Grande do Sul. To my knowledge there are only two large N studies (Marquetti 2007, World Bank report 2008) that empirically investigate the effects of participatory budgeting. While Marquetti focuses on the effect of participatory budgeting on

[1] See the Empowerment project and the Participation and Civic Engagement Projects at http://web.worldbank.org.

[2] The most recent experiments of participatory institutions have some form of deliberative assembly in them; nonetheless it is important to maintain the distinction between these two types of institutions because each of them can exists in isolation. Pure participatory institutions are adopted in Italy and Switzerland (i.e. the referendum and the popular initiative law), pure experiments of deliberation are more common (e.g. Deliberation Day). For a very interesting discussion on the differences between deliberation and participation see Cohen and Fung (2004).

[3] Wampler, Brian and Leonardo Avritzer (2008).

fiscal performance and redistribution in all the municipalities of the southern state of Rio Grande Do Sul, the World Bank report investigates the effects of participatory budgeting on poverty indicators and tax revenues on all Brazilian municipalities.

In this paper I propose a comprehensive analysis of the effects of participatory budgeting. I investigate both the economic and the political effects of participatory budgeting. The analysis is based on a novel panel dataset covering all the Brazilian cities with a population larger than 50000 inhabitants from 1996 to 2008[4]. The statiscal analysis shows that participatory budgeting alters the structure of public expenditures, increasing the share of expenditures devoted to health care. Surprisingly PB, after controlling for individual heterogeneity, has no effect on overall public expenditure, current expenditures, personnel expenditures and the share of public expenditure devoted to housing or education. Additionally participatory budgeting doesn't seem to have any effect on the revenues contradicting some of the theoretical and anecdotal evidence proposed by many researchers (e.g., Rhodes 2000, Shah and Wagle 2003). Finally the analysis shows strong evidence that participatory budgeting has a positive effect on the probability of reelection of the party of the mayor. This last novel result is particularly interesting because it could explain the widespread adoption of various form of participatory budgeting during the nineties (Wampler 2007b).

2. What is Participatory Budgeting?[5]

According to World Bank, participatory budgeting is a process through which citizens present their demands and priorities for civic improvement, and influence the budget allocations made by their municipalities through discussions and negotiations[6]. This mechanism has the peculiar characteristic of establishing a link between the technical formulation of the budget and the participatory process. It complements representative institutions rather than substituting for them. Usually the municipal budget is decided by a handful of bureaucrats, Participatory budgeting is an attempt to open this process to the citizenship.

[4] With regard the investigation of the political effects of PB I am still collecting the data for 1992 from each region and thus the dataset starts in 1996.

[5] This section is based on my field visit of Porto Alegre in 2009.

[6] World Bank's *Empowerment Case Studies: Participatory Budgeting in Brazil* available at http://siteresources.worldbank.org/INTEMPOWERMENT/Resources/14657_Partic-Budg-Brazil-web.pdf

Porto Alegre, as I mentioned before, is considered the most successful example of participatory budgeting. The participatory procedure In Porto Alegre has been refined over the past 20 years. During these years the process has experienced an almost constant increase in the number of participants; from the initial 900 to more than 18000 in 2001. In Porto Alegre the budget plan is developed over a period of 11 months through a series of meetings in three different levels: the micro-local, the district (17 regions[7] in which the city is divided) and city-wide levels.

Meetings are self-organized at the micro-level of the street, the apartment block, and the neighborhood throughout the year. On the one hand many[8] describe these meetings as similar to the ones that are promoted in U.S. cities by concerned citizens, neighborhood association and NGOs to organize a community around a specific issue of interest (beautification projects, revitalization projects, crime prevention etc.). On the other hand the participatory budgeting process transforms the effectiveness of these meetings and their potential impact. The proposals that are generated at the micro-level have a real chance to be implemented, and this, according to many observers[9], constitutes a powerful incentive to participation.

At the district level the process begins in March when the plenary assemblies are held. There are thematic and regional assemblies. In these assemblies each participants registers himself and declares to which neighborhood group he belongs. The assemblies range from 200 participants to more than a 1000 depending on the thematic or the district. The meetings are managed by municipal civil servants that enforce strict rules of discussion (e.g. each speaker can talk a maximum of 3 minutes). Usually the speakers represent a residents' groups or associations. The number of people that participates in the plenary assembly dictates the number of delegates that can be elected to the District Forum. Each residents' group will separately elect, in e specific meeting, a number of delegates that is proportional to the number of people that are registered under the group's name. Therefore, it is very important for the success of a group's objective that the highest number of people shows up at the first district/thematic plenary meeting. The plenary assemblies have two additional main functions: electing the representatives in the participatory budgeting Council (two representatives and two substitutes) and ranking the neighborhood priorities.

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7 The number of regions was changed in 2007, before there were only 16.

8 Among others see the description made by Gret, M. and Sintomer, Y. (2005).

9 Among others see the description made by Gret, M. and Sintomer, Y. (2005).

At the city level the main organ is the Participatory Budget Council (Conselho do Orçamento Participativo - COP), consisting of delegates elected by the 17 districts and by the six thematic assemblies. This institution is the site of the dialogue between the popular movement and the city administration. It meets once or twice a week during the PB process. It defines the criteria for resource allocation, defends the priorities of regions and themes, discusses revenues and expenditures, drafts the detailed Investment Plan, and votes on the budget proposal presented by the executive. In Porto Alegre three criteria determine the budget allocation for each of the 17 regions of the city – the priorities decided by the COP, the existing levels of provision in terms of infrastructure and services, and the population. To them three logics are applied: a majority-democratic logic, a technical logic, and a redistributive logic. Thus, each regional popular assembly (FROP) selects its service priorities. The executive assesses the technical viability of projects. The municipality produces an index of existing levels of provisions of services and infrastructures in each region. Then, the assembly of the participatory budgeting decides on the relative weight of the various criteria to ensure that service needs in less provided areas of the city receive proportionately more funding. During this process the GPO (Gabinete de Programação Orçamentária, formerly known as GAPLAN, Gabinete de Planejamento), a technical office specifically created, is in charge of translating the citizens' demands into technically and economically viable municipal projects. This participatory procedure has been refined over 20 years of operation. Each year the COP councilors evaluate the performance of the procedure and vote changes and improvements.

A World Bank case study of Porto Alegre[10] points out that between 1989 and 1996, the number of households with access to water services rose from 80% to 98%; the percentage of the population served by the municipal sewage system rose from 46% to 85%; the number of children enrolled in public schools doubled; in the poorer neighborhoods, 30 kilometers of roads were paved annually since 1989. According to the authors since transparency improves the motivation to pay taxes, revenue increased by nearly 50% (budget resources for investment only went up from US$ 54m in 1992 to US$ 70m in 1996). Due to these results PB has been declared one of the international local government's "best practices"[11] at the UN Habitat conference in 1996.

[10] Shah, P. & Wagle, S. (2003).

[11] http://www.bestpractices.org

The incredible success of participatory budgeting in Porto Alegre seems to be limited to the first 13 years of its implementation. In 2002 after a change in the rules governing the process[12], participation has for the first time begun to decline. Additionally, according to some researchers, (Baierle 2002, 2007, Chavez 2006) the process has been experiencing a structural crisis exacerbated by the loss of the leftish coalition in 2004. The new government of the city, confirmed in 2008 election, has been supporting the process only on paper. Delays, and lack of information are plaguing the procedure. The participants often receive the investments plan a few days before the discussion eliminating the possibility of real deliberation.

Recent changes in the organizational rules are leading toward the professionalization of the representatives of the participatory budgeting Council. In order to be candidated a citizen is now required to have participated various years, and council members can now be reelected with no limitation. The power of the council members has been additionally increased by the introduction of new discretionary funds (in 2009 around 250000$) that are allocated directly by the council bypassing the procedures of the participatory process[13] (Spada 2009).

The most recent World Bank case study on Porto Alegre (World Bank 2008) shows, among many other problematic symptoms, how the share of executed investments has dropped from 90% to less than 10% in the last 7 years. According to the ONG Cidade, that has been monitoring the process since its beginning, the government of the city utilizes this chronic delay in the implementation of the investments to alter the priorities decided by the population. On paper the citizens decide 100% of the investments of the city, but in reality it's difficult to understand the amount of investments that will be implemented.

These recent developments are highlighting the fragility of the participatory process, how it strongly depends on the support of the governing coalition and the constant risk that the process becomes a large and well organize form of clientelism.

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[12] The two rounds of discussions have been substituted by a single plenary assembly. The change has decreased the amount of time dedicated to the general discussion. Most assemblies now only focus on the elections of the representatives of the Counsel of participatory budgeting.

[13] This procedure, called “Emenda” to the Partipatory Budgeting, was introduced in 2006. During the PT administration changes to the Participatory budgeting could be implemented only by distracting funds from one project to fund another one after the process was concluded. With the new procedure the government announces the amount of discretionary funds before the participatory process begins. Usually the funds end up divided among the projects sponsored by the council members and those sponsored by the representative of the municipality of each region.

2.1 Other Brazilian PB experiences

In the past 20 years more than 350 Brazilian cities have implemented some form of PB. The current literature has a number of definitions of the participatory process that are vague, like the one from the World Bank I presented in the introduction, and cannot really used to draw lines between types of PB due to the lack of city level data. The literature doesn't have a detailed map of the differences among the various institutional designs for all Brazil. Currently the PB cases are identified through self-reporting and surveys. The variance of the institutional design is unexplored and the effects of different design are unknown.

In a recent paper Wampler (Wampler 2009) suggests that there could be three main different types of participatory budgeting. Those that are implemented by policy entrepreneur, those that are implemented by policy advocates and those that are implemented by pro-forma adopters. In general the case studies of the last 20 years has shown that a number of the PB processes adopted in Brazil are "*para inglês ver"*[14] a common Portuguese phrase that signifies, more or less, a window dressing process, a facade (e.g. Wampler 2007). In these cases, the percentage of investment really decided of the population is quite small, effective participation is restricted to an elite of community leaders that are often coopted by the government of the city and the whole process is highly controlled by the executive of the city.

The theoretical literature describing the positive effects of participatory budgeting has been developed mainly analyzing the case of Porto Alegre that, as many have pointed out (e.g. Abers 1999, Baierle 2007), is a very peculiar city that may be not very representative of other situations.

2.2 The Empirical Literature on Participatory Budgeting

As I mentioned before there are only an handful of empirical papers on PB. The majority of researches are based on anecdotal evidence based on one or few more case studies. The first notable exception is Torres Ribeiro and Grazia (2003) that have provided a detailed census of all the experiences of PB in Brazil during the period 1997 and 2002. Teixeira (2002), using the dataset collected by Ribeiro and De Grazia, analyzes the outcomes of PB among small rural

[14] "So that the English can see". The origin of this expression is potentially related to a law against slavery passed by the Brazilian Regency Government in 1831 under the pressure of the English Crown. The law was not applied for twenty years.

municipalities. She identifies a substantial number of cases in which PB has been a failure and has been abandoned. She points out three main factors that sustain PB: the importance of a strong network of civil society organizations, the political will of the ruling party, and, finally, the human and economic resources available to the municipality.

More recently Avritzer and Wampler (2005), building upon the research of Torres Ribeiro and Grazia (2003) have constructed a census of all the PB experiences from 1989 till 2004. They use this dataset to explain the adoption of PB in Brazil. They identify five main factors: the presence of a Mayor affiliated to the Worker Party (Partido dos Trabalhadores), the size of the municipality, its location, the level of development measured through the HDI index, and finally the civil society-political society relationships. They don't provide a statistical analysis, but they show a number of very interesting relationships using tables and simple descriptive statistics. Wampler (2007), expanding the previous analysis, proposes a static probit model on all the 200 cities that have a population greater than 100,000 individuals. The model points out that the emergence of PB is significantly correlated with the presence of a PT majority. More interestingly, excluding from the sample the cases in which PT had a majority, the analysis leads to the surprising result that PB was adopted more often in cities in which the left was weak and conservative forces held power. Wampler concludes that these conservative municipal governments "were seeking to gain governing and elections benefits from their association with a program that is known for its emphasis on social justice, transparency, and direct participation".

Marquetti and Bêrni (2006) propose the first systematic study of the fiscal effects of participatory budgeting. Again building upon the research of Ribeiro Torres and Grazia they investigate all the 60 cities of the southern state of Rio Grande Do Sul with a population larger than 30000 inhabitants. They present two separate cross-sections, one for the period 1997-2000 the other for the period 2000-2004. They find that cities adopting PB tend to spend more in education, "culture, sport and leisure" (this is one of the aggregate entry of the Brazilian balance sheet) and housing. They also find an interesting interaction between the availability of resources and the effects of PB on overall public spending. Poor cities that adopt PB tend to spend less than those not adopting it. While among the cities with more resources, those that adopt PB spend more resources than those that do not. They explain this phenomenon by claiming that PB forces the government to provide an optimal amount of public goods. In poor cities, they assume

that citizens prefer to pay lower taxes and receive a smaller amount of public goods than what is usually offered. In larger cities, citizens prefer a larger amount. Given the size of the sample their results have to be considered with care.

The most recent and sophisticated empirical analysis on Brazilian PB has been conducted by the World Bank (WB 2008). Using a difference in difference matching model the equipe of the World Bank investigates the effect of participatory budgeting on poverty measure and fiscal revenues. The matching process constructs a synthetic control group that is most similar to the city adopting participatory budgeting. Additionally, the model controls for the effect of the share of votes obtained by the Worker Party to avoid that leftish redistributive politics confounds the effect of PB. Both propensity score and kernel matching technique are compared. The results show that participatory budgeting has an effect on various poverty reduction indexes.

3. The data

This project builds on a number of existing datasets (Ministero da Fazenda, Ipeadata[15], and IBGE[16] recurring publications, Tribunal Superior Electoral) that contain detailed information on economic, social, political and demographic variables for every municipality in Brazil.

With regard the main explanatory variable, the presence of participatory budgeting, using the data collected by Ribeiro Torres and Grazia (2003), Avritzer and Wampler (2006) and a novel telephonic and internet research that I conducted in 2008, I have constructed a dummy variable that identifies all the cases of participatory budgeting for the cities with a population larger than 50000 inhabitants[17]. The decision of limiting the study to cities with a population larger of 50000 is due to the fact that the information contained in smaller cities' balances is highly unreliable[18]. The number of cities in the sample is 562.

Brazilian elections at the municipal level are held every 4 years. In 1989 the first municipal elections were held after the dictatorship, but there is no data available for the period 1989-1992. Additionally The data on the municipal share of the national GDP, and the data on

[15] This is a panel containing detailed information on public finance and in particular information on the typology of municipal investments. Part of the data goes back to 1985. The dataset is available online at http://www.ipea.gov.br/default.jsp

[16] Instituto Brasileiro de Geografia e Estatística.

[17] As a reference year to identify the size of the city I use 2004.

[18] The Brazilian law requires the public balance sheet to be certified only when a city has a population larger than 20000 inhabitants. But the quality of the data with regards cities with a population below 50000 is really low.

elections is available from 1996. Thus the sample used in the empirical analysis of the economic and political effects of participatory budgeting covers the period 1996-2008.

Given that the main explanatory variable (presence of participatory budgeting) does not vary much within each period[19], the econometric model uses averages of the economic variables within each four year electoral period. Table 1 describes the dynamic of adoption of participatory budgeting from 1989 to 2008.

Table 1: The diffusion of participatory budgeting among the cities with more than 50000 inhabitants

	1989-1992	1992-1996	1996-2000	2000-2004	2004-2008
Number of cities implementing PB	11	33	68	138	132
Cities that initiated PB for the first time	11	26	51	99	65
Cities with 4 years of PB experience		7	11	27	41
Cities with 8 years of PB experience			6	8	16
Cities with 12 years of PB experience				4	6
Cities with 16 years of PB experience					4
Cities that abandoned PB		4	16	29	71
Cities with a population larger than 50000 inhabitants in 2004	562	562	562	562	562

Sources: Ribeiro Torres and Grazia (2003), Avritzer and Wampler (2006) and my own field work in the winter of 2008.

The table shows a peak in the rate of adoption during the period 2000-2004 and a peak in the number of cities abandoning the process during the period 2004-2008. During the last period the number of cities adopting participatory budgeting for the first time is smaller than the number of cities abandoning the process. This result is only valid among the cities with more than 50000 inhabitants, when considering all Brazilian cities the trend is still positive (Avritzer and Wampler 2008).

3.1 The empirical analysis

[19] Most cities adopt participatory budgeting in the first or second year of each period, and almost no city abandons the procedure before the end of the period.

In this section I will present two basic family of models. The first group will study the effect of participatory budgeting on public expenditures and revenues. The second one will analyze the effect of participatory budgeting on the probability that the party of the mayor wins the election at the end of the manadate. While the first family of models has a continuous dependent variable the second one has a discrete dependent variable assuming value 1 when the party controlling the city doesn't change across periods.

When analyzing the economic effects of PB, I will compare three different specifications: a random effects regression, a fixed effects regression to control for selection bias and a GMM regression that will investigate the effect of the lagged dependent variable. The three models are fairly common in the analysis of panel data, and most econometric textbooks analyze extensively the strength and weaknesses of each of them[20]. While the random and fixed effect models are static, the GMM model is dynamic. The GMM controls for individual heterogeneity by taking differences and uses lagged instrumental variables of the dependent variable and the regressor to overcome potential endogeneity problems (Arellano and Bond 1991). All the specifications will use time dummies to control for time effects.

When analyzing the political effects of PB, due to the discrete nature of the dependent variable, continuity of the Mayor's party in power[21], I will compare two specifications, a random effect logit and a fixed effect logit.

3.2 The economic effects

I will begin by analyzing the effects of participatory budgeting on public expenditures. As table 2 shows participatory budgeting doesn't significantly total public expenditures when controlling for individual city effects. The result remains similar even when considering per-capita expenditures[22].

The model regress the average public expenditures over each four years time period on a dummy indicating the presence of participatory budgeting procedures during such period. As controls I included the average population to capture difference in size, the average revenues during the period to capture difference in wealth and finally a measure of the power of the PT, Partido dos Trabalhadores (Worker's Party).

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[20] See Wooldridge 2002 or Cameron, Trivedi 2005 for a detailed explanation.

[21] A dummy that assumes value one when the party of the mayor remains in power in the next elections.

[22] These results are available upon request.

Table 2: The effect of participatory budgeting on public expenditures

	Random Effects	Fixed effects	Arellano and Bond
Implementing Participatory Budgeting	-16.4*** (-3.14)	0.28 (0.07)	-1.3 (-0.34)
Revenues	0.15*** (15.26)	.06*** (4.03)	.04*** (3.82)
Population	496.8*** (44.95)	48.2 (0.57)	-241.4*** (-2.81)
Worker's Party (PT) share of seats	22.07 (0.41)	-31.9 (-1.16)	-61.8** (-2.33)
Time dummies	included	included	included
Lagged public expenditures			.12*** (6.01)
Constant	-15.2*** (-3.43)	74.4*** (4.87)	128.8*** (8.28)
N	1534	1534	959
Number of groups	558	558	539

*** significant at the 0.01 percent level. ** significant at the 0.05 percent level. * significant at the 0.10 percent level.
T-statistic showed in parenthesis for the first two models, Z-statistics showed for the GMM

The latter control is included to disentangle the political effect linked with the presence of the party that first introduced participatory budgeting and that is still controlling more than 37% of the cities adopting it. Table 3 shows the evolution of the percentage of cities in the sample controlled by the PT and adopting participatory budgeting.

Table 3: The PT and the cities with more than 50000 inhabitants adopting participatory budgeting

	1996-2000	2000-2004	2004-2008
Percentage of cities adopting PB controlled by the PT	40%	40%	37%

Many other specifications (e.g., using per capita values, controlling for GDP, controlling for the presence of Surplus) have been tested without altering the results. When in the regression I do not include the effect of the worker party I increase the size of the sample[23], the standard errors improve notably, but the results do not change.

Overall the effect of participatory budgeting disappears when individual heterogeneity is controlled for. The result is not surprising given that in the majority of cities participatory budgeting affects only a small part of the investments and that in 1999 the Fiscal Responsibility Law was passed introducing a number of limits to municipal spending. Even if participatory budgeting has no effect on total public spending, it is possible that it has an effect on the share of current expenditures over total expenditures due to the increased cost in term of personnel, consumables and organization. When we consider the effect of PB on the share of current expenditures over total expenditures we obtain similar results (Table 4).

Table 4: The effect of participatory budgeting on the share of current expenditures

	Random Effects	Fixed effects	Arellano and Bond
Implementing Participatory Budgeting	0.009* (2.35)	0.007 (1.50)	0.004 (0.98)
Revenues	-0.000002 (-0.26)	-0.00002* (-1.93)	-0.00002* (-1.72)
Population	-.0007 (-0.09)	0.24** (2.55)	0.20** (2)
Worker's Party (PT) share of seats	-.006 (-0.30)	-0.19 (-0.63)	-0.01 (0.7)
Time dummies	Included	Included	Included

[23] The political variables are only available from 1996, when I do not include them the regression considers also the period 1992-1996, these results are available upon request.

Lagged share of current expenditures			0.12*** (3.43)
Constant	0.84*** (221.5)	0.81*** (47.84)	0.71** (20.4)
N	1534	1534	959
Number of groups	558	558	539
*** significant at the 0.01 percent level. ** significant at the 0.05 percent level. * significant at the 0.10 percent level. T-statistic showed in parenthesis for the first two models, Z-statistics showed for the GMM			

While random effects show a significant positive correlation, fixed effects and the GMM estimation display non significant results. Again the effect of participatory budgeting disappears when individual heterogeneity is controlled for.

Considering other specifications does not alter the results. If we drop the political control (Worker's Party share of seats) the effect of participatory budgeting becomes significant when considering fixed effect, but it cease to be significant in the dynamic GMM estimation that not only considers the individual effects, but also controls for the endogeneity of the dependent variable using lagged instruments.

Overall, there is no evidence that participatory budgeting has an expansionary effect of public spending. When we consider different types of expenditures the results are more interesting. The effect of participatory budgeting on the share of expenditures dedicated to health care is positive and strongly significant as Table 5 shows.

Table 5: The effect of participatory budgeting on the share of health care expenditures

	Random Effects	Fixed effects	Arellano and Bond
Participatory Budgeting	0.033*** (5.47)	0.02*** (3.2)	0.018*** (2.87)
Revenues	0.000003 (0.27)	0.00001 (0.69)	0.00002 (1.13)
Population	0.009 (0.65)	0.002 (0.98)	-0.6 (-0.45)
Worker's Party (PT) share of seats	.047 (1.36)	-0.01 (-0.42)	0.02 (0.43)

Time dummies	included	included	included
Lagged share health care expenditures			0.013 (0.87)
Constant	0.36*** (61.1)	0.37*** (14.59)	0.38*** (14.52)
N	1533	1533	959
Number of groups	558	558	539

*** significant at the 0.01 percent level. ** significant at the 0.05 percent level. * significant at the 0.10 percent level.
Z-statistic showed in parenthesis for the first and third model, t-statistics showed for the fixed effect

When considering different specifications (e.g., using per capita values, controlling for GDP, controlling for the presence of Surplus, controlling for total expenditures) the results do not change.

Table 6 investigates the effects of participatory budgeting on education expenditures. Again we observe that after controlling for individual heterogeneity the effect of participatory budgeting disappear. Considering different specifications (e.g., using per capita values, controlling for GDP, controlling for the presence of Surplus, controlling for total expenditures) does not alter the results.

Table 6: The effect of participatory budgeting on the share of education expenditures

	Random Effects	Fixed effects	Arellano and Bond
Participatory Budgeting	-0.014*** (-3.40)	-0.006 (-1.31)	-0.003 (0.410)
Revenues	0.00002*** (3.38)	0.000001 (0.1)	0.00000002 (0.0017)
Population	-0.05*** (-4.58)	0.12 (1.33)	0.14 (1.45)
Worker's Party (PT) share of seats	-0.05* (-1.92)	0.003 (1.33)	-0.007 (-0.23)

Time dummies	included	included	included
Lagged share health care expenditures			0.022** (2.04)
Constant	0.41*** (45.79)	0.37*** (20.36)	0.36*** (18.33)
N	1533	1533	955
Number of groups	558	558	539

*** significant at the 0.01 percent level. ** significant at the 0.05 percent level. * significant at the 0.10 percent level.
Z-statistic showed in parenthesis for the first and third model, t-statistics showed for the fixed effect

When investigating the share of expenditures devoted to the personnel, the results remain similar, i.e. the random effect model shows some effects, while the fixed effect and the GMM model do not. When investigating the share of public expenditure devoted to housing, pension funds, and transportion all the three models do not reject the null that participatory budgeting has no effect.

Overall there is a weak evidence that participatory budgeting has any significant effect not only on total public spending, but also on the composition of spending. Only the share of spending devoted to health care is significantly affected by the implementation of participatory budgeting.

When investigating the revenue's side, the results are not much different. Table 7 shows no significant effects of participatory budgeting on the share of tax revenues on the overall revenues. Similar results are obtained when considering the overall tax revenues, or the balance sheet net results[24].

Table 7: The effect of participatory budgeting on the share of tax revenues

	Random Effects	Fixed effects	Arellano and Bond
Participatory Budgeting	0.001 (0.08)	-0.001 (-0.58)	-0.002 (-0.9)

[24] The results are available upon request.

GDP	0.0002 (-0.53)	0.004*** (3.53)	0.0018 (1.44)
Population	0.04*** (3.57)	-0.13*** (-3.38)	-0.043 (-0.94)
Worker's Party (PT) share of seats	-0.007 (-0.53)	-0.03** (-2.02)	-0.004 (-0.27)
Time dummies	Included	Included	Included
Lagged share of tax revenues			0.45*** (8.82)
Constant	0.12*** (33.47)	0.16*** (25.33)	0.07*** (6.35)
N	1534	1534	955
Number of groups	558	558	539

*** significant at the 0.01 percent level. ** significant at the 0.05 percent level. * significant at the 0.10 percent level.
Z-statistic showed in parenthesis for the first and third model, t-statistics showed for the fixed effect

Overall there is no evidence that participatory budgeting has any effects on the revenues.

The previous results are very important, not only in the substance, but also as a methodological reference for future studies. The presence of individual heterogeneity, time effects and potential endogeneity in public spending are clearly elements that must be considered.

3.3 The political effects

The current empirical literature does not investigate the political effect of participatory budgeting. The example of Porto Alegre, in which the party (PT) introducing participatory budgeting in 1989 held power for four mandates until 2004, is contrasted with the 1996 election when many cities adopting PB changed the coalition controlling them. This anecdotal evidence is often used to support the idea that participatory budgeting does not have a significant impact on the probability that the party of the mayor wins the election again. What the anecdotal evidence

does not consider is the relative number of changes with respect cities not adopting participatory budgeting and the other factors influencing such changes.

When considering all these factors the effect of participatory budgeting is quite large as table 8 shows.

Table 8: The effect of participatory budgeting on the probability of reelection, panel logit

Dep. variable assumes value 1 when the party of the mayor wins the elections again		
	Random Effects	Fixed effects
Participatory Budgeting	0.47*** (3.27)	0.57*** (2.89)
Public expenditures	-0.001 (-1.05)	-0.01*** (-2.58)
Population	0.54 (1.27)	2.7 (0.68)
Worker's Party (PT) share of seats	2.9*** (4.25)	2.4* (1.93)
GDP	-0.006 (-0.15)	-0.06 (-0.32)
Time dummies	included	included
Constant	-0.89*** (-8.67)	0.15 (0.83)
N	1534	981
Number of groups	558	343

*** significant at the 0.01 percent level. ** significant at the 0.05 percent level. * significant at the 0.10 percent level.
Z-statistic showed in parenthesis

The table displays the result of regressing the probability that the party of the mayor wins the elections at the end of term on a dummy that identifies the adoption of participatory budgeting during the term. The models include as regressors public expenditure, to control for fiscal policies, population, to capture the effect of size, a measure of the Worker's Party (PT)

power to control for the expansion of the PT in Brazil and a measure of the GDP produced by the city to control for the effect of wealth and development. As usual, I include period dummies to control for heterogeneity over time.

The effect of participatory budgeting is positive and significant in both specifications. Table 8 display the coefficients in logit units, to calculate the marginal effects we need to transform the result and select a baseline level.

When applying such transformation to a dummy variable I consider a discrete change from zero to 1. Given the panel structure of the sample I further calculate the marginal effect given that the random or the fixed effect is zero. When applying such transformation I obtain that the adoption of participatory budgeting increases the probability of victory of the party of the mayor by 10% in the random effect model and by 15% in the fixed effect model. Such result is robust to various changes in specification (e.g., using per capita values, controlling for the presence of Surplus, controlling for tax expenditures and any other type of expenditure).

This novel result is quite interesting and could help explaining the widespread adoption of participatory budgeting during the nineties.

Conclusions

Apart few exceptions, the current literature on the effects of participatory budgeting is based on case studies, most of which on the early years of Porto Alegre. When empirical analysis are conducted they are based on static cross-sections that do not consider individual heterogeneity or endogeneity problems. This paper is a first attempt to analyze more rigorously the effect of participatory budgeting. Using a sample of all the Brazilian cities with a population larger than 50000 inhabitants between 1996 and 2000 both individual heterogeneity and endogeneity problems are controlled for.

The analysis points out that participatory budgeting has a significant effects on the allocation of public spending. The share of public spending devoted to health care is positively associated with participatory budgeting. To the contrary of previous findings participatory budgeting in this sample has no significant effects on revenues.

However, a strong and significant political effect of participatory budgeting is found. A party that implements participatory budgeting increases of more than 10% the probability of

winning the next mayoral election. This striking result can help explaining the widespread adoption of participatory budgeting at the end of the nineties.

It is important to remark that the definition used to identify the presence of participatory budgeting is quite rough and does not distinguish between effective and window dressing participatory budgeting (Wampler 2009). Secondly there is the possibility that participatory budgeting does not affect the amount of public spending, but instead it affects the distribution of spending, transferring more resources to specific subset of the population (Marquetti 2003).

Therefore, the next step in the agenda should be to construct a better census of the participatory budgeting cases that would encompass not only the various institutional rules, but also the amount of investment that each city devotes to the process.

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