



UNIVERSITY OF THE PHILIPPINES

Master of Development Economics

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Do citizens' voices count in local spending?  
An empirical study on the effects of citizen  
participation on local budget performance

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Date of Submission

30 August 2023

Thesis Classification:

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## Abstract

Advocates assert that opening government processes to the participation of citizens improves governance and service delivery, and ultimately help bring forth greater prosperity for all. While qualitative evidence are abundant on the exemplars of participatory governance and the results they brought to citizens, the quantitative literature is inconclusive at best, and at worst proves the lack of a causal relationship between participation and desired governance and development outcomes.

This study contributes to the body of empirical evidence showing that participatory governance has generally positive, though mixed, effects on public financial management. In particular, this study investigates the effects of the participation of civil society organizations (CSOs) in local government units' (LGUs) development councils, which is mandated by the Local Government Code in the Philippines. Using panel regression, the study finds that CSO participation—particularly its more substantial forms like submission of action plans to follow through on council discussions and provision of technical support to the council—has a positive effect on increasing expenditures in the aggregate and on key development sectors. However, CSO participation is also associated with constrained fiscal resources, particularly LGU dependence on national transfers. Moreover, the effects of CSO participation on local budget outcomes are not always straightforward: these are significantly dependent on context and some effects may likely be nonlinear.

Though this study does not claim to establish causality, it nevertheless affirms the policy direction to broaden and deepen participatory governance. Nevertheless, reforms are needed to produce more substantive metrics of CSO and citizen participation, to understand and improve the enabling environment for participation, and to invest in studies that establish the elusive impacts of participatory governance.

Keywords: local government units, public financial management, participatory governance, civil society organizations, panel regression

## Acknowledgements

I would like to express my deep gratitude to my thesis adviser, Cielo Magno, PhD, whose guidance and persistence made this work possible. I am grateful that she remained my thesis adviser despite my protracted progress and her busy schedule now under secondment as Undersecretary of Finance. I likewise thank my thesis reader, Assistant Secretary Karlo Fermin Adriano, PhD, who painstakingly reviewed my work despite his busy schedule. I likewise express my admiration and gratitude towards all my professors during the course of my Masters in Development Economics studies for taking the patience to hone a mid-career development professional (or: someone significantly older than the mean MDE cohort) who had no undergraduate background in economics.

I likewise thank my colleagues in the profession who motivate me to continue working in public sector reform and innovation. To Dr. Selva Ramachandran, Resident Representative of the United Nations Development Programme (UNDP) Philippines, and my superiors and colleagues at the UNDP Impact Advisory Team, Accelerator Lab, and Pintig Lab for the flexibility and encouragement to complete this thesis. Special thanks are due to my supervisor and UNDP PH Economist, Arlan Brucal, PhD, for advice and input to this study. To my partners in government, civil society, and international organizations, with whom I have the opportunity to collaborate towards greater fiscal openness, and in one way or another have helped to shape this study. Special thanks are due to the World Bank and to the Department of the Interior and Local Government for the use of data on local budgets and local governance.

Finally, I would like to express my sincerest gratitude to my family. To my spouse Pamela Joy Mariano-Capistrano, with whom I share the joy and pain of completing our respective theses—in her case, for her Doctorate in Philosophy—while raising our family in the middle of a pandemic. And to Likha Maria, our daughter, who inspire us to strive to become the best parents and the best citizens that we can be.

## **Version Notes**

As submitted on 30 August 2023. Formatted for electronic publishing.

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## **I. Introduction**

The Philippines relishes in global acclaim as a pioneer in citizen participation in all levels of governance, yet it also suffers from malaises that citizen participation has been touted to cure.

Since the revival of democracy in 1986 through the EDSA People Power uprising, civil society organizations (CSOs) have emerged and flourished at the national and local levels to provide a necessary check to the power abuses that marked the Marial Law regime, give a voice to marginalized sectors in society, and contribute to statecraft and social development. Aiming to institutionalize “People Power” in government, the post-EDSA state has sought to open greater and formal spaces for citizen and CSO participation in all levels of the government. For instance, the Local Government Code (LGC) of 1991, or Republic Act (R.A.) No. 7160, enshrined the crucial role of CSOs, non-government organizations (NGOs), and people’s organizations (POs) as “active partners in the pursuit of local autonomy.”<sup>1</sup> It mandates, among others, the representation of CSOs in Local Development Councils (LDCs) and other local special bodies. It was hoped that CSO participation would help improve the quality of governance and, eventually, enable LGUs to better respond to socioeconomic development challenges.

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<sup>1</sup> Section 34, Chapter IV, Title I, Book I of R.A. No. 7160.



Although qualitative evidence are abundant on exemplars of participatory governance and the results they brought to citizens, the literature on the quantitative evidences that validate and generalize their impacts has been relatively thin. Available studies in the Philippines are inconclusive at best, and at worst proves the lack of a relationship between participation and better governance and, ultimately, socioeconomic development. A recent study found that the membership of CSOs in LDCs did not have a significant effect on LGUs' budget utilization rates (BURs). Seeing the problem of inadequate measurement, the study recommended "that more substantive measurements of the quantity, quality, and impact of CSO participation" be formulated and utilized (C. Magno et al., 2022). This thesis attempts to expand the available metrics of CSO participation, then to quantitatively test the relationship between CSO participation and the quality of governance, particularly, local fiscal management.

This study is relevant on the following grounds. First, the Supreme Court decision on the Mandanas-Garcia case in 2018. The landmark ruling not only corrected the computation of LGUs' share in national revenues but also forced the issue of the still-incomplete devolution of public services under the LGC. Second, the national government has been providing billions in subsidies to LGUs in a bid to promote good governance standards, including transparency and citizen participation. Such policy intent has been enshrined in law through the Seal of Good Local Governance (SGLG) Act of 2019 (R.A. No. 11292) and recent issuances to operationalize participatory mechanisms. Third, the country since 2012 has been a member of the Open Government Partnership (OGP) and,

under it, has committed to promote meaningful participation in local governance mechanisms.

To address this objective, the subsequent discussions will be divided into seven main chapters. First, the study begins with a review of the norms and standards of fiscal openness as well as the literature globally and in the Philippines that attempt to quantify the link between citizen participation and effective budgeting (Sec II). It then outlines key hypotheses and the methodology to test these (III) and explores and describes the available observational data (IV). Following these sections are the description of the results of the panel regression analyses covering all LGUs and for municipalities, cities, and provinces (V). After distilling key findings from the evidence (VI), this study concludes with insights for future participatory budgeting reforms as well as further studies to evaluate their impact (VII).

## **II. Theoretical Background**

Advocates in government, civil society, and the international community argue that opening the government's processes, especially those which involve the utilization of resources and delivery of services, helps curb corruption, improve public services, and ultimately benefits society. The OGP—of which the Philippines was among the seven co-founding countries— was created in 2011 based on the belief that transparency, citizen participation, and accountability lead to improved public services and, consequently, to greater prosperity (2011). Is this normative aspiration founded? A better understanding of the underlying theory of change between it and local development is called for. This section outlines the available literature and government policy on measuring participation particularly in the budget process; the current state of evidence globally on the impacts of budget participation and fiscal openness on the quality of governance and on development outcomes; and available Philippine studies that explore this theme.

### **1 Measuring Participation**

Although openness is often considered as a means for loftier development goals, it is also viewed as an outcome in and of itself (Capuno, 2005; Medina-Guce, 2020a). Public participation has been framed as a ladder (Arnstein, 1969) or a spectrum (International Association for Public Participation, n.d.) where citizens engage governance processes at various stages, in varying degrees of genuineness, and with different levels of influence over policy and impact on development outcomes. Against the

broadly accepted notion of participation as a gradient, various evaluative instruments have been put forward to measure it (see Medina-Guce, 2020b for a review of participation norms and instruments).

In the Philippines, participation in local governance has been measured mainly as compliance with statutory requirements. The Department of the Interior and Local Government (DILG), for instance, has been mandated to monitor whether LGUs have accredited CSOs and has given them sufficient seats in LDCs. Compliance to such has been included in the SGLG since 2014<sup>2</sup>. Moreover, beginning 2017, additional data was included on the actual attendance of CSOs in LDC meetings, whether they were tapped to provide technical assistance to LDC secretariats, and whether they submitted action plans to the LDC. Representation of CSOs and NGOs in key local bodies was also included in the SGLG: (i) the Local Disaster Risk Reduction and Management Council (LDRRMC, since 2016), (ii) Peace and Order Council and Anti-Drug Abuse Council (since 2017), and (iii) Solid Waste Management Board (since 2017).

The mere presence of CSOs in local bodies is, however, a narrow metric of participation. Recognizing this, the government commissioned the development of a new set of Participatory Governance Metrics (PGM). In undertaking this work, Medina-Guce (2020b) defined three dimensions of

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<sup>2</sup> In the 2014 and 2015 SGLG, data available was on whether CSOs were represented in the LDC or not. In the 2016 SGLG, data available was on whether the CSO representatives consisted at least one-fourth of the LDC membership. Beginning 2017, new variables were added to measure participation beyond their mere presence.

participatory governance which are measured by 15 indicators: (i) space or environment of participation, which pertains to how participatory governance is anchored in policy and enabled by access to information and institutional capacity; (ii) engagement or process of participation, which pertains to the quality of interactions between government and citizens; and (iii) outcomes or results of participation, which is not only about how program decisions and results are influenced but also on how government-citizen relations are changed. The tool has been piloted recently but has not been rolled out to all LGUs (also see Medina-Guce 2022a and 2022b for results of pilot tests).

## 2 Fiscal Openness and Its Impacts: Global Evidence

Specifically on participation in the budget, the Open Budget Survey (OBS) since 2006 has been regularly measuring fiscal openness<sup>3</sup> across countries (International Budget Partnership, n.d.). OBS measures participation through the presence of participatory mechanisms throughout the budget cycle alongside transparency through the availability and accessibility of eight essential budget documents and reports, and accountability through establishment of oversight from the legislature and audit. In the Philippines, the government made great strides in improving its OBS

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<sup>3</sup> Fiscal openness is in essence the broad umbrella used to characterize policies, reforms, and innovations that promote greater transparency, participation, and accountability in PFM. The Global Initiative for Fiscal Transparency (GIFT)—a global network of national budget ministries, international financial institutions, and non-government organizations advocating for greater fiscal openness—define such through a set of [High Level Principles on Fiscal Transparency, Participation, and Accountability](#) (n.d.).

scores and rankings after pursuing fundamental budget reforms coupled by efforts to bring the budget process closer to citizens (Capistrano, 2017).<sup>4</sup>

However, the evidence on the touted impacts of fiscal transparency and participation on the quality of governance and on development outcomes is mixed. In a systematic review on the impacts of transparency, participation, and accountability in public finance, de Renzio & Wehner (2017) found that of the studies conducted before 2015, “(v)ery few studies can plausibly claim to identify a causal effect of fiscal openness.”<sup>5</sup> These include a handful of experimental or quasi-experimental studies on how disclosure and participation mechanisms affect key development outcomes such as improved budget allocation and reduced corruption. A follow-up to this systematic review (Haus, et. Al, 2022) found growing evidence on the effect of open governance on budget process outcomes since 2015.<sup>6</sup> Specifically on citizen participation, while causal evidence remains thin, recent studies suggest that it has positive effects on budget

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<sup>4</sup> Capistrano (2017) documented the country’s rise from a country with limited transparency in 2006-2012 to one with significant budget transparency in the 2015 OBS with a score of 61; and with significant participation with 65. In the 2021 OBS, the Philippines continues to be a leader in the OBS, with a transparency score of 68, an oversight score of 74, and a participation score of 35. Though the latter is low, it is still significantly above the global average of 14.

<sup>5</sup> De Renzio & Wehner (2017) reviewed 38 studies that investigate how transparency and participation in the budget reduce corruption, improve governance, and promote socioeconomic development. Only eight (8) of these were able to establish causal links through experimental or econometric methods.

<sup>6</sup> Haus, Wehner & de Renzio (2022) reviewed more than 200 publications and papers, of which 32 were selected to be included in the systematic review after meeting criteria set: published since 2015, has an independent variable or treatment that relates to budget transparency or participation, specifies outcomes that relate to governance, development, or quality of the budget, and could make a claim to identify causality.

outcomes such as higher revenues, increased resources for health, and even attainment of outcomes such as reduced infant mortality.

In interpreting quantitative evaluations that find this weak causal link, Fox (2015) cites three takeaways. First, information disclosure is not enough as an intervention although it is a necessary step to enabling participation. Second, efforts on citizen monitoring “often lacks bite” in terms of giving citizens a greater voice and vote in decision-making. Finally, participatory mechanisms are often captured by local political elites. He argues for a nuanced approach to interpreting the evidence, which looks more deeply into the kinds of information and participatory mechanisms which are being offered by reforms.

Recently added to the literature on the impacts of fiscal openness is a new study (Elberry, et al., 2022) which explores its effects on the technical efficiency of public spending.<sup>7</sup> The study found an inverted U-shaped or concave relationship between transparency and spending efficiency: openness improves efficiency to an extent until excessive requirements create inefficiencies. However, the same relationship was not statistically significant for participation.

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<sup>7</sup> Elberry, et al. (2022) use a novel approach in that they first established a metric on the “technical efficiency” of public spending by countries using data envelopment analysis. This new metric was then to regressed against transparency and participation scores under the OBS.

### 3 Public Participation Impacts in the Philippines.

There is no lack of literature documenting the origins of Philippine civil society and their engagement in governance and public finance institutions (such as Tapales, 2003; Wurfel, 2004; and Dressel, 2012); the central importance of citizen participation in decentralization and reform (such as Aceron, 2018; and Medina-Guce, 2020a); government-led efforts (such as F. Magno, 2015; and Capistrano, 2017); or multiple case studies of innovative local governments and CSOs.

On the latter, the most prominent of which is the celebrated case Naga City, the hometown of the late Mayor and former Interior and Local Government Secretary Jesse Robredo, where the People's Council concept was born. The Naga City People's Council was mandated by local fiat to be an independent aggrupation of CSOs and NGOs in the city and be present in all local special bodies and legislative committees (F. Magno, 2015). On the CSO side, the Concerned Citizens of Abra for Good Government (CCAGG) emerged in the post-Marcos milieu to pioneer the citizens' monitoring of local infrastructure projects, even successfully causing the removal of erring public works officials (Dressel, 2012).

However, studies that quantify the impacts of participatory governance have been limited. A notable example of such is a study by Capuno (2005), which tested the viability of human development indicators as a proxy for local governance quality, and explored other themes of local governance such as participation. Arguing that "social inclusion should itself count as development," the study found through a household survey that participation has intrinsic benefits: membership in organizations as well



as direct involvement in government projects were linked to satisfaction on the incumbent local administration and some key local officials. In a follow up study, Capuno and Garcia (2008) used propensity score matching to find out if information about the Governance for Local Development Index (GI) could entice citizens to take part in civic activities or be a member of local organizations.

In the Philippines, the Kapit Bisig Laban sa Kahirapan-Comprehensive and Integrated Delivery of Social Services (KALAHI-CIDSS) was implemented with World Bank financing from 2003. Like community driven-development programs globally, KALAHI-CIDSS incorporated components of participatory budgeting: through barangay assemblies, beneficiaries selected projects to be funded. Saguin (2018) revisited household survey data of KALAHI-CIDSS beneficiaries and, used differences-in-differences to tease out causal effects. He found that the program helped to improve the income of poor households, while there was no impact on other social outcomes like access to services, likelihood to participate, and trust (also cited in Haus, et al., 2022).

Participatory governance reforms also attempted to establish mechanisms to parallel existing local bodies under the LGC, such as the case of Bottom-Up Budgeting (BUB). In their evaluation of the BUB program during the administration of President Benigno S. Aquino (2010-2016), Manasan, et al. (2017) found that BUB has improved perceptions on public service access

and delivery. However, it found that the effect of the program on local poverty reduction—the overt objective of BUB—was unclear.<sup>8</sup>

Subsequently, the administration of President Rodrigo R Duterte (2016-2022) abolished BUB. They, instead, pivoted back to strengthening existing local mechanisms like the LDC. It implemented the Assistance to Municipalities (AM) program that, among others, incentivized LGUs to improve the functionality of their LDCs and ensure adequate CSO representation. In a baseline study of governance gaps to be addressed by AM, Sicat, et al. (2020) fielded a survey among LGUs and CSOs. It found, among others, that majority of LGU representatives perceived CSO participation to be desirable, and believed that CSOs should participate in all stages of local development planning. Meanwhile, most CSOs surveyed believed that they are influential in local development planning: from proper prioritization to ensuring sectoral representation.

Most recently, C. Magno et al. (2022) inquired into how local governments' fiscal performance is influenced by several factors, including metrics of local governance that are available through the SGLG. This includes CSO participation, albeit narrowly defined as LGUs' compliance to the required proportion of CSOs in LDCs and special bodies. The study found no statistically significant relationship between CSO representation and

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<sup>8</sup> In a notable commentary on BUB, Acheron (2019) said the program failed to empower grassroots CSOs from the center because the same central bureaucracy failed to ensure that the grassroots projects were carried through.

LGUs' budget utilization rates (BURs), though the authors nuance this as due to the insufficient measurement of participation. Stronger determinants of the BUR that were found by the study included the size of budgets particularly of capital outlays (negatively influences BUR), vulnerability to disasters (negative), and adverse audit observations (positive).

In summary, global norms on public participation and literature on its impacts of on the quality of governance and on development outcomes have become richer in recent years. In the Philippines, studies have been produced to quantify participation through specific policy reforms and their effects. Although evidence that explicitly links local participation with the quality of local governance is rather thin, there is an opportunity to use available observational data collected by government on CSO participation in LDCs for econometric analysis.

### III.

## Hypotheses and Methodology

This study aims to carry on with investigating this linkage between CSO participation in LGUs and the quality of governance—measured through local fiscal performance—using a variety of available metrics. It aims to test the following hypotheses:

- H<sub>0</sub> CSO participation has no discernable effect on an LGU's budget performance.
- H<sub>1</sub> CSO participation is associated with better LGU budget performance.
- H<sub>2</sub> CSO participation may be linked to better budget performance under certain conditions.

The null hypothesis is what the present literature (de Renzio and Fung, 2017; Elberry et al., 2022; and C. Magno et al., 2022) has so far established: that there is no statistically significant evidence of participation improving budget performance. In contrast, hypothesis #1 is the pure yet elusive ideal that CSO participation helps to improve the quality of local governance as measured by an LGU's fiscal performance. Meanwhile, hypothesis #2 explores a more nuanced view of participatory governance that Fox (2015) and Medina-Guce (various) have sought to unbundle. For this study, this nuanced hypothesis is defined as whether the effect of citizen participation on budget performance could be more evident: (a) in specific sectors or aspects of expenditure; and (b) within types of LGUs (i.e., among provinces, cities, and municipalities).

To test these hypothesis, this study will analyze the relationship between CSO participation and budget performance outcomes through panel regression while controlling for LGU effects, using models patterned after C. Magno, et al. (2022).<sup>9</sup>

The panel linear model is specified as follows:

$$y_{hit} = D'_{it}\delta + X'_{it}\beta + u_{it} \quad [1]$$

where  $y_{hit}$  stands for budget performance measured by the  $h^{\text{th}}$  metric of the  $i^{\text{th}}$  LGU in year  $t$ ;  $D_{it}$  are measures of participatory governance;  $X_{it}$  represents the governance and socioeconomic characteristics of LGUs; and  $u_{it}$  is the error term, which may be decomposed further as the sum of  $\alpha_i$  (LGU effects) and  $\varepsilon_{it}$  (idiosyncratic error).<sup>10</sup> The rest of this section spells out the methodology of this study given the limitations of the available data as well as assumptions to be made based on these.

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<sup>9</sup> For reference, C. Magno et al. (2022) used the following model specification:

$$\ln BUR_{it} = \beta_0 + \alpha \ln \ln (U_{it}) + \gamma V_{it} + \delta W_{it} + \epsilon X_{it} + \sigma Y_{it} + \pi Z_{it} + \mu_{it}$$

where  $BUR_{it}$  is the budget utilization rate of LGU  $i$  at time  $t$ ;  $U_{it}$  is a vector that contains various budget data;  $V_{it}$  is a vector that contains several financial indicators;  $W_{it}$  is a vector that contains a couple of social data variables;  $X_{it}$  is a vector that contains the good governance indicators;  $Y_{it}$  is a vector containing the disaster vulnerability variables; and  $Z_{it}$  is a vector that contains dummy variables indicating municipality, city, or province. This thesis simplified the model specification to focus on CSO participation.

<sup>10</sup> This main model will be compared against a model specification without control variables, i.e., testing the direct relationship of  $D_{it}$  with  $Y_{hit}$ . Annex C spells out all the regression analysis, but this paper only cites results from the main specification.

## 4 The Data

This study constructed a data set which combines local budget and fiscal performance data with available measures of local participation and other crucial covariates. The data set builds on the work already done by the World Bank (2021) and by C. Magno et al. (2022), by enhancing the indicators on citizen participation by drawing from the SGLG data set of the DILG (see Table 1 below and Annex A for descriptions of the variables used. Section IV provides descriptive analyses of the said data).

**Table 1. The Variables Used**

Indicator	Description
<b>y: Budget Performance</b>	
Local Revenue Growth	Year-on-year percentage change in revenues of an LGU.
Dependence on National Government Transfers	Proportion of national government transfers in an LGU's total receipts. Computed for only IRA / NTA.
Share of Productive Expenditures (Class)	Ratio of budget allocated for maintenance and other operating expenditures (MOOE) and capital outlays (CO) against total approved budget. Additionally, shares of MOOE and CO of the total budget.
Share of Productive Expenditures (Sectors)	Proportion of budget allocated for all sector or functions except general public services and debt servicing against the total budget. Additionally, share of key functions in the budget: education, health, social services, economic services, Local Development Fund (LDF) and Local Disaster Risk Reduction and Management Fund (LDRRMF).
Per Capita Expenditure	Ratio of nominal actual budget utilization and population in 2018, aggregate and per key function and expense class (see above).
Budget Utilization Rate	Ratio of actual budget utilization over the approved (or final) budget for the current year. Computed for the total budget and for key functional / sectoral allocations and expense classes (see above).
<b>D: Participation &amp; Open Government</b>	
CSO Membership in LDC	CSO participation metrics under the SGLG: (i) dummy representing whether an LGU's LDC has at least 25% of its members from CSOs; (ii) proportion of CSO members in the LDC; (iii) dummy of whether the LDC tapped the CSO to provide technical support to its secretariat;

Indicator	Description
	(iv) dummy of whether the CSO members participated in LDC meetings and deliberations; (v) dummy of whether a CSO member submitted a CSO action plan to follow through on LDC discussions.
CSO Membership in LDRRMC Committee	Dummy variables on whether an LGU's LDRRMC has at least four (4) CSO members.
<b>X: Control Variables</b>	
<i>Set 1: Unique Functional Characteristics</i>	
Size of functional budgets	Natural log of the final budget amount of: (i) expense classes, i.e., personnel services, MOOE, CO, debt servicing; (ii) sectors and funds, i.e., general public services, economic services, social services, education, health, local development fund, local disaster risk reduction and management fund.
<i>Set 2: Governance and Capacity Indicators</i>	
Budget Per Capita	Final budget divided by the population.
Seal of Good Local Governance (SGLG) Scores	Aggregated pass/fail scores of an LGU in the following: (i) financial administration; (ii) disaster preparedness; (iii) social protection; (iv) peace & order; (v) ease of doing business and competitiveness; (vi) environmental management; (vii) culture and heritage; (viii) overall score.
Transparency and Access to Information	Dummy whether an LGU has complied with the Full Disclosure Policy (FDP) requirements to post certain financial documents (i) online on the FDP portal and (ii) physically in conspicuous places
Audit Observation	Dummy on audit observation rendered by COA on the financial accounts of the LGU: (i) unqualified; (ii) qualified (as benchmark); (iii) disclaimer; (iv) adverse; (v) no opinion or report.
<i>Set 3: Socioeconomic Development</i>	
Population Density, 2018	Population in the province, city, or municipality divided by land area
Poverty Rate, 2018	Official estimates of income poverty (for provinces and some key cities) and small area estimates (for cities and municipalities)
Urban Population, 2018	Proportion of urban population in the province, city, or municipality

In defining the empirical strategy, the limitations of the available data must be accounted for. First, this study's metrics of participatory governance may not provide a full, substantive picture of the quality and results of participation. Although the inclusion of CSOs in the deliberations of LDCs is a necessary step to providing citizens with the

opportunity to influence local priorities, their mere presence may not be a sufficient factor. Unfortunately, more substantive measurements are not available on a broad scale: the proposed Participatory Governance Metrics of Medina-Guce (2020b) has only been piloted in Region 7.

Second, participatory governance does not occur in a vacuum. The participatory governance literature argues that mechanisms for citizens' participation require an enabling environment to work. Such may include difficult-to-measure factors, e.g., progressiveness of the local leadership, the openness of the LGU to citizen's participation, LGU capacity overall and to manage CSO participation, the robustness of local civil society and private sectors, among others. These indicators could be thought to influence both the outcome and explanatory variables and, moreover, not currently measured rigorously. Some factors that characterize the political and economic environment in an LGU—e.g., participation in elections, contestability of elections, presence of political clans and dynasties, etc.—may be included in future studies.

Finally, this study does not aim to determine causal relationship between citizen's participation on local budget outcomes. It only wishes to examine if a correlation exists. This is because of the limitation in data that will allow us to control for the effects of other relevant variables.



## 5 Panel Regression Approach

The data set being used in this study is an unbalanced data set. While the data set covers all of 81 provinces, 146 cities, and 1,488 municipalities, not all of these LGUs have valid data points, and some of which have missing variables. For instance, some variables of participation are only available in the SGLG for 2017 to 2018. The LGU budget data set may also have some encoding errors owing to the novel method used. Also, there are outliers that need to be clipped out lest they bias the results.<sup>11</sup> For instance, there are observations where the CSO membership is an overwhelming majority of the LDC, up to 100%: an implausible scenario.

Apart from the missing values, omitted variable bias may also likely be present, as described in the preceding subsection, and may cause endogeneity issues. A fixed effects (FE) model may be conventionally used as a strategy to address these issues, however, this relies on the assumption that the unmeasured characteristics as well as other unobserved individual fixed effects are time-invariant. Certain geographic characteristics of these LGUs may obviously be considered as time invariant, but others such as LGU capacity, robustness of CSO sector, and even characteristics of the leadership may change over time. Meanwhile, a random effects (RE) model, which was used in C. Magno et al. (2022), may be a more efficient model compared to fixed effects. Even as it may not be able to fully control for unobserved heterogeneity across the LGUs, the random effects model

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<sup>11</sup> The study employs a form of “Winsorization” where a variable’s values that fall below the 1<sup>st</sup> percentile and above the 99<sup>th</sup> percentile were changed to “NA.”

retains information that fixed effects regression disregards. Its use, however, assumes that the unobserved heterogeneity is exogenous, and violation of this assumption may lead to a certain level of bias in the model. This is an assumption that C. Magno et al. (2022) were willing to make and is thus worth considering in this study.

With the oftentimes “confusing and contradictory” guidance in available literature on model selection,<sup>12</sup> Gelman and Hill (2007) have advised that one should “always use multilevel modeling (‘random effects’).” This study follows this advice through the specification of a “nested” model where the error components include a within-group effect defined as Region of the LGU. This hierarchical modeling may help control for unobserved effects of the regional grouping of the LGUs and its associated implications on political and socioeconomic development without the overly restrictive imposition of individual fixed effects. The nested random effects model is specified as follows:

$$y_{hijt} = \mathbf{D}'_{ijt}\boldsymbol{\delta} + \mathbf{X}'_{ijt}\boldsymbol{\beta} + u_{ijt} \quad [2]$$

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<sup>12</sup> The selection of the panel regression model to be used may not be straightforward. One might conduct a Hausman specification test to determine whether fixed effects and random effects are systematically different, perhaps in the procedure that Dougherty (2011) presents.

However, apart from the considerations spelled out in Part B and the impracticality of shifting between fixed and random effects in the narrative depending on the results of the specification test, recent empirical studies (such as by Clark and Linzer, 2015) showing that such a test may not necessarily be a reliable tool.

where  $j$  is an index representing regions where LGUs belong; and where the error term  $u_{ijt}$  is composed of the group effect  $\mu_j$ , the nested effect  $v_{ij}$ , and idiosyncratic error  $\varepsilon_{ijt}$ .

## 6 Empirical Strategy

Guided by the above, this study adopts the following empirical strategy. The first is that the availability of citizen participation variables will be prioritized. As such, only observations from years 2017 and 2018 will be included in this study, when all the explanatory variables are available. This also somehow addresses the endogenous effect of the 2016 elections.

Second, the regression analyses will be conducted across all LGUs and then for each LGU type. This segmentation of the regression analysis may not only help to control for heterogeneity but also surface nuances across and within the LGU types.

Third, each of these sets of regression analyses will test for all dependent variables: the six aggregate budget outcomes and the function-specific outcomes (e.g., budget share, expenditure per capita, and BUR for key expense classes and sectors). This study is not only interested in the relationship between participation and aggregate budget outcomes but also the possibility that key budget sectors are influenced more by CSO participation.

Fourth, this study primarily uses and cites the results of the nested random effects models [specification 2]. Alternative panel model specifications, most notably the fixed effects model, will be implemented in the background for comparison and will be cited in this study when relevant. Also implemented in the background are analyses that use a version of these models without control variables (see Annex C).

Fifth, while the inclusion of multiple variables in the model aims to avoid omitted variable bias, such may lead to multicollinearity. To minimize the effect of this eventuality, analyses were undertaken to identify potentially problematic variables and, as necessary, exclude them from the model. Stepwise regressions—or regression analyses that take the explanatory variables on CSO participation one by one—have also been undertaken to tease out any effects that may have been drowned out in the baseline model.

Sixth, the study also takes interest in how key variables may not necessarily be linear and how they may interact with each other. To recall, a nonlinear relationship between fiscal transparency and budget efficiency was found by Elberry, et al. (2022), where the positive effects of transparency are diminished and turn negative at a certain point. To test for nonlinearity, a squared estimator of the proportion of CSOs in the LDC will be specified. On interaction effects, it will be interesting to see how variables amplify or counteract each other.

Finally, it must be considered that five of the six main dependent variables are expressed as percentages where a linear model may not always be appropriate. As could be gleaned in the distribution plots in the exploratory data analysis (see Annex B), these variables are fairly normally distributed, and thus a linear model may still be useful.<sup>13</sup> But as key dependent variables are proportions that are bounded between 0 and 1, a beta regression model<sup>14</sup> may be worth considering and is thus implemented for four of the main dependent variables: NTA dependence, share of productive expense classes, share of productive sectors, and BUR<sup>15</sup>. Their results will be discussed in comparison to the results of the nested random effects model to check for consistency of findings.

The econometric analysis conducted for this study uses the **R** language for statistical computing (R Core Team, 2023) deployed through **Rstudio** (Posit Team, 2023). Key packages used are **plm** for the panel regression analysis (Croissant & Millo, 2008), **betareg** (Grün et al, 2012) for the beta regression, **tidyverse** for data cleaning and exploratory analysis (Wickham et al., 2019), **knitr** for formatting key sections of this report (Xie, 2023), and **stargazer** for generating regression tables (Hlavac, 2022).

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<sup>13</sup> Except that NTA dependence and the BUR are skewed to the left (*see Annex B*).

<sup>14</sup> Specifically, beta regression using logit and probit link functions. For each, two specifications are constructed: one where only control variables are specified (akin to the OLS or “pooling” model), and another where dummy variables for provinces are added to emulate fixed effects at the level of provinces (dummy variables per LGU could not be accommodated by the computer program).

<sup>15</sup> BUR values above 100% are clipped out to accommodate the beta regression restrictions. Though ideally actual spending should be kept within the approved budget, in reality expenditures may exceed the budget due to a number of reasons including improper accounting of prior year expenditures and additional spending under supplemental appropriations.

## IV. The Panel Data: Description & Exploratory Analysis

This study constructed a data set which combines local budget and fiscal performance data with available measures of local participation and other crucial covariates. The main indicators are described below alongside descriptive analyses (*See Annex B for full summary statistics*).

### 1 Dependent Variable: Budget Performance ( $y_{hit}$ ).

The data set used by C. Magno et al. (2022) built on the work of the World Bank (2021), which was in turn built using novel methods. World Bank used machine learning to extract detailed budget information from financial audit reports on LGUs by the Commission on Audit (CoA). Such data, which spans from 2015 to 2018,<sup>16</sup> includes the proposed, approved (or final), and actual (implemented) budgets of LGUs at the level of expense classifications within budget functions or sectors. The World Bank also drew data from the Statement of Receipts and Expenditures of the Department of Finance – Bureau of Local Government (DoF-BLGF). This data set enabled the computation of the Budget Utilization Rate (BUR)—the ratio of actual and final budgets—for each LGU, for their overall utilization as well as utilization of budgets per expense class and sector.

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<sup>16</sup> As explained in Section V, this study focuses on fiscal years 2017 to 2018 to prioritize the availability of participation data. Moreover, the data has been Winsorized to address extreme outliers.

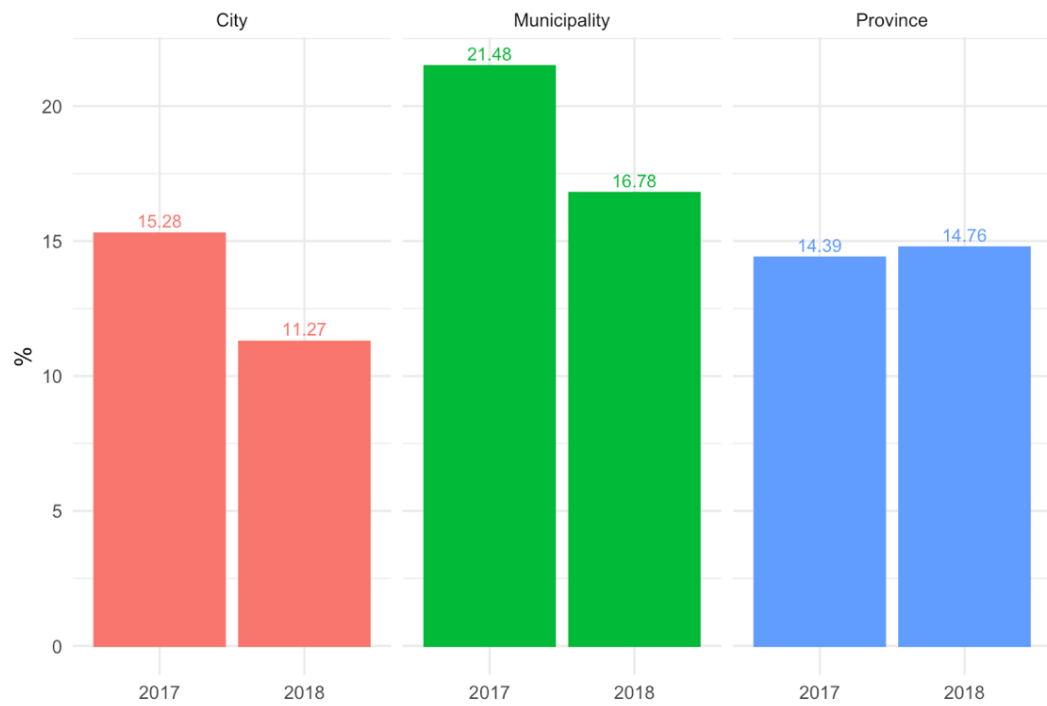
However, it must be recognized that budget utilization presents a narrow picture of LGUs' fiscal health and priorities. Broadly speaking, public financial management (PFM) systems should help governments achieve fiscal discipline, allocative efficiency, and operational efficiency (Campos and Pradhan, 1997). These PFM goals are approximated by indicators that have been derived from the World Bank data set.

***Fiscal Sustainability.*** In central government contexts, aggregate fiscal discipline pertains to governments' ability to balance expenditures and revenues, and is typically measured by the fiscal deficit. However, LGUs are prohibited by the LGC to incur deficits. Moreover, LGUs have raked up fiscal surpluses, indicating not just a glut in resources but the inability to utilize these. For this paper, we use variables that measure the fiscal sustainability of LGUs through increasing LGUs' fiscal means and reducing their dependency on national transfers.

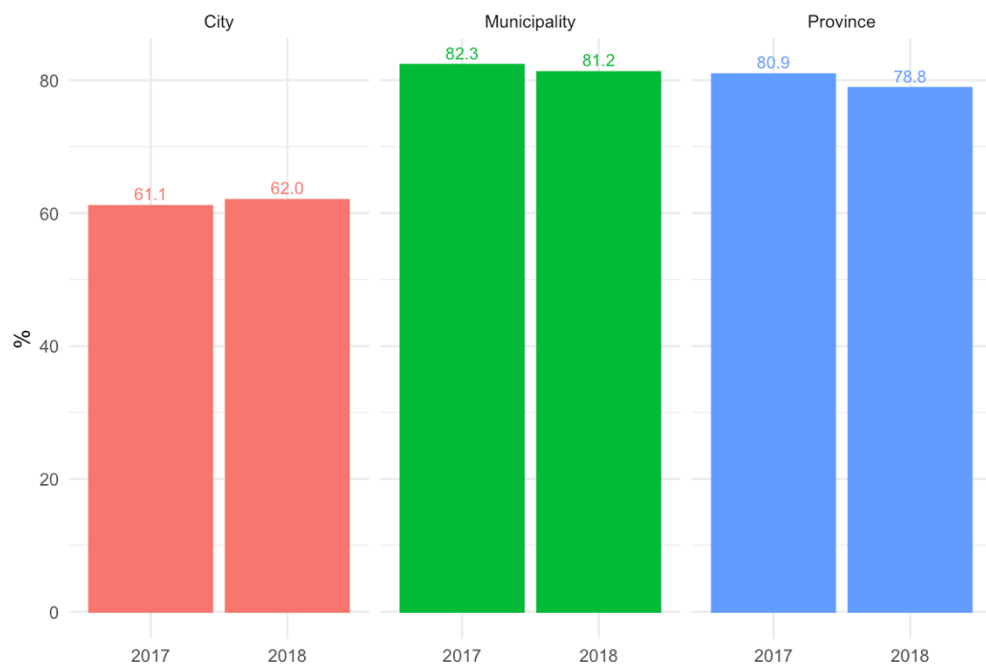
*Growth of locally generated revenues* indicates LGUs' ability to collect local real property, business, and other taxes and revenues. From 2017 to 2018, annual local revenue growth averaged 18%. Although municipalities experienced the highest growth—as high as an average of 15% in 2017—cities continue to generate significantly higher revenues compared to municipalities and provinces (see Figure 1).

Meanwhile, *NTA dependence* continued to be high at 80%. Municipalities and provinces are more NTA dependent, compared to cities which are more capable of generating revenues from real property, business, and other taxes (see Figure 2).

**Figure 1. Mean Annual Growth of Local Revenue**



**Figure 2. Mean NTA Dependency Rates**





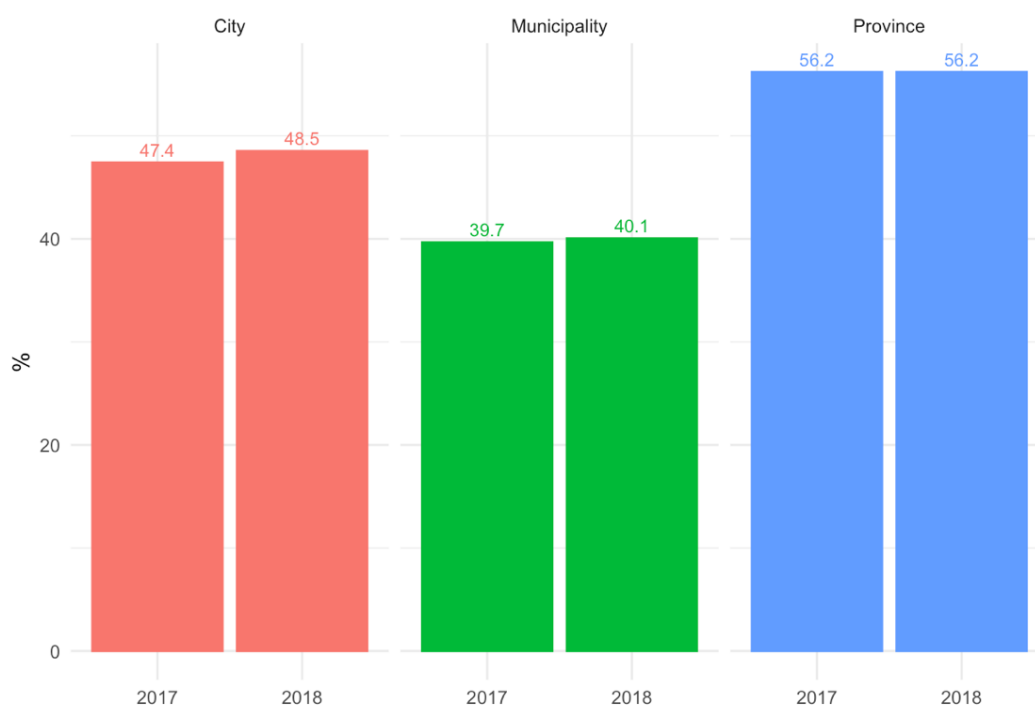
**Allocative Efficiency.** This outcome pertains to the ability of LGUs to spend on the right priorities: to allocate more resources to development needs. This implies that LGUs must increase the share of productive expenditures, as opposed to overhead and other expenditures not for socioeconomic development. There are two ways to measure productive expenditures. The first is by using the *combined shares of budgets for maintenance and other operating expenditures (MOOE) and for capital outlays (CO) in the total budget*. The remainder are budgets for personnel services (PS), debt servicing, and other unclassified items. This is, of course, an imperfect definition as MOOE still contains both overhead expenditures to maintain LGU operations as well as spending on goods and services needed to deliver socioeconomic programs. Based on this, 60% of LGUs' budgets, on average, are allocated for MOOE and CO, with provinces and cities allocating larger shares (See Figure 3).

**Figure 3. Mean Share of Productive Expense Classes in the Budget**



The second method is the *combined budgetary shares of education, health, labor and employment, housing, social services, economic services, the LDF, and the LDRRMF*. This results in a lower share of productive expenditures at an average of 41%. Still, provinces continue to allocate larger shares to productive expenditures at 56% (See Figure 4).

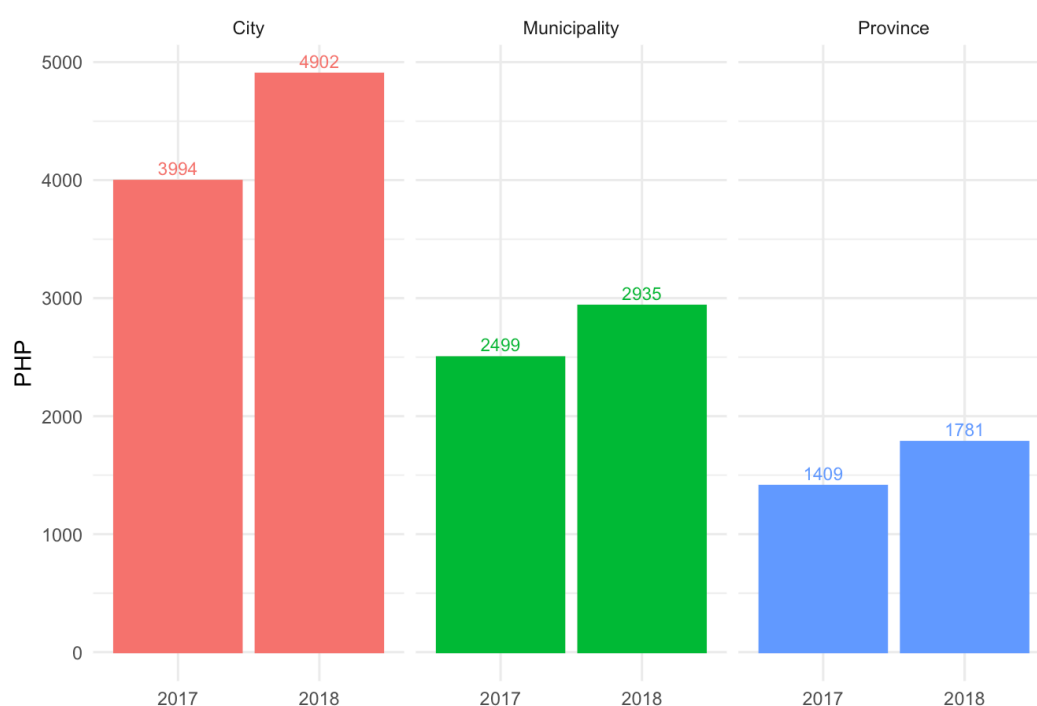
**Figure 4. Mean Share of Productive Sectors and Funds in the Budget**



**Operational Efficiency.** Finally, this pertains to the ability of LGUs to utilize resources efficiently while optimizing value for money, and ultimately to deliver services with measurable development. For this study, we use two indicators of operational efficiency: (a) per capita expenditures, which is a rough proxy for LGUs' overall capability to deliver services, and (b) the budget utilization rate (BUR), which stands for the rate of actual expenditures against the approved budgets of LGUs.

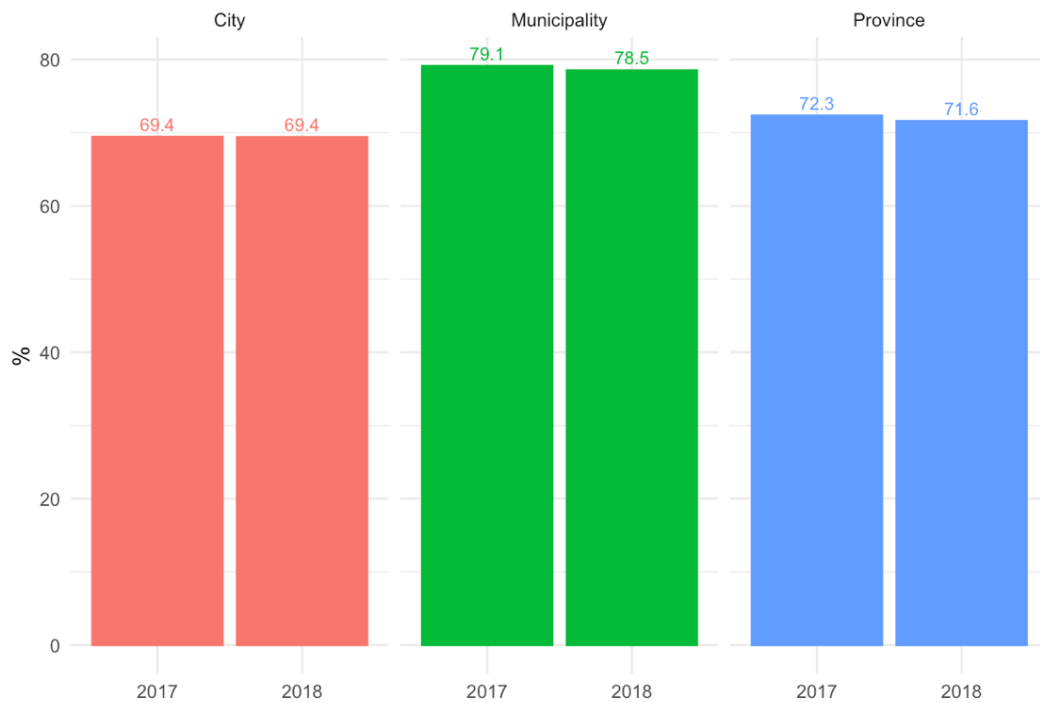
*LGUs per capita expenditures* average PHP 3,274 annually. As expected, cities spend more per capita at PHP 4,742. Meanwhile, provinces spend the least per person at PHP 2,129 (See Figures 5). Growth in per capita expenditures also generally follows growth in per capita productive spending, which averages PHP 1,301 yearly across the period covered.

**Figure 5. Mean Expenditures per Capita**



The *budget utilization rate* or BUR has been the subject of the study by C. Magno et al. (2022). On average, LGUs utilize about 78% of their budgets. Cities tend to have lower BUR at 69%, while municipalities' are higher at 79% (See Figure 6).. The overall BUR of LGUs have been decreasing as LGUs are not able to absorb increasing budgets particularly of capital outlays (World Bank, 2021; C. Magno et al, 2022). The LGUs' utilization of their productive budgets, including capital outlays, is lower at 72%

**Figure 6. Mean Budget Utilization Rate**



## 2 Explanatory Variable: Participation ( $D'_{it}\delta$ ).

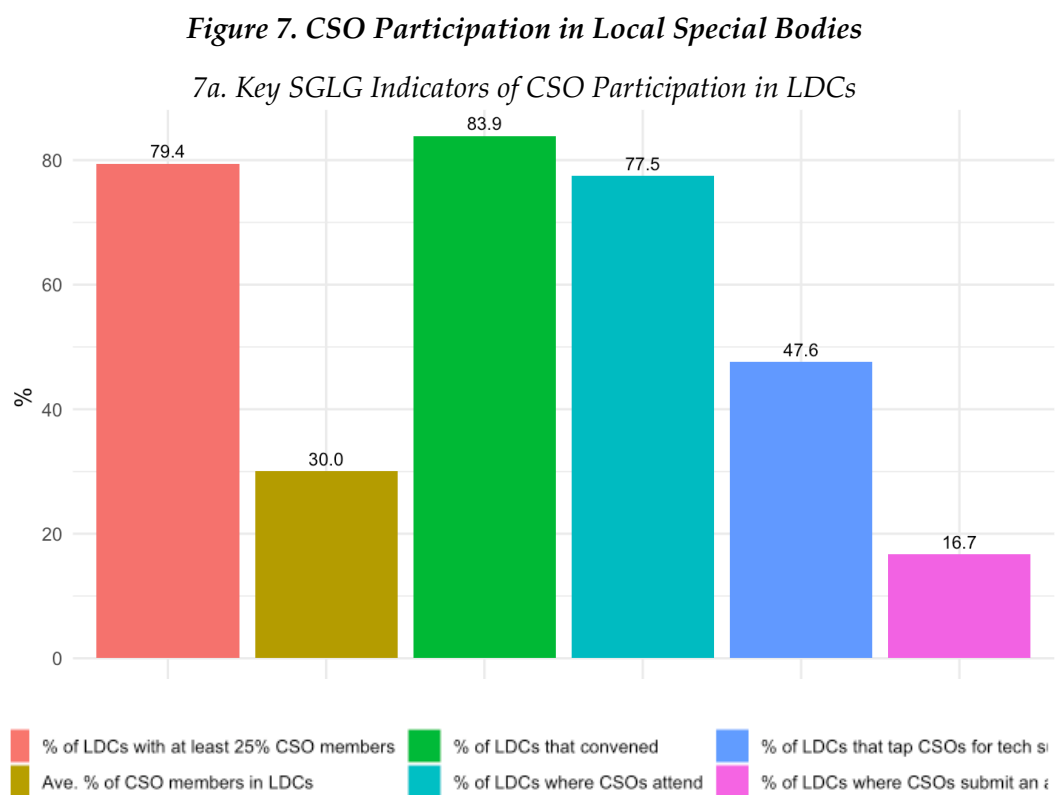
Beginning 2017, measures on the functionality of LDCs have been added to the SGLG. These measures include whether the Council was organized and if CSO members of the council meet or exceed the 25% requirement of the LGC. Other indicators that are available in the SGLG<sup>17</sup> are: (a) whether the number of CSOs in the LDC meets the minimum 25% of the membership; (b) the proportion of CSOs as members in the LDC; (c) whether the LDC tapped CSOs—non-government organizations, academic institutions, or research institutions—to provide technical

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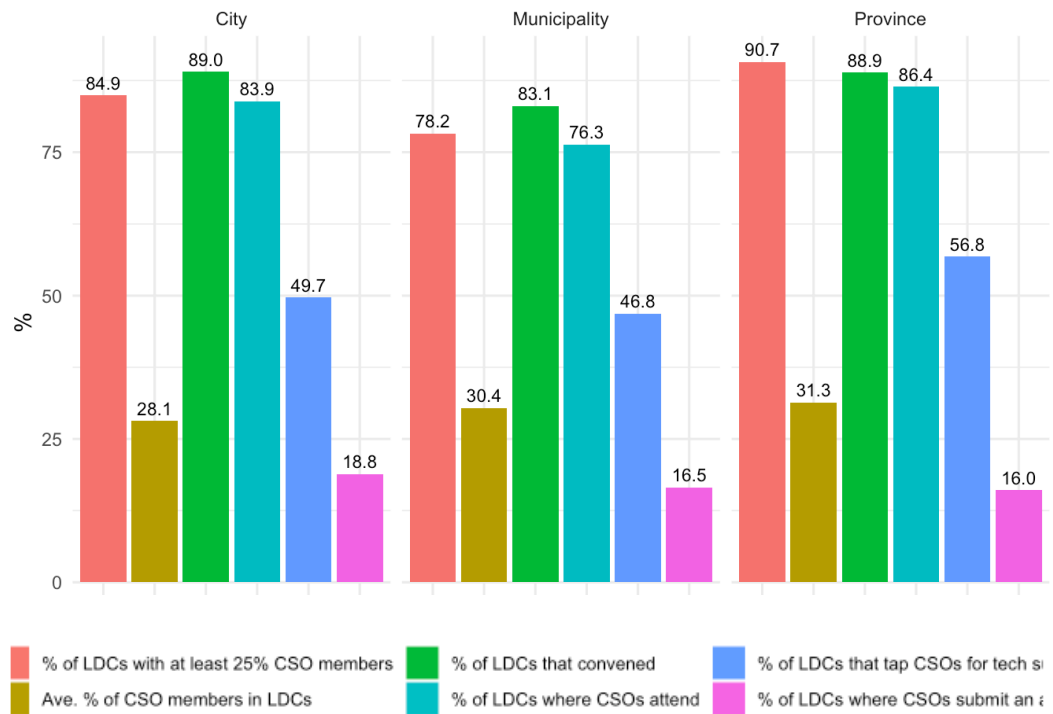
<sup>17</sup> Each SGLG round has a detailed methodology on the fiscal years covered, and this tends to change across rounds, but typically these cover the prior year's outcomes. For simplicity, we assume that an SGLG covers outcomes from the prior fiscal year.

support to the LDC secretariat; (d) if the CSO-members actually participated in the LDC discussions; and (e) if the member-CSOs submitted an action plan to follow up on LDC deliberations.

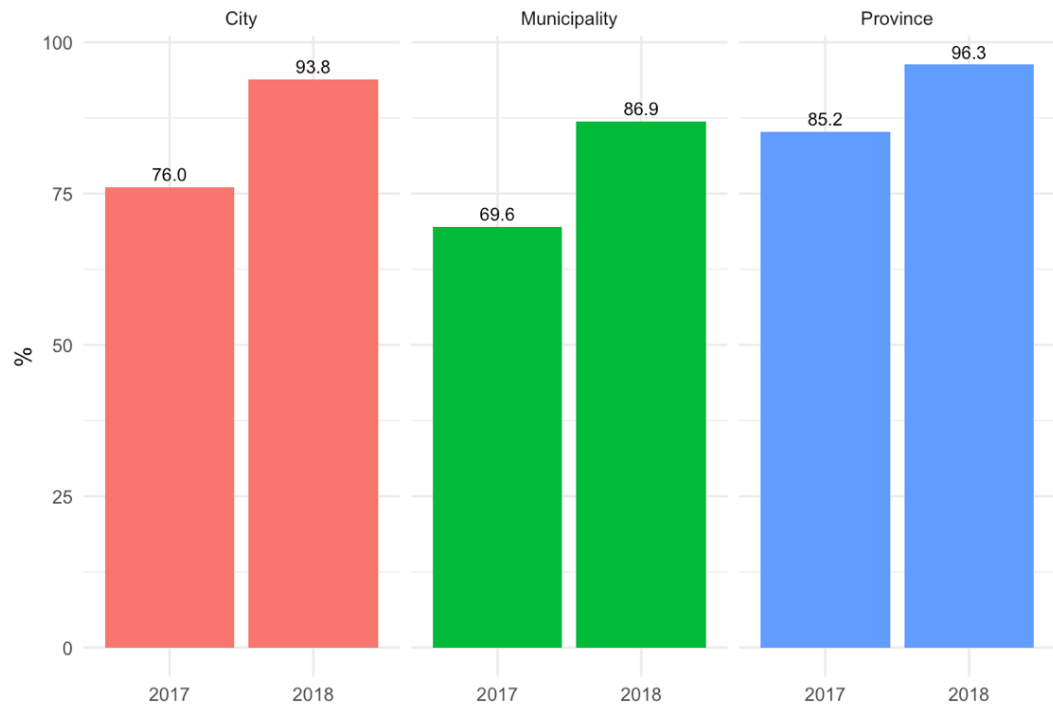
These SGLG indicators measure varying depths of CSO participation: from mere presence (about 70% of LGUs met the minimum CSO representatives in the LDC) to more meaningful engagement (about 17% of LGUs have CSOs submit an action plan). Though the indicators do not reveal the substance of LGU-CSO engagements, these indicators are useful for now in illustrating the funnel of citizen participation. (see Figures 7a-7d). The representation of (f) at least four (4) CSO members in the Local Disaster Risk Reduction and Management Council (LDRRMC) will also be used as an explanatory variable.



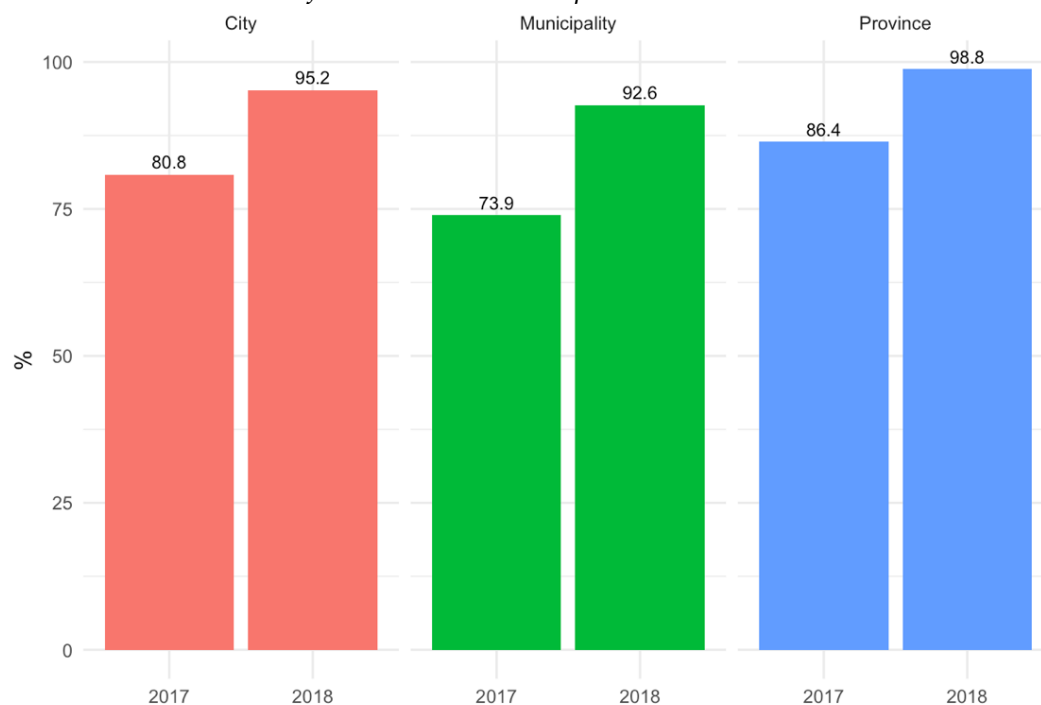
7b. Key SGLG Indicators of CSO Participation in LDCs, Per LGU Type



7c. Proportion of LGUs that Meet Minimum 25% CSO Membership



*7d. Presence of Minimum 4 CSO Representatives in LDRRMCs*



Meaningful participation cannot be achieved without citizens' access to information and accountability mechanisms. For one, the SGLG measures compliance to the Full Disclosure Policy (FDP): (i) posting of financial reports in conspicuous places in the LGU office, and (ii) submission to the DILG's FDP Portal (See Figure 8).

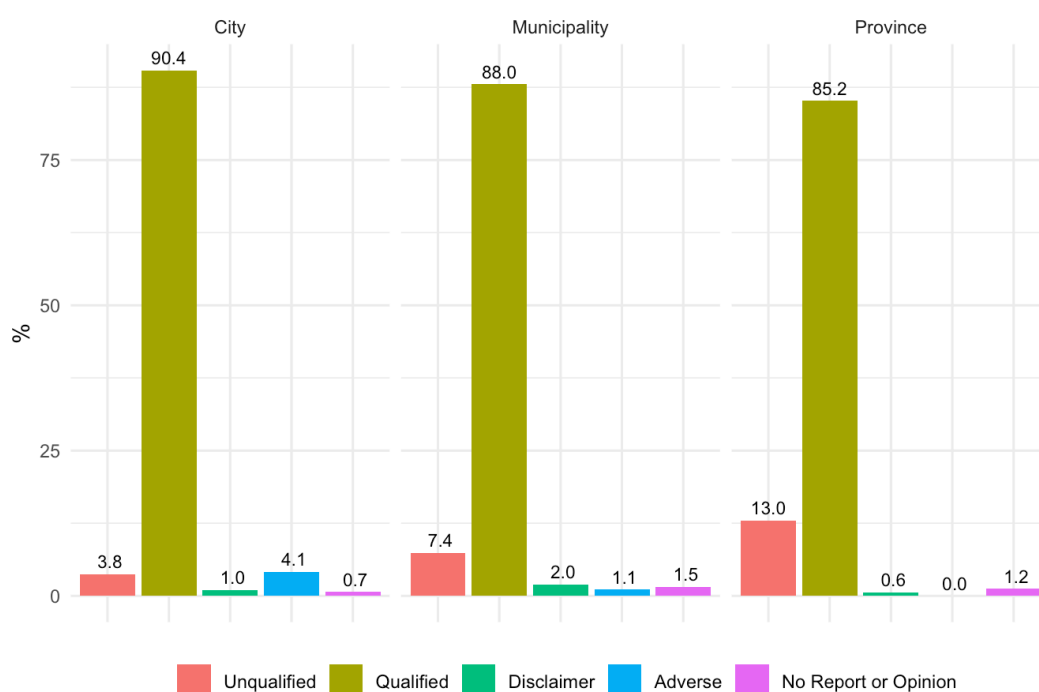
*Figure 8. LGU Compliance with the Full Disclosure Policy*



On the other hand, accountability is understood in many ways: from having strong oversight from the legislature and an independent audit office, to the direct accountability through the elections. For this study we use the audit rating provided by the Commission on Audit (CoA) on the financial accounts of LGUs. The SGLG also considers the opinion made by the Commission on Audit (CoA) on the LGU in its annual financial audit.

The CoA renders an opinion on whether the financial accounts of the LGU is unqualified, qualified, disclaimer, or adverse. CoA (2022) has clarified that these opinions are not “ratings” or “grades” given to an agency’s accounts but an assessment on whether the financial statements are prepared, in all material respects, in accordance with applicable financial reporting standards. Nevertheless, these audit opinions indicate the capability of the LGU to properly account for their financial transactions. An overwhelming 88% of LGUs have qualified findings (*see Figure 9*).

**Figure 9. COA Audit Opinions on LGU Financial Accounts**

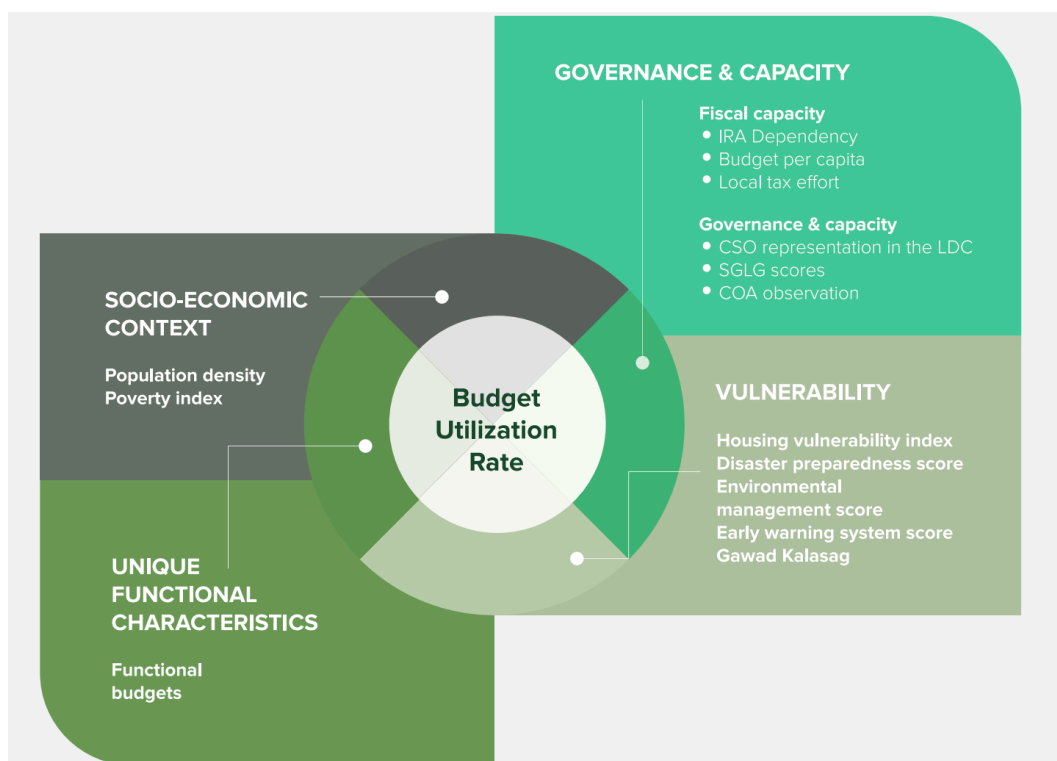




### 3 Control Variables ( $X'_{it}\beta$ )

The data set already assembled by C. Magno et al. (2022) draws from other data sources to analyze the potential determinants of the BUR (see Figure 10 below). This study will adopt these variables as controls under the second specification, albeit with modifications.

*Figure 10. Analytical Framework in C. Magno et al. (2022)*



First, indicators on the unique functional characteristics of LGUs will be included. This pertains to the size of the current-year budgets of LGUs for all expense classes and sectoral categories. The values are transformed to their natural log.

Second, indicators on governance and capacity will be included. However, this study already uses local tax effort and IRA dependency as outcome variables and CSO representation and CoA audit opinions as explanatory variables. Instead, the following will be included: (a) dummies for LGU type (province as reference), as a rough indicator of capacity (b) budget per capita, as a rough indicator of capacity; and (c) LGU attainment of pillars of the SGLG: Financial Housekeeping, Disaster Risk Management, Social Protection, Ease of Doing Business, Peace and Order, Environmental Management, Culture and Tourism, and the Overall Rating.

Finally, socioeconomic context indicators will be included, mainly poverty incidence, population density, and share of urban population in 2018. Unlike in C. Magno et al. (2022), this study will not have a distinct group of covariates on vulnerability because the SGLG environmental management and disaster preparedness scores are already in the governance and capacity pillar. The author also has no access to the data set on the Housing Vulnerability Index (Healey et al., 2022).

## V. Regression Analyses

To recap, the regression analysis were conducted for each of the dependent variables representing aggregate budget outcomes, i.e., year-on-year local revenue growth, NTA dependence, share of productive spending in both definitions, spending per capita, and BUR (subsection 1) as well as budget outcomes that can be disaggregated per key budget dimension, i.e., MOOE, CO, education, health, social services, economic services, LDF, and LDRRMF (subsection 2). As described above in the empirical strategy, this study primarily reports the results of the nested random effects models, while the alternative panel models as well as beta regressions are run in the background for comparison. These are followed by explorations into nonlinearities and interaction effects. This section ends with a discussion of regression results for each LGU type, comparing these against the results of the analyses when including all LGUs.

### 1 Regressions on Aggregate Budget Outcomes for All LGUs

First, on *fiscal sustainability*. CSO participation's influence on local revenue growth is insignificant. At best, this may indicate that local revenue generation may not consistently be a topic of discussion in CSO engagement of LDCs. Meanwhile, a higher proportion of CSO members in LDCs is positively associated with NTA dependence. This result from the nested random effects model is validated by the beta regression. The correlation needs to be explored further, as it may indicate that CSOs tend to be present in less fiscally capable LGUs.

Second, on *allocative efficiency*. There was no statistically significant relationship between CSO participation and the share of productive expenditures (defined as MOOE + CO). When using the alternative definition of productive expenditures (net of GPS and Others), a negative and statistically significant relationship exists with CSO assistance to LDC secretariats. This may indicate that LGUs with less fiscal space for productive spending tend to tap external technical assistance from CSOs. The results of the beta regressions validate these findings.

Finally, on *operational efficiency*. CSO participation through the share of CSO members in the LDC is positively associated with spending per capita in a statistically significant way. This correlation, however, may be nonlinear: the quadratic form of the variable indicates a concave direction. Meanwhile, CSO participation's influence on budget utilization is not conclusive: in the base models there was no statistically significant relationship, consistent with the findings of C. Magno et al (2022). The beta regression confirms this lack of a relationship, while the stepwise regressions show that a positive relationship may exist between CSO technical assistance to the LDC and the BUR.

In summary, at least looking at aggregate budget outcomes for all LGUs, CSO participation is positively associated with NTA dependence and per capita spending, while it is negatively associated with the share of productive expense classes. Meanwhile, its influence on local revenue growth, the budgetary share of productive sectors, and budget utilization is inconclusive at best (*See Table 1 and details in Annex C1*). A per-function analysis and per-LGU class analysis will be necessary to unbundle

nuances, if any, on how CSOs affect budgetary outcomes. The alternative models are mostly consistent with the results of the nested random effects model regression, with the beta models consistently showing larger effect sizes for the statistically significant covariates and better fit in terms of R<sup>2</sup>.

**Table 2. Nested Random Effects (RE) Models, All LGUs**

	Dependent variable:					
	locrevgrwth	ntadepend	prodshare1	prodshare2	spendpercap	bur
cso25pct	0.030 (0.022)	-0.001 (0.007)	0.009 (0.007)	0.007 (0.008)	121.632 (90.102)	-0.010 (0.008)
cso25pct	-0.070 (0.081)	<b>0.063**</b> <b>(0.029)</b>	-0.005 (0.028)	-0.008 (0.030)	<b>1,020.181***</b> <b>(378.506)</b>	0.046 (0.033)
csoattend	0.002 (0.019)	-0.005 (0.006)	-0.001 (0.006)	-0.003 (0.007)	-30.978 (80.378)	0.004 (0.007)
csoassist	0.003 (0.014)	0.000 (0.005)	-0.001 (0.005)	<b>-0.013***</b> <b>(0.005)</b>	-75.379 (59.795)	-0.000 (0.005)
csoplan	0.012 (0.017)	-0.002 (0.006)	0.002 (0.005)	-0.002 (0.006)	41.702 (71.626)	0.008 (0.006)
Constant	<b>0.177***</b> <b>(0.056)</b>	<b>0.782***</b> <b>(0.023)</b>	<b>0.081**</b> <b>(0.038)</b>	<b>0.357***</b> <b>(0.035)</b>	-409.572 (291.978)	<b>0.773***</b> <b>(0.034)</b>
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,924	2,927	2,702	2,680	2,952	2,701
R <sup>2</sup>	0.019	0.296	0.342	0.255	0.350	0.272
Adjusted R <sup>2</sup>	0.007	0.288	0.333	0.246	0.342	0.263
F Statistic	<b>51.23**</b>	<b>1,127.39***</b>	<b>1,101.83***</b>	<b>775.75***</b>	<b>1,523.75***</b>	<b>650.14***</b>
Results of Alternative Models:						
Beta Reg. (Probit)	not applicable	consistent, with larger coefficient	consistent, with larger coefficient	consistent, with larger coefficient	not applicable	results consistent
FE Panel	<i>cso25pct</i> negatively correlated	results consistent	results consistent	results consistent	no cso variable correlated	results consistent
Stepwise (RE Panel)	<i>cso25pct</i> negatively correlated	3 variables positively correlated	results consistent	no cso variable correlated	no cso variable correlated	<i>csoassist</i> positively correlated

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## 2 Regressions on Function-Specific Outcomes for All LGUs

In this subsection, the relationship between CSO participation and function-specific budget outcomes—share of the budget, per capita spending, and BUR—are tested. These functions are (a) MOOE, (b) CO, (c) education; (d) health; (e) social services, (f) economic services, (g) LDF, and (h) LDRRMF. Each of these components have three outcomes: (i) share of the total budget; (ii) spending per capita; and (iii) BUR (*see Annex C1*).

On the *share of productive budgets*, to recall, CSO participation affects it differently depending on how the latter is defined: based on the nested random effects panel models, no statistically significant effect on the share of productive expense classes (MOOE + CO); and a negative effect on the share of productive sectors and funds. As in the case of the combined shares of MOOE and CO, the separate budgetary shares of MOOE and of CO were not shown to be influenced by CSO participation in a statistically significant way. The alternative models however show that certain CSO participation variables may have a positive effect on MOOE and CO. Meanwhile, the share of education in the local budget is negatively associated with the submission of CSO action plans, albeit with a minuscule effect size. The beta regression shows that provision of CSO technical assistance is also negatively correlated and has a larger coefficient. These may point to the tendency of LGUs which have less fiscal space to seek external technical assistance.

Based on the nested random effects models, the only dependent variable where CSO participation had a positive effect is on the share of social services: positive with submission of CSO plans, although with a very small coefficient. The beta regression model validates this but with a larger effect size, and shows that the shares of health, economic services, and LDF may also be affected positively.

*Expenditures per capita* in the aggregate is positively affected by the share of CSO members in the LDC. Consistent with this, CSO participation indicators had positive and statistically significant effects on CO (action plans), health (CSO proportion in the LDC), social services (proportion in the LDC and action plans), economic services (proportion of CSOs in the LDC), LDF (proportion of CSOs), and LDRRMF (proportion of CSOs). However, these positive effects were countered by negative effects of CSO participation on CO and economic services (CSO assistance to the LDC) and the LDRRMF (attendance in LDC meetings). Meanwhile, CSO participation did not have a statistically significant effect on MOOE and education spending per capita (*See Table 4*).

Finally, *utilization of the budget* is, on the aggregate, not significantly associated with any CSO participation indicator. Findings from the disaggregated analysis are mostly consistent with this behavior (*see Table 5*). There are however some notable exceptions, where positive and statistically significant (though weak) relationships were seen between CSO participation and the BUR of economic services (CSO assistance to LDC) and the LDF (CSO action plans, although with a very low R-squared value). The alternative models also showed largely consistent results.

**Table 3. Nested RE Models on Shares of Productive Spending**

<i>Dependent variable: Share of Budget Components</i>								
	mooe	co	educ	health	social	econ	ldf	ldrrmf
ldc_cso25pct	-0.000 (0.006)	0.005 (0.006)	-0.001 (0.001)	0.001 (0.002)	-0.002 (0.001)	-0.004 (0.005)	-0.001 (0.003)	0.001 (0.003)
ldc_csopct	0.017 (0.023)	-0.007 (0.023)	-0.003 (0.006)	0.006 (0.008)	0.002 (0.006)	0.006 (0.019)	0.005 (0.011)	0.002 (0.010)
ldc_csoattend	0.005 (0.005)	-0.003 (0.005)	0.000 (0.001)	-0.001 (0.002)	0.002 (0.001)	0.005 (0.004)	0.003 (0.003)	-0.003 (0.002)
ldc_csoassist	0.002 (0.004)	-0.004 (0.004)	-0.001 (0.001)	0.002 (0.001)	-0.000 (0.001)	-0.004 (0.003)	-0.001 (0.002)	-0.002 (0.002)
ldc_csoplan	0.006 (0.004)	0.003 (0.005)	<b>-0.002**</b> <b>(0.001)</b>	0.001 (0.002)	<b>0.002*</b> <b>(0.001)</b>	-0.002 (0.004)	0.003 (0.002)	0.000 (0.002)
ldrrmc_cso4reps								0.003 (0.003)
Constant	<b>-0.473***</b> <b>(0.041)</b>	0.005 (0.024)	0.007 (0.006)	-0.004 (0.008)	<b>0.016***</b> <b>(0.006)</b>	-0.023 (0.018)	<b>0.057***</b> <b>(0.012)</b>	0.038*** (0.010)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,697	2,726	2,727	2,729	2,732	2,727	2,728	2,732
R <sup>2</sup>	0.414	0.421	0.347	0.465	0.417	0.262	0.628	0.384
Adjusted R <sup>2</sup>	0.407	0.414	0.339	0.458	0.410	0.253	0.623	0.376
F Statistic	<b>1,657***</b>	<b>1,963***</b>	<b>1,411***</b>	<b>2,304***</b>	<b>1,925***</b>	<b>937***</b>	<b>4,495***</b>	<b>1,666***</b>
Results of Key Alternative Models:								
Beta Reg. (Probit)	results consistent	csopt positively correlated	csoassist negatively correlated	3 variables correlated (diff signs)	csoplan has larger coefficient	2 variables positively correlated	csopt positively correlated	results consistent
FE Panel	csoassist positively correlated	2 variables correlated (diff signs)	no cso variable correlated	results consistent	no cso variable correlated	csopt positively correlated	csoplan positively correlated	results consistent
Stepwise (RE Panel)	csoplan positively correlated	results consistent	no cso variable correlated	csoassist positively correlated	no cso variable correlated	results consistent	results consistent	csoattend negatively correlated

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01



**Table 4. Nested RE Models on Productive Spending Per Capita**

Dependent Variable: Per Capita Spending								
	mooe	co	educ	health	social	econ	ldf	ldrrmf
ldc_cso25pct	56.580 (39.217)	9.412 (25.304)	2.861 (4.067)	-0.373 (7.397)	1.286 (4.748)	-7.620 (12.477)	15.550 (14.327)	6.799 (9.158)
ldc_csopct	249.004 (163.975)	158.704 (102.764)	-19.784 (17.145)	<b>72.507**</b> <b>(30.940)</b>	<b>41.705**</b> <b>(19.334)</b>	<b>171.92***</b> <b>(50.850)</b>	<b>99.514*</b> <b>(59.618)</b>	<b>68.796*</b> <b>(37.423)</b>
ldc_csoattend	-13.589 (35.019)	2.495 (22.427)	0.302 (3.628)	-8.904 (6.605)	3.326 (4.230)	8.205 (11.098)	10.717 (12.782)	<b>-16.335**</b> <b>(8.182)</b>
ldc_csoassist	2.028 (26.014)	<b>-40.812**</b> <b>(16.528)</b>	-3.075 (2.703)	-1.273 (4.940)	-3.460 (3.118)	<b>-13.752*</b> <b>(8.204)</b>	-12.347 (9.469)	-8.017 (5.996)
ldc_csoplan	33.432 (31.179)	<b>36.487*</b> <b>(20.055)</b>	0.225 (3.241)	5.475 (5.892)	<b>8.773**</b> <b>(3.767)</b>	1.862 (9.936)	15.105 (11.348)	3.026 (7.227)
ldrrmc_ cso4reps								7.689 (10.359)
Constant	<b>-335.24***</b> <b>(123.204)</b>	<b>-133.23*</b> <b>(71.194)</b>	<b>-22.41*</b> <b>(11.745)</b>	-10.65 (23.921)	-8.23 (14.030)	-47.74 (35.384)	<b>-79.66*</b> <b>(42.225)</b>	-10.06 (26.598)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,953	2,949	2,945	2,950	2,953	2,946	2,953	2,956
R <sup>2</sup>	0.353	0.227	0.289	0.456	0.395	0.252	0.328	0.265
Adjusted R <sup>2</sup>	0.345	0.218	0.280	0.450	0.388	0.244	0.320	0.256
F Statistic	<b>1,521***</b>	<b>841***</b>	<b>1,164***</b>	<b>2,401***</b>	<b>1,891***</b>	<b>958***</b>	<b>1,415***</b>	<b>1,045***</b>
Results of Key Alternative Models								
FE Panel	csoplan positively correlated	results consistent	results consistent	no cso variable correlated	only csoplan correlated	only csopct correlated	csoplan positively correlated	2 csvars correlated (dif signs)
Stepwise (RE Panel)	results consistent	csoassist positively correlated	results consistent	no cso variable correlated	no cso variable correlated	no cso variable correlated	no cso variable correlated	no cso variable correlated

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

*Table 5. Nested Re Models on BUR of Productive Expenditures*

	Dependent Variable: BUR							
	mooe	co	educ	health	social	econ	ldf	ldrrmf
ldc_cso25pct	0.139 (0.432)	-0.017 (0.020)	0.024 (0.020)	-0.008 (0.007)	-0.007 (0.011)	-0.008 (0.013)	-0.000 (0.017)	-0.022 (0.024)
ldc_csopct	0.188 (1.693)	-0.082 (0.078)	-0.030 (0.074)	-0.039 (0.030)	0.005 (0.046)	-0.051 (0.051)	-0.086 (0.069)	0.130 (0.094)
ldc_csoattend	0.140 (0.385)	-0.023 (0.018)	0.023 (0.018)	-0.000 (0.007)	-0.003 (0.010)	-0.006 (0.011)	0.012 (0.015)	-0.013 (0.021)
ldc_csoassist	-0.227 (0.270)	-0.009 (0.013)	-0.013 (0.012)	0.002 (0.005)	0.012 (0.007)	<b>0.015*</b> <b>(0.008)</b>	-0.017 (0.011)	-0.019 (0.015)
ldc_csoplan	0.325 (0.331)	0.024 (0.015)	0.001 (0.015)	0.009 (0.006)	0.002 (0.009)	0.010 (0.010)	<b>0.022*</b> <b>(0.013)</b>	0.012 (0.018)
ldrrmc_cso4reps								0.014 (0.028)
Constant	<b>22.245***</b> <b>(2.721)</b>	<b>1.103***</b> <b>(0.113)</b>	<b>1.017***</b> <b>(0.100)</b>	<b>1.272***</b> <b>(0.053)</b>	<b>1.788***</b> <b>(0.079)</b>	<b>2.079***</b> <b>(0.082)</b>	<b>0.971***</b> <b>(0.133)</b>	<b>0.589***</b> <b>(0.136)</b>
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,658	2,685	1,847	2,270	2,426	2,449	2,390	2,336
R <sup>2</sup>	0.551	0.079	0.114	0.297	0.220	0.325	0.070	0.052
Adjusted R <sup>2</sup>	0.546	0.067	0.097	0.286	0.209	0.315	0.056	0.038
F Statistic	<b>3,195***</b>	<b>200***</b>	<b>116***</b>	<b>254***</b>	<b>422***</b>	<b>994***</b>	<b>149***</b>	<b>88***</b>

Results of Key Alternative Models:

Beta Reg. (Probit)	results consistent	results consistent	results consistent	results consistent	results consistent	no cso variable correlated	2 variables correlated (diff signs)	results consistent
FE Linear	results consistent	csoattend negatively correlated	csoattend positively correlated	results consistent	results consistent	no cso variable correlated	results consistent	results consistent
Stepwise (RE Linear)	results consistent	results consistent	results consistent	csoplan negatively correlated	results consistent	no cso variable correlated	no cso variable correlated	results consistent

Note:

\*p<0.1; \*\*p<0.05; \*\*\*p<0.01

### 3 Nonlinearities and Interaction Effects

The squared form of the proportion of CSOs in the LDC and the interaction effects were only statistically significant in sporadic instances, which were nevertheless worth noting. Nonlinear relationships emerged strongly between spending per capita—in the aggregate as well as for MOOE and CO—and the proportion of CSOs in the LDC. The nonlinear term was also significantly correlated with the budgetary share of MOOE (concave). The concave relationships echo the prognosis of Elberry, et al. (2022) that the positive effect of fiscal openness diminishes and even turns negative at a certain point.

Many potential interaction effects were noted, but it was only in one case where both interacting variables and the interaction term were found to be statistically significant: NTA dependence. The proportion of CSOs in the LDC has a positive effect, while the attendance of CSOs in LDC meetings had a negative effect. The interaction term was positive, leading to a positive net effect. In the overall, this confirms the behavior in the base model where CSO participation (proportion of CSOs in LDC) was positively associated with NTA dependence. The interaction effect could help to provide a nuanced understanding (see Table 5 and Annex C1).

*Table 6. Notable Interaction Effects and Nonlinearities*

	Interaction Effects	Squared % CSOs in LDC
Local Revenue Growth	none	none
NTA Dependence	csopct x csoplan = net positive <sup>1</sup> csoassist x cso25pct = net positive <sup>2</sup> csoplan x csoattend = net positive <sup>1</sup>	none
Share of Productive Expense Classes	none	MOOE: concave <sup>3</sup>
Share of Productive Sectors and Funds	none	none
Spending per Capita	Aggregate: csopct x cso25pct = net positive <sup>1</sup> csopct x cso25pct = net positive <sup>1</sup>  MOOE: csopct x cso25pct = net positive <sup>1</sup> csoassist x cso25pct = net negative <sup>1</sup> csopct x cso25pct = net negative <sup>1</sup>	Aggregate: possibly concave <sup>4</sup>  MOOE: possibly concave <sup>4</sup>  CO: concave <sup>3</sup>
Budget Utilization Rate	MOOE: csoplan x cso25pct = net negative <sup>1</sup> csoplan x csoattend = net negative <sup>1</sup>	none

Notes: 1) interacting variable, on its own, is not statistically significant; 2) both primary variable and interaction term were positively correlated with the dependent variable; 3) both the variable and its squared term are statistically significant; 4) squared term is not statistically significant.

## 4 Regression Analyses for Each LGU Type

The results of the regressions in the previous subsection were instructive of the relationships between CSO participation and key budget outturns but were not able to spell out nuances across LGU types. This section describes notable differences when running the nested random effects regression analyses for each LGU type. Some modifications had to be made to address multicollinearity and other issues, especially for provinces and cities which had significantly less observations.<sup>18</sup> *Details of regression analyses are in Annex C2.*

***Fiscal Sustainability.*** The analyses for municipalities and provinces confirm the lack of a notable relationship between CSO participation and local revenue growth. However, a positive relationship can be seen in cities between CSO provision of technical assistance to LDCs and local revenue growth. On NTA dependence, the statistically significant and positive effect of CSO participation is still seen in municipalities and provinces but not cities (*see Tables 7 and 10*).

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<sup>18</sup> These include the removal of the following from the control variables: city and municipality dummies, the log of budgets for sectors and funds, all lagged budget values, and dummy on adverse audit. To simplify the analyses, the alternative models were not anymore implemented as we are interested only in comparing any difference in results when regressing for each LGU type..

*Table 7. Nested RE Models on Fiscal Sustainability, Per LGU Type*

	<i>Dependent Variable: Fiscal Sustainability</i>					
	locrevgrowth			ntadepend		
	muni	cities	prov	muni	cities	prov
ldc_cso25pct	0.039 (0.024)	-0.008 (0.044)	-0.014 (0.169)	-0.003 (0.008)	0.002 (0.018)	0.002 (0.036)
ldc_csopct	-0.125 (0.094)	-0.170 (0.184)	0.207 (0.433)	<b>0.061*</b> <b>(0.032)</b>	0.004 (0.083)	0.094 (0.107)
ldc_csoattend	-0.000 (0.022)	-0.016 (0.040)	-0.011 (0.130)	-0.008 (0.007)	0.009 (0.016)	<b>0.043*</b> <b>(0.025)</b>
ldc_csoassist	0.013 (0.015)	<b>0.058**</b> <b>(0.023)</b>	0.038 (0.080)	-0.004 (0.005)	<b>-0.018*</b> <b>(0.010)</b>	-0.016 (0.017)
ldc_csoplan	0.003 (0.019)	0.018 (0.028)	-0.013 (0.100)	0.003 (0.006)	-0.004 (0.011)	0.017 (0.020)
Constant	<b>0.187***</b> <b>(0.061)</b>	0.069 (0.118)	1.372 (1.902)	<b>0.784***</b> <b>(0.021)</b>	<b>0.745***</b> <b>(0.056)</b>	<b>0.849***</b> <b>(0.112)</b>
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs	2,515	260	149	2,515	257	155
R <sup>2</sup>	0.015	0.099	0.058	0.382	0.656	0.445
Adjusted R <sup>2</sup>	0.004	-0.001	-0.143	0.375	0.618	0.332
F Statistic	<b>37.263*</b>	26.071	7.476	<b>1,072.241***</b>	<b>374.678***</b>	<b>82.010***</b>

*Note:*

*\*p<0.1; \*\*p<0.05; \*\*\*p<0.01*

*Allocative Efficiency.* Previously, it was shown that CSO participation did not have a statistically significant effect on the share of productive expense classes in the aggregate and for MOOE and CO separately. The regression analyses on the share of productive expense classes per LGU type produced results that were consistent with these.

Meanwhile, CSO technical assistance to the LDC was shown to have negative effects on the share of productive sectors for regression analyses covering all LGUs and for municipalities. In cities and provinces, CSO participation did not have a statistically significant effect on the budgetary share of productive sectors (*see Table 8*).

**Table 8. Nested RE Models on Allocative Efficiency, Per LGU Type**

	<i>Dependent Variable: Allocative Efficiency</i>					
	prodshare1			prodshare2		
	muni	cities	prov	muni	cities	prov
ldc_cso25pct	0.008 (0.008)	0.020 (0.029)	-0.022 (0.031)	-0.004 (0.009)	-0.038 (0.037)	0.058 (0.045)
ldc_csopct	0.007 (0.030)	0.024 (0.113)	0.046 (0.085)	-0.020 (0.035)	-0.111 (0.159)	0.030 (0.133)
ldc_csoattend	-0.006 (0.007)	0.021 (0.024)	-0.005 (0.022)	-0.002 (0.008)	0.049 (0.032)	0.023 (0.031)
ldc_csoassist	0.001 (0.005)	-0.006 (0.015)	-0.002 (0.015)	<b>-0.015***</b> <b>(0.006)</b>	0.017 (0.020)	0.003 (0.021)
ldc_csoplan	0.000 (0.006)	-0.018 (0.017)	0.004 (0.018)	0.004 (0.007)	-0.027 (0.023)	-0.016 (0.025)
Constant	0.003 (0.042)	-0.269 (0.263)	0.298 (0.385)	<b>0.404***</b> <b>(0.038)</b>	<b>0.916**</b> <b>(0.379)</b>	<b>0.870***</b> <b>(0.141)</b>
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Obs	2,308	240	154	2,284	241	155
R <sup>2</sup>	0.324	0.441	0.540	0.065	0.211	0.256
Adjusted R <sup>2</sup>	0.316	0.373	0.445	0.054	0.116	0.104
F Statistic	<b>955.870***</b>	<b>131.971***</b>	<b>146.137***</b>	<b>60.914***</b>	<b>44.642**</b>	30.613

*Note:*

*\*p<0.1; \*\*p<0.05; \*\*\*p<0.01*

The relationships with specific budget components also differ between municipalities, cities, and provinces in interesting ways. For instance, the budgetary share of education is both positively and negatively affected by

different CSO participation variables in municipalities and cities, although in provinces there was no statistically significant effect seen. Moreover, the LDF—which at the minimum should be at 20% of an LGU's NTA—is not affected by CSO participation in municipalities and provinces, but there is a positive and statistically significant effect in cities. The latter, which are less NTA dependent, had more resources to spare to augment their LDFs (*see Table 10 for a list, and Annex C2 for the regression tables*).

**Operational Efficiency.** To recall, CSO participation has a positive effect on per capita spending in the aggregate as well as for most budgetary sectors. As expected, this result is largely mirrored in the regression analyses for municipalities. Meanwhile, cities' per capita expenditures are negatively affected by CSO attendance in the LDC, although there is a positive counteracting effect by the submission of action plans. In provinces, there is no statistically significant relationship (*see Table 9*). Looking at per capita spending per component, CSO participation had more statistically significant effects in municipalities and cities than in provinces (*see Table 9*).

Meanwhile, though CSO participation does not seem to have a statistically significant effect on the overall BUR, it has notably positive relationships with the BUR of social services, economic services, and the LDF. For BUR, CSO participation in municipalities has a positive effect on the aggregate as well as for CO, social services, economic services, and LDF. This relationship behaves differently in cities and provinces. In cities, the overall BUR is correlated with two CSO participation variables whose effects had different directions, while in provinces CSO participation had



no statistically significant effect on the outcome (see Table 9). Looking at BUR per budget component, one could glean that CSO participation had a mostly positive effect in municipalities, balanced in cities, and mostly negative in provinces (see Table 10).

*Table 9. Nested RE Models on Operational Efficiency, per LGU Type*

	<i>Dependent Variable: Operational Efficiency</i>					
	spendpercap			bur		
	muni	cities	prov	muni	cities	prov
ldc_cso25pct	92.257 (94.442)	452.268 (309.901)	-116.899 (295.484)	-0.008 (0.009)	0.029 (0.036)	-0.081 (0.050)
ldc_csopct	<b>1,181.899***</b> <b>(403.100)</b>	-1,301.759 (1,351.002)	-996.407 (787.082)	<b>0.060*</b> <b>(0.035)</b>	-0.183 (0.155)	-0.138 (0.142)
ldc_csoattend	-18.494 (85.461)	<b>-446.580*</b> <b>(268.245)</b>	-260.663 (217.273)	0.007 (0.008)	<b>-0.056*</b> <b>(0.030)</b>	-0.031 (0.035)
ldc_csoassist	-102.523 (62.550)	-56.993 (169.616)	-35.318 (140.435)	0.006 (0.005)	-0.010 (0.020)	-0.033 (0.023)
ldc_csoplan	-4.679 (77.515)	<b>471.735**</b> <b>(190.815)</b>	129.351 (173.942)	0.002 (0.007)	<b>0.061***</b> <b>(0.022)</b>	0.020 (0.028)
Constant	-77.801 (258.506)	609.980 (828.763)	964.293 (985.575)	<b>0.710***</b> <b>(0.036)</b>	<b>0.744***</b> <b>(0.140)</b>	<b>0.775***</b> <b>(0.157)</b>
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2,538	261	153	2,306	242	153
R <sup>2</sup>	0.361	0.744	0.644	0.286	0.372	0.387
Adjusted R <sup>2</sup>	0.354	0.716	0.571	0.278	0.296	0.260
F Statistic	<b>1,354.879***</b>	<b>670.726***</b>	<b>229.503***</b>	<b>545.455***</b>	<b>114.642***</b>	<b>67.688***</b>

*Note:*

\* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$

*Table 10. Comparison of Nested RE Regression Results for All LGUs, Municipalities, Cities, and Provinces.*

	All LGUs	Municipalities	Cities	Provinces
<b>Fiscal Discipline</b>				
Local Revenue Growth	None	None	(+) CSO attendance in LDC	None
NTA Dependence	(+) % of CSOs in LDC	(+) % of CSOs in LDC	(-) CSO assistance to LDC	(+) CSO attendance in LDC
<b>Allocative Efficiency</b>				
Share of Productive Expense Classes	None	None	None	None
- MOOE	None	(+) % of CSOs in LDC	(+) CSO action plans	None
- CO	None	None	(+) CSO attendance in LDC (-) CSO action plans	None
Share of Productive Budgetary Sectors/Funds	(-) CSO assistance to LDC	(-) CSO assistance to LDC	None	None
- Education	(-) action plans	(+) CSO attendance in LDC (-) min. 25% CSOs in LDC	(+) min. 25% CSOs in LDC (-) CSO action plans	None
- Health	None	None	None	(+) min. 25% CSOs in LDC and CSO action plans
- Social Services	(-) min. 25% CSOs in LDC <sup>1</sup>	(+) CSO action plans	None	(-) min. 25% CSOs in LDC
- Economic Services	None	None	(+) CSO attendance in LDC	(-) CSO action plans
- Local Dev't Fund	(+) CSO action plans <sup>1</sup>	None	(+) CSO assistance to LDC	None
- Local DRRM Fund	None	None	(+) LDRRMC CSO reps (-) min. % of CSOs in LDC	(-) % of CSOs in LDC
<b>Operational Efficiency</b>				
Per Capita Spending	(+) % of CSOs in LDC	(+) % of CSOs in LDC	(+) CSO action plans (-) CSO attendance in LDC	None

	<b>All LGUs</b>	<b>Municipalities</b>	<b>Cities</b>	<b>Provinces</b>
- MOOE	(+) min. % of CSOs in LDC <sup>1</sup>	(+) % of CSOs in LDC	(+) CSO action plans	None
- CO	(+) CSO action plans (-) CSO tech assistance	(+) % of CSOs in LDC (-) CSO tech assistance	(+) CSO action plans	(-) CSO attendance in LDC
- Education	None	(-) CSO tech assistance	(+) min. % of CSOs in LDC (-) % of CSOs in LDC	(-) % of CSOs in LDC & tech assistance to LDC
- Health	None <sup>1</sup>	(+) % of CSOs in LDC	None	None
- Social Services	(+) % of CSOs in LDC <sup>1</sup>	(+) % of CSOs in LDC	None	None
- Economic Services	(+) % of CSOs in LDC <sup>1</sup>	(+) % of CSOs in LDC	None	None
- Local Dev't Fund	(+) CSO action plan <sup>1</sup>	(-) tech assistance to LDC	(+) CSO action plan	None
- Local DRRM Fund	(-) CSO attendance in LDC <sup>1</sup>	(-) CSO attendance in LDC	None	None
Budget Utilization Rate	(+) CSO action plan <sup>1</sup>	(+) % of CSOs in LDC	(-) CSO attendance in LDC (+) CSO action plans	None
- MOOE	None	(+) CSO action plan	None	(-) CSO attendance in LDC
- CO	(+) CSO action plan <sup>1</sup>	None	(+) CSO action plan (-) attendance in LDC	(-) tech assistance to LDC
- Education	None	(+) min.25% CSOs in LDC	None	(-) % of CSOs in LDC
- Health	None	(+) CSO action plan (-) min. 25% CSOs in LDC	None	(-) % of CSOs in LDC, CSO action plan
- Social Services	(+) CSO assistance to LDC <sup>1</sup>	(+) CSO assistance to LDC	(+) CSO assistance to LDC	(-) CSO assistance to LDC
- Economic Services	(+) CSO assistance to LDC	(+) CSO assistance to LDC	None	(-) CSO attendance to LDC
- Local Dev't Fund	(+) CSO action plans	None	(-) min. % of CSOs in LDC	(-) CSO assistance to LDC
- Local DRRM Fund	None	None	(-) LDRRMC CSO reps	(+) CSO attendance in LDC

Notes: (1) This result is different from the original regression result in part V where CSO participation had no statistically significant effect on the BUR.

## **VI.**

### **Discussion of Key Themes**

The regression analyses in the preceding two sections show that the participation of CSOs in LDCs has mixed effects on different local budget outcomes. This gives credence to the nuanced hypothesis, but it is worth noting where and how CSO participation and budget performance relate with each other. This section spells out key themes from the empirical results.

#### **1 Citizens' Voices Count in Increasing Spending on Sectors that Matter.**

The evidence shows specific instances where CSO participation has a positive relationship with budget outcomes. First, the regression analyses covering all LGUs show that CSO participation had a positive relationship with spending per capita in the aggregate and on key budget components: CO, health, social services, economic services, the LDF, and the LDRRMF. The results for municipalities, and for cities to an extent, mirrors this behavior but with some differences on the budget components. In contrast, the effects of participation are insignificant if not in the negative direction for provinces.

CSO participation is also positively related with the utilization of budgets that matter. For all LGUs as well as for municipalities and cities, CSO participation particularly the advanced forms—technical assistance to the LDC and CSO action plans—had a positive effect on the BUR of key

budget components. For all LGUs, these are economic services, and the LDF; MOOE, education, health, social services, and economic services for municipalities; and CO and social services for cities. It must also be noted that indicators on the mere presence and attendance of CSOs in the LDC—have mixed effects. Notably, participation in provinces has a mostly negative effect on the BUR except in LDRRMF.

## 2 Citizens' Voices Tend to be Louder Where Resources are Thin.

There are also situations where CSO participation is correlated with undesirable budget outcomes. The main case in point here is NTA dependence, which tends to be higher as the proportion of CSO members in the LDC increases, at least for all LGUs as well as for municipalities and provinces. One may use this to validate the ideal that NGOs and CSOs are present where they are needed. But an alternative explanation for this is that CSOs tend to be present in LGUs with limited fiscal space and thus have a motive to secure additional resources. After all, CSO participation is among the conditions by which CSOs can access additional funding from the national government, such as through the Assistance to Municipalities. Additional analysis is however needed to confirm this relationship, considering that in cities the reverse of the relationship is true: the proportion of CSOs in the LDC is linked to lower NTA.

The theme of increased CSO participation in resource-constrained contexts also emerges when looking at its effects on the share of productive spending. At least for all LGUs and for municipalities, CSO provision of

technical assistance to the LDC is negatively associated with the collective share of productive sectors and funds in the budget. Perhaps this is an indication of municipalities' limited institutional capacity and thus the need to tap technical assistance from CSOs. For cities and provinces this relationship is not statistically significant. Other budget shares that are negatively affected by CSO participation are CO (cities), education (municipalities and cities), social services (provinces, but positive in municipalities), economic services (provinces, but positive in cities), and the LDRRMF (cities and provinces).

### 3 Where Citizens' Voices Seem to Not Matter

It is also worth pointing out where the effects of CSO participation are statistically insignificant, foremost of which is on local revenue growth at least for all LGUs as well as in municipalities and provinces. Especially in contexts where fiscal resources are thin and national transfers are insufficient, the generation of additional resources is a mission-critical element to local development and which CSOs should be interested in. Unfortunately, as surmised earlier, perhaps CSO inputs into the LDC do not delve into this issue in these contexts. Of course, there are many other factors to be considered—the technical capacity of LGUs to collect revenues, the political implications of new taxes, the economic activity in the locality—and CSO participation may after all be an insignificant factor in the revenue side of the coin. The case of cities—where CSO participation was seen to be positively correlated with local revenue growth—needs a closer look.

Additionally, there are specific components of the budget which one may think are positively influenced by CSO participation but are revealed to not be affected by it. An interesting case is the LDRRMF vis-à-vis representation of CSOs in the LDRRMCs. It is only in the context of cities where the latter has significant effects: positive on the share of the LDRRMF in the budget and negative on the utilization of the LDRRMF. One plausible explanation for this is that cities have greater resources that they can use to augment their LDRRMFs beyond the mandatory 5-percent share of the LDRRMF. In all other cases—in municipalities and provinces, particularly—CSO representation in the LDRRMC has no discernible effect on LDRRMF-related outcomes.

#### 4 The Effects of CSO Participation Metrics are Not Straightforward.

Given the above, the relationships between CSO participation indicators and metrics of budget performance are not straightforward: if significant, these can be positive or negative based on the context. Moreover, the weak fit of the regression models must be acknowledged. The nested random effects models with covariates have R-squared values that range from 20% to 40%. In the instances where the R-squared surpassed this range—models on the shares of MOOE, health, social, and LDF; and BUR of MOOE—the CSO participation variables do not have a strong or statistically significant effect. In these cases, other covariates had a stronger relationship with the budget outcomes—such as budget size and some SGLG indicators—although these are outside the scope of this study.

Additionally, there are noteworthy findings from the analysis of nonlinear and interaction effects even if these were not always statistically significant. For instance, interaction effects validated the net positive relationship between CSO participation and NTA dependence. Additionally, the interaction effects showed dynamics among the CSO participation variables, although there was no consistency as to which specific variables tend to counteract each other. Other interaction effects are outside the scope of this study and are worth analyzing in the future: with transparency and accountability; with other metrics of governance such as SGLG ratings; and with political and electoral phenomena such as presence of dynasties.

Nonlinear effects of CSO participation on budget outcomes—most prominently, the concave relationship with spending per capita—were also seen. The concave relationships are reminiscent of the findings of Elberry, et al. (2022) that fiscal openness and budget effectiveness have an inverted U-shaped relationship, i.e., openness enhances budget outcomes until a certain point when it starts to become a burden. Apart from spending per capita in the aggregate, also showing a concave relationship with the proportion of CSO members in the LDC are spending per capita on MOOE, CO, and the LDF in the case of municipalities. Interestingly, the relationship between CSO participation and per capita spending on social services, the LDF, and LDRRMF in provinces is convex or U-shaped, i.e., the relationship is negative until a certain point.



## 5 Limitations of the Analysis

To reiterate, with the available data and the methodology employed, this study cannot claim to establish causality between CSO participation and budget performance. First, this study uses a data set that measured the mere presence and attendance of CSOs in the LDC and whether CSOs provided certain value-adding inputs. The study acknowledges that the data set used—the SGLG—focused on the functionality of the LDC, including compliance with the minimum standards set in law. As such, the lacks information on the robustness of the CSO landscape in the locality,<sup>19</sup> the type of CSOs which are participating, nor the sectors or advocacies that these CSOs represent. The content of the CSOs' inputs to the LDC and how they are considered in the planning, programming, and budgeting decisions of the LGU, are not captured in the SGLG data set.

Moreover, the data is devoid of an assurance that these CSOs counted are genuine organizations who were able to meaningfully participate in the LDC's decision-making processes. Unfortunately, the literature and press reportage is rife with anecdotes of LGUs tapping friendly CSOs, even those which are affiliated or are even created by local politicians, or at worse are fake and set up for nefarious purposes.

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<sup>19</sup> The SGLG data set for certain years has information on the actual number of CSO members in the LDC, but the proportion of CSOs in the LDC was selected to normalize the values. Moreover, it is unclear if the CSO member headcounts pertain to the number of organizations or individuals regardless of organizational affiliation.

The empirical strategy employed for this study sought to consider the imperfections of the available data, minimize underlying issues such as omitted variable bias and multicollinearity, and manage other characteristics most notably the heterogeneity of LGUs. Even with these, the primary econometric tool used—linear panel regression with nested random effects—is not on its own designed to establish causality.

Moreover, the “treatment” of CSO participation is not currently assigned to groups in a random fashion, preventing the construction of a robust counterfactual. Apart from CSO representation in the LDC being legally mandated, the government has established a policy regime that incentivizes CSO participation through the SGLG and conditional transfer mechanisms. As such, an overwhelming majority of LGUs comply with the minimum 25% of LDC seats being opened to CSOs. Quasi-experimental methods may potentially be applied to the other forms of CSO participation covered by the SGLG—actual attendance in LDC meetings, technical assistance to the LDC secretariat, and action plans—but this was not the objective and approach taken by this study.

## VII. Conclusion

During the writing of this study, the first-year implementation of the SGLG Act was completed with the announcement of the 2022 SGLG winners: 18 provinces (of 81), 60 cities (of 146), and 274 municipalities (of 1,488; DILG, 2022a). The 2023 SGLG was also kicked off with the release of updated guidelines for the round (DILG, 2023). These new SGLG rounds assess LGUs in all 10 areas,<sup>20</sup> and in some of these areas CSO participation in LDCs and other local special bodies is embedded.<sup>21</sup> Prior to the 2022 SGLG round, the DILG has also issued guidelines for the setting up of CSO desks and people's councils (2021) akin to the Naga City example.

Such policies to institutionalize, scale up, and further improve CSO participation in local governance are laudable. And it is hoped that this study contributes to such efforts by providing evidence which helps to assert that promoting meaningful participation is a worthwhile endeavor.

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<sup>20</sup> The 10 “all in” criteria for the SGLG under the Act include those originally in the 2019 SGLG round and prior (i.e., financial administration, disaster preparedness, social protection, business friendliness, peace and order, environmental management, and tourism and heritage) and new areas (i.e., health compliance and responsiveness, sustainable education, and youth development; DILG, 2022b). The SGLG for 2020 and 2021 were not conducted due to the COVID19 pandemic.

<sup>21</sup> As of the 2023 SGLG guidelines, participation is also required in the following: CSO representation in LDRRMC (disaster preparedness); membership of federations of sangguniang kabataan and parents-teachers associations in local school boards (sustainable education); CSO representation in peace and order councils and anti-drug abuse councils (safety, peace and order); CSO representation in local solid waste management boards; sectoral representation in local culture and arts promotion councils (tourism and heritage); and representation of youth organizations in the local youth development council (youth development).

Despite its limitations, this study provided empirical evidence on the relationship between CSO participation in LDCs and key budget outcomes. In particular, the more value-adding forms of CSO participation in LDCs are associated with increased spending and utilization of productive components of the budget. This study also found that CSO representation in the LDC is associated with limited fiscal space in an LGU, most notably NTA dependence, which may have resulted from such LGUs' desire to access resources by complying with national policies.

Through these findings, this study hopes to have contributed to the body of quantitative evidence which indicates the complex though nevertheless positive contribution of CSO participation on better local governance particularly of the public coffers. The study however also highlights some key gaps and issues which need to be addressed by further reforms in order to maximize the positive contribution of citizen participation.

First, *metrics of the substance of CSO engagement are needed*. This is why Medina-Guce (2020b), as commissioned by DILG and UNDP, developed the proposed Participatory Governance Metrics (PGM) to better assess the environment, process, and outcomes of participation. DILG should consider a wider-scale rollout after a successful pilot test in Region 7. This, however, should consider the plans to further improve on the SGLG as well as the slew of assessments that LGUs are currently subjected to. Further research may also delve into the LDC discussions and the content of CSOs' inputs into these as captured in meeting minutes and CSO action plans, perhaps enabled by machine learning-based content analysis.

Second, *the drivers or determinants of CSO participation also need to be unbundled*. After all, participation should be seen as a good in and of itself. While national policy and incentives have compelled LGUs to ensure that at least 25% of seats in the LDC are occupied by CSOs, it pays to understand what drives LGUs to enable substantive participation. Further studies could also be pursued on how transparency and information entice and enable CSO participation (akin to the study of Capuno and Garcia, 2008), as well as how accountability mechanisms such as audits and elections interact with participatory mechanisms. Other factors that could influence CSO participation may include the fiscal and institutional capacity of LGUs, the robustness of the CSO ecosystem in the locality, the local socioeconomic situation, among others

Third, *political enablement or interference of participation needs to be accounted for*. Participation does not occur in a sterile environment, where CSOs' inputs are considered objectively based on their technical merits and devoid of political factors. It is, after all, a dynamic process of influence and negotiation (see the exposition of Medina-Guce, 2020a on power dynamics in local participation). An inquiry into the political affiliations of accredited CSOs is a plausible albeit tedious option, especially absent a national database of CSOs accredited by LGUs. Alternatively, one can attempt to analyze how CSO participation is affected by political phenomena, such as but not limited to: contested or uncontested elections, reelections or new administrations, political affiliations, and political dynasties (using, for instance, the analysis of Mendoza, et al., 2012 and subsequent work).

Fourth, *the elusive impacts of participation on governance and social outcomes must continue to be sought*. The seminal field experiment by Olken (2007) as reanalyzed and replicated by other authors (see review by Haus, et al., 2022) continues to be the gold standard in the field. The study entailed a randomized control trial in the context of a rural development program in Indonesia. It found that public participation—through attendance in “accountability meetings” at the village level—helped to reduce missing expenditures, although this was not as much as the effect of increasing the probability of audit. It may be expensive to replicate such an experiment in the Philippines, but there may be other opportunities to undertake an experimental or quasi-experimental study alongside DILG efforts to institutionalize and strengthen participation in LDCs.

Finally, *CSO participation does not necessarily equate with citizen participation*. Increasingly, local governments have been adopting direct citizen participation mechanisms aided by technology: from complaints hotlines to citizen satisfaction indexes, and from town hall meetings to social media engagement. The effectiveness of these mechanisms vis-à-vis CSO representation is worth evaluating in terms of policy impacts. Just the same, CSOs continue play an important role as mediator between the governor and the governed. This is a constant institutional role that, arguably, cannot be replaced by sporadic movements and campaigns.

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## **IX.**

### **Annexes**

- A. Description of Variables and Data Sources
- B. Statistical Summary Tables
- C. Regression Analyses

## Annex A. Description of Variables and Data Sources

Indicator	Description	Data Source
<b>y: Budget Performance</b>		
Local Revenue Growth	Year-on-year percentage change in revenues and expenditures of an LGU.	Bureau of Local Government Finance (BLGF) Statement of Receipts and Expenditures (SRE) for 2015-2018, as compiled by World Bank (WB) and UNDP.
Dependence on National Government Transfers	Proportion of national government transfers (IRA or NTA only) in an LGU's total receipts.	BLGF SRE for 2015-2018, as compiled by WB & UNDP
Share of Productive Expenditures: Expense Classes	Ratio of budget allocated for maintenance and other operating expenditures (MOOE) and capital outlays (CO) against total approved budget. Additionally, shares of MOOE and CO of the total approved budget.	Commission on Audit (CoA) Audit Reports on LGUs for 2015-2018, as compiled by WB
Share of Productive Expenditures: Sectors and Funds	Proportion of budget allocated for all functions except general public services and debt servicing against the total budget. Additionally, share of key functions in the budget: education, health, social services, economic services, Local Development Fund (LDF) and Local Disaster Risk Reduction and Management Fund (LDRRMF).	COA Audit Reports on LGUs for 2015-2018, as compiled by WB
Per Capita Expenditure	Ratio of nominal actual budget utilization and population in 2015, aggregate and per key expense class and sectoral category (see above).	COA Audit Reports on LGUs for 2015-2018, as compiled by WB; and Census of Population and Housing for 2018.
Budget Utilization Rate	Ratio of actual budget utilization over the approved budget for the current year. Computed for the total budget and for key categories.	COA Audit Reports on LGUs for 2015-2018, as compiled by WB

Indicator	Description	Data Source
<b>D: Participation &amp; Open Government</b>		
CSO Participation in Local Development Council	(i) Dummy representing whether an LGU's Local Development Council (LDC) has at least 25% of its members from civil society organizations (CSOs); (ii) proportion of CSO members in the LDC; (iii) dummy of whether the LDC tapped the CSO to provide technical support to its secretariat; (iv) dummy of whether the CSO members actually participated in LDC deliberations; (v) dummy of whether a CSO member submitted a CSO action plan to follow through on LDC discussions.	Department of the Interior and Local Government (DILG) Seal of Good Local Governance (SGLG) for 2016-2019
CSO Membership in Local Disaster Risk Reduction and Management Committee	Dummy variables representing whether an LGU's Local Disaster Risk Reduction and Management Committee (LDRRMC) has at least four (4) CSO members.	DILG SGLG for 2016-2019
<b>X: Control Variables</b>		
<i>Set 1: Unique Functional Characteristics</i>		
Size of functional budgets	Natural log of the final budget amount of: (i) budgetary sectors, i.e., general public services, economic services, social services, education, health, local development fund, local disaster risk reduction and management fund; (ii) expense classes, i.e., personnel services, MOOE, CO, and debt servicing	COA Audit Reports on LGUs for 2015-2018, as compiled by WB
<i>Set 2: Governance and Capacity Indicators</i>		
Budget Per Capita	Final (approved) budget divided by the population.	COA Audit Reports on LGUs for 2015-2018, as compiled by WB

Indicator	Description	Data Source
Seal of Good Local Governance (SGLG)	Aggregated pass/fail scores of an LGU in the following dimensions of the SGLG: (i) financial administration; (ii) disaster preparedness; (iii) social protection; (iv) peace and order; (v) ease of doing business; (vi) environmental management; (vii) culture and heritage; (viii) overall score.	DILG SGLG for 2016-2019
Transparency and Access to Information	Dummy variables representing whether an LGU has complied with the Full Disclosure Policy (FDP) requirements to (i) post certain financial documents online (DILG's FDP Portal) and (ii) physically in conspicuous places.	DILG SGLG for 2016-2019
Audit Observation	Dummy variables indicating the audit observation rendered by COA on the financial accounts of the LGU: (i) unqualified; (ii) qualified (as benchmark); (iii) disclaimer; (iv) adverse; (v) no opinion or report.	DILG SGLG for 2016-2019
<i>Set 3: Socioeconomic Development</i>		
Population Density	Official population in the province, city, or municipality divided by land area	Philippine Statistics Authority (PSA) Census 2015 and 2020 (2018 author's calculations)
Poverty	Official estimates of income poverty (for provinces and some key cities) and small area estimates (for cities and municipalities)	PSA Poverty Statistics 2015 and 2018
Urban Population	Proportion of urban population in the province, city, or municipality as derived from the Census	PSA 2015 and 2020 (2018 author's calculations)



## **Annex B. Exploratory Analysis**

*Full exploratory data analysis including descriptions of visualizations is available in [kpicapistrano.github.io/MDE\\_Thesis](https://kpicapistrano.github.io/MDE_Thesis)*

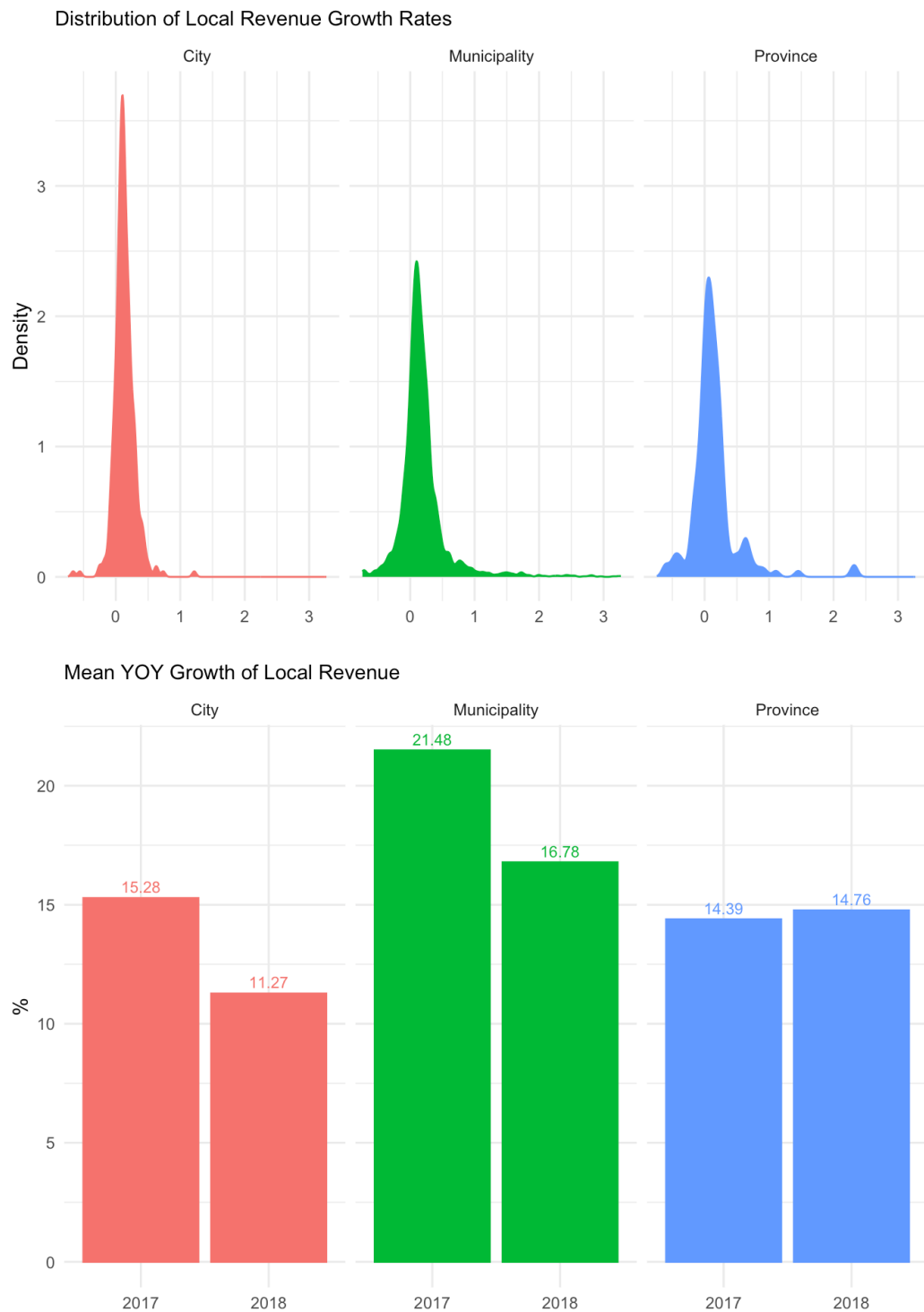
### **Annex B.1. Visualizations**

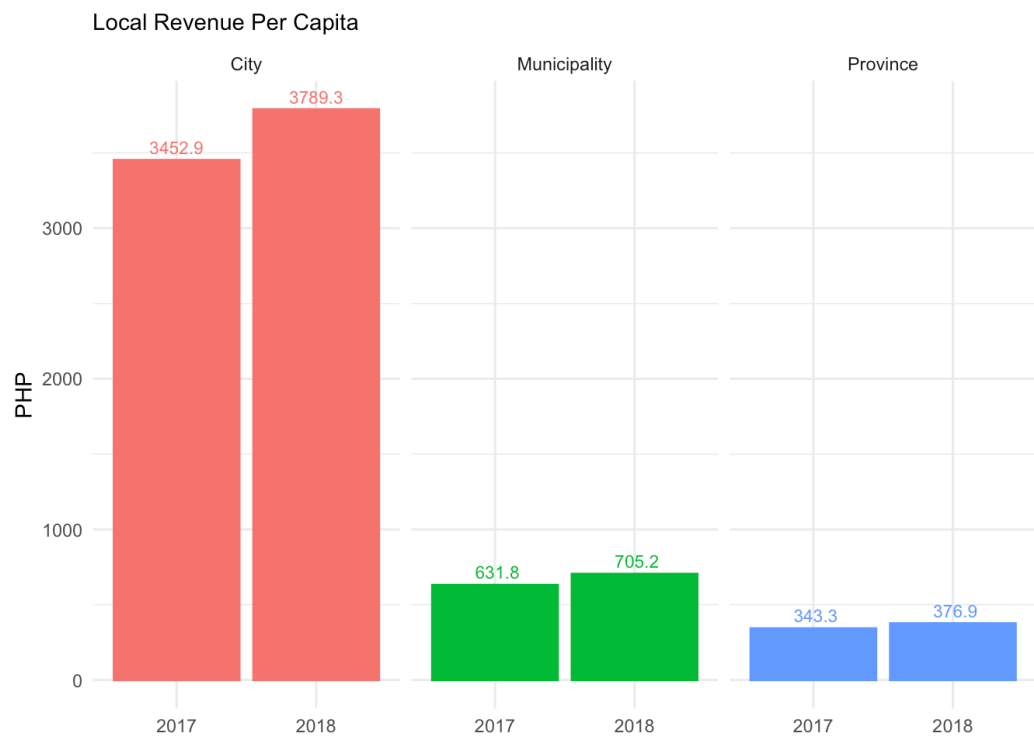
### **Annex B.2. Statistical Summary Tables**

## Annex B.1. Visualizations

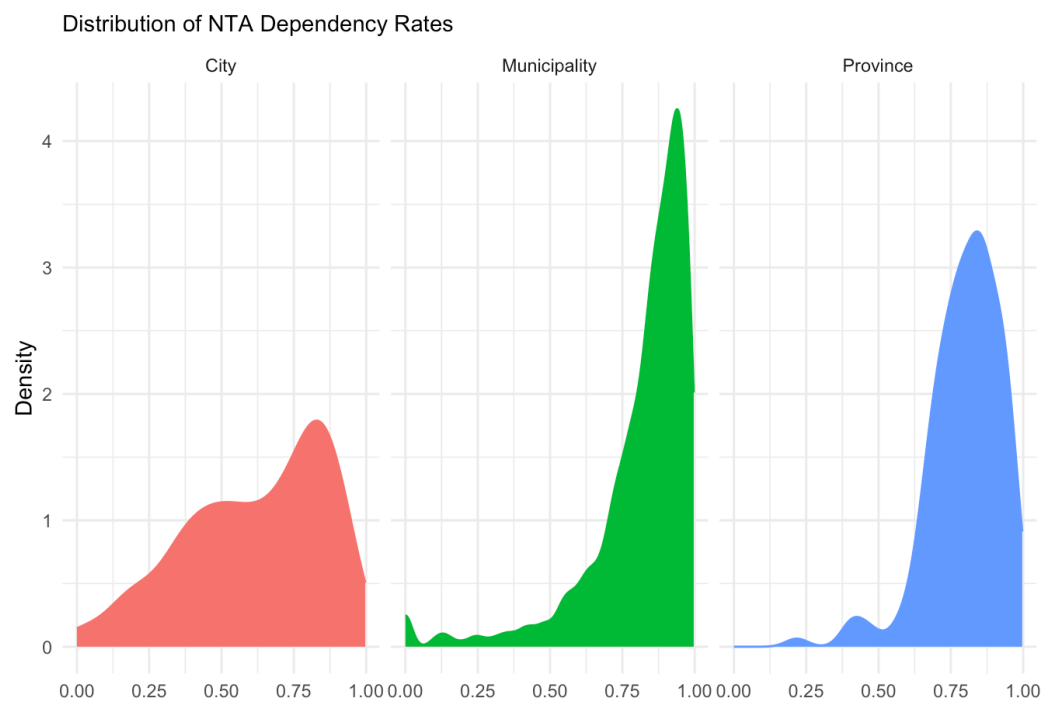
### 1. Outcome Variables: Local Budget Performance

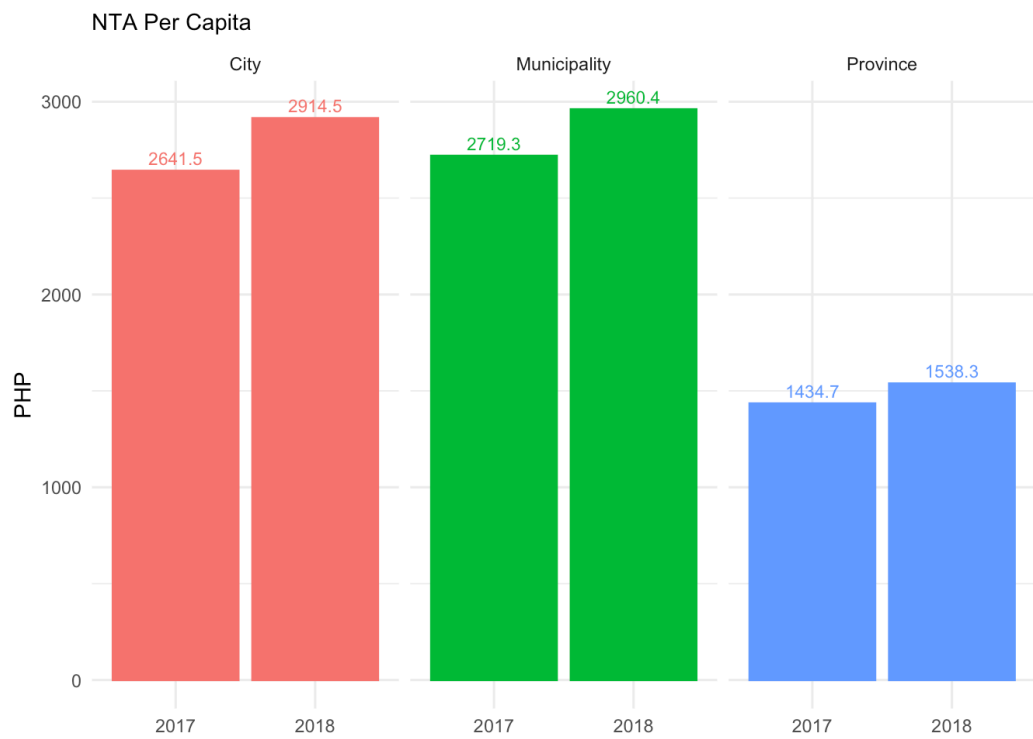
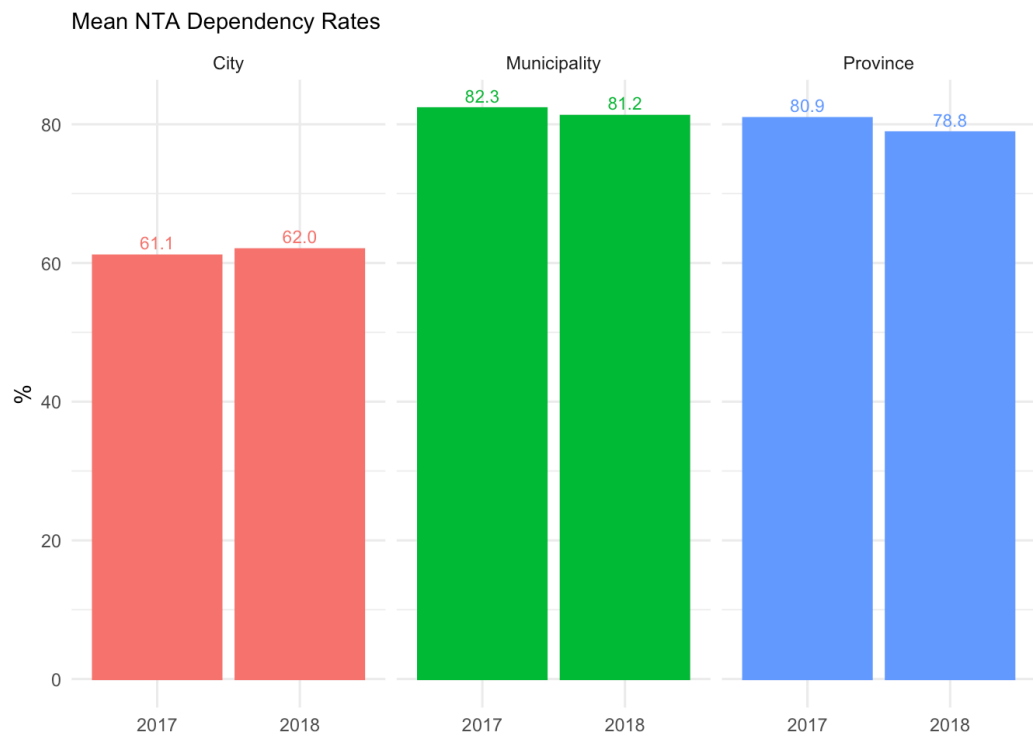
#### 1.1 Local Revenue Growth



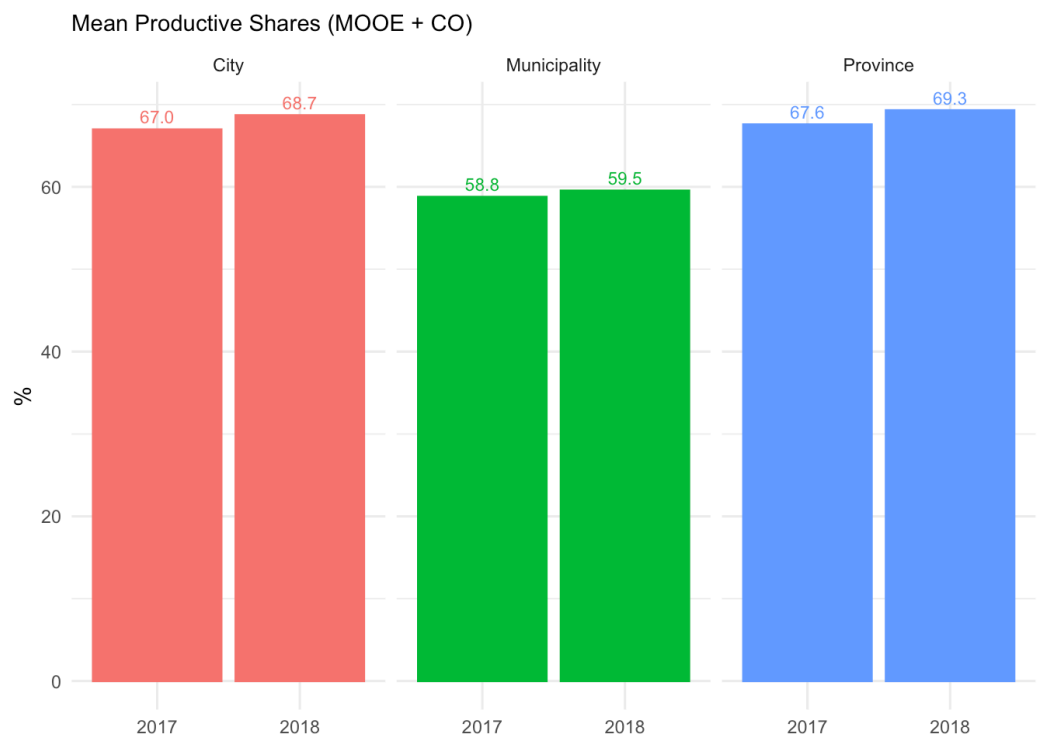
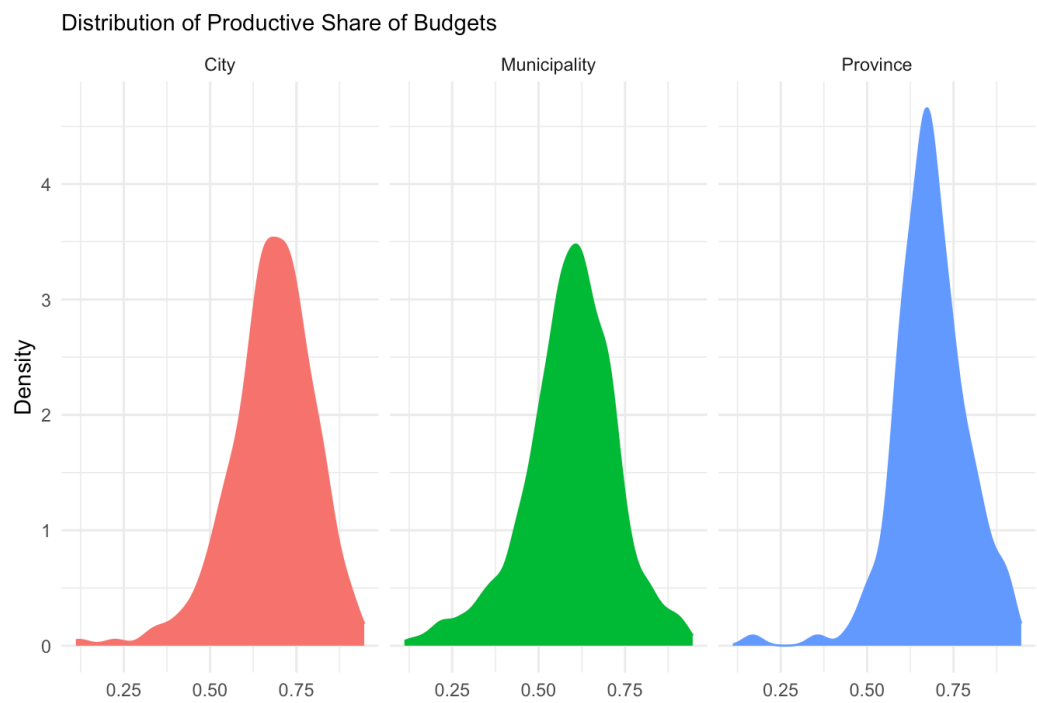


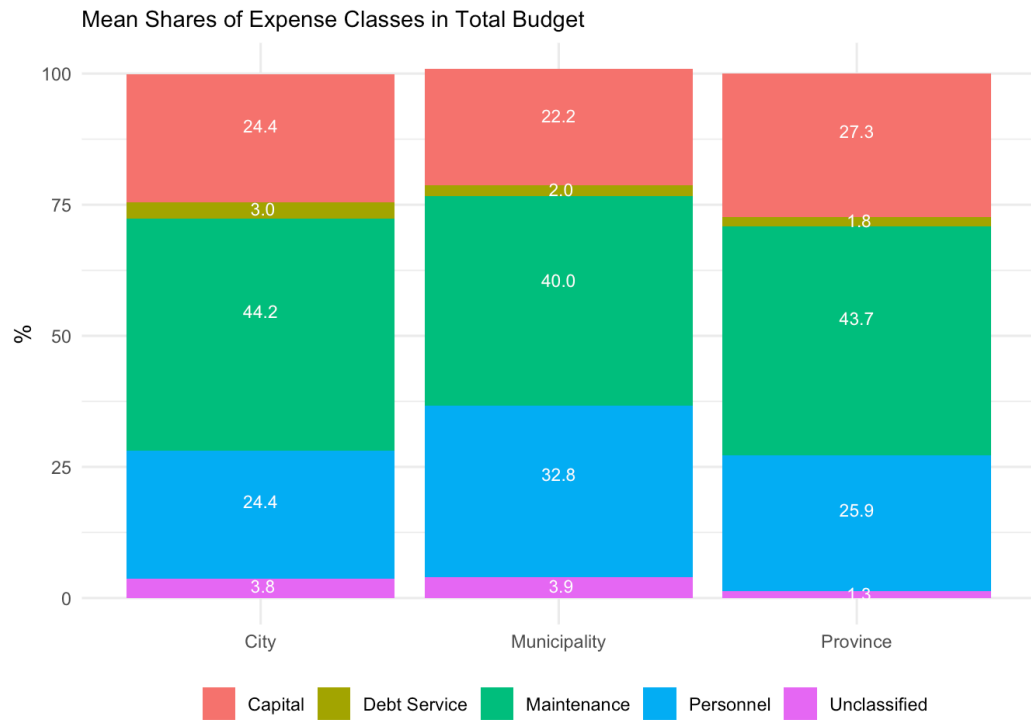
## 1.2 NTA Dependency



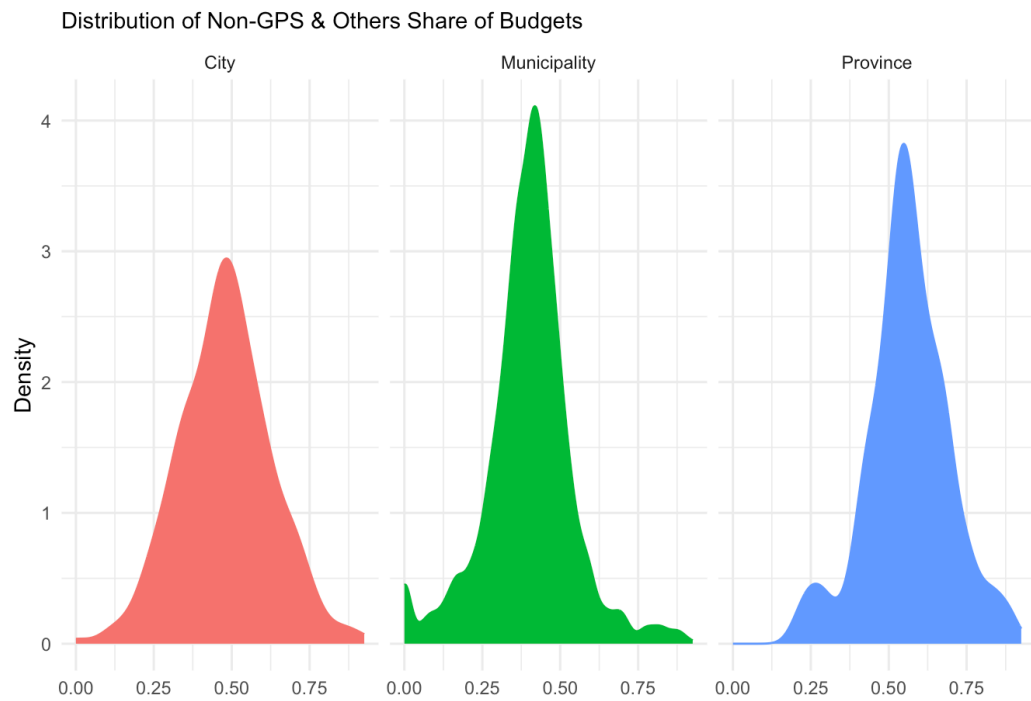


1.3 Share of Productive Expense Classes (MOOE + CO)

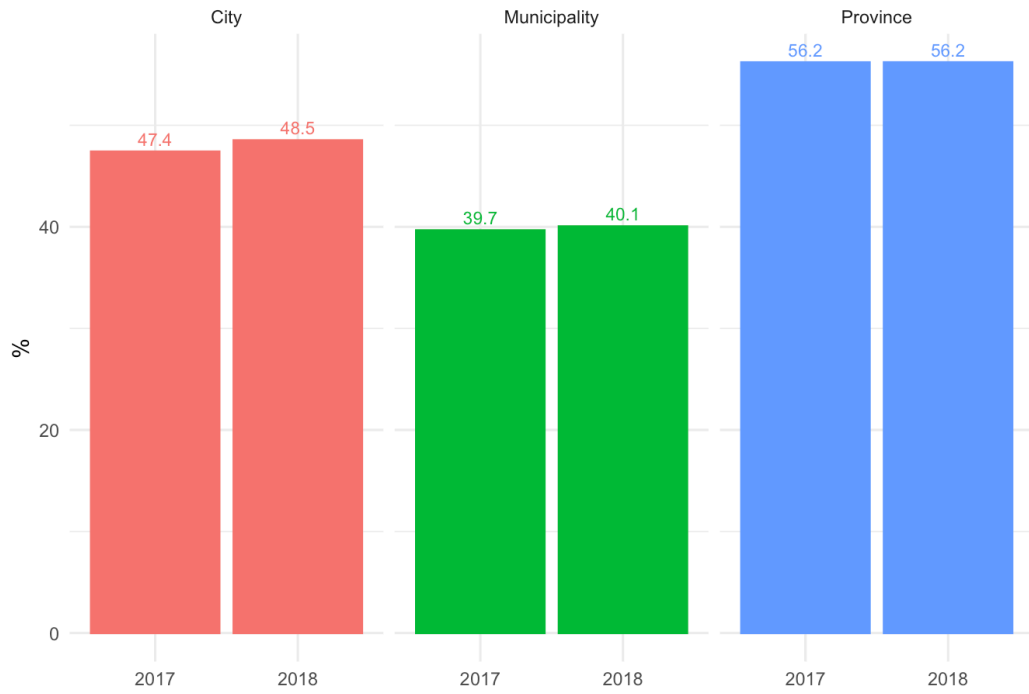




#### 1.4 Share of Productive Sectors & Funds



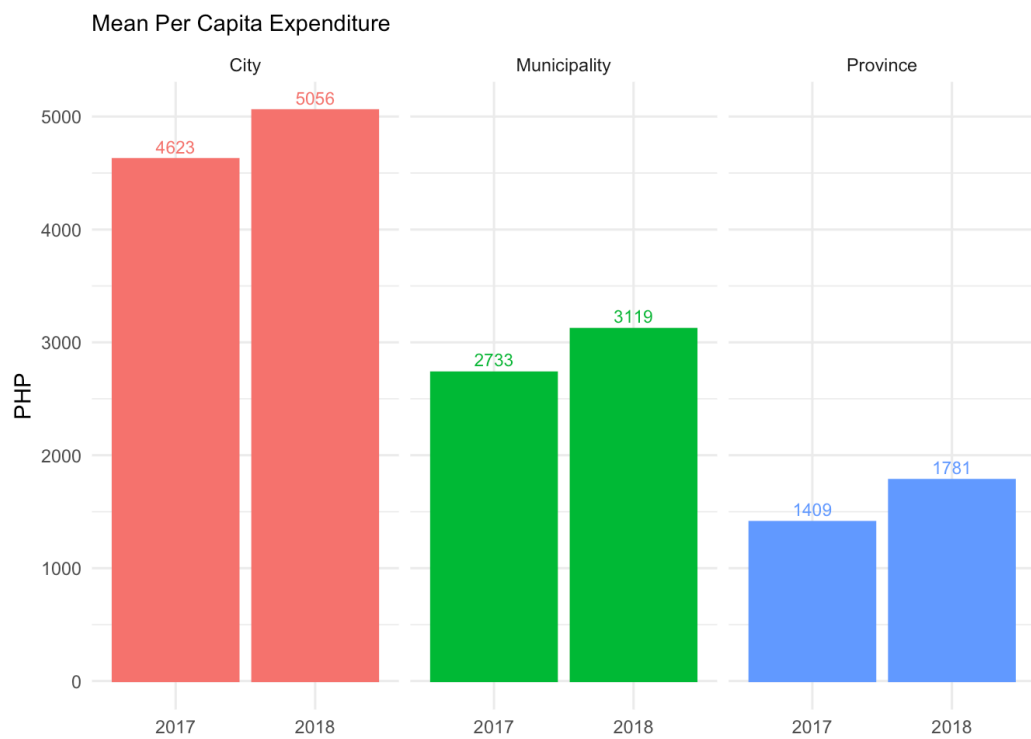
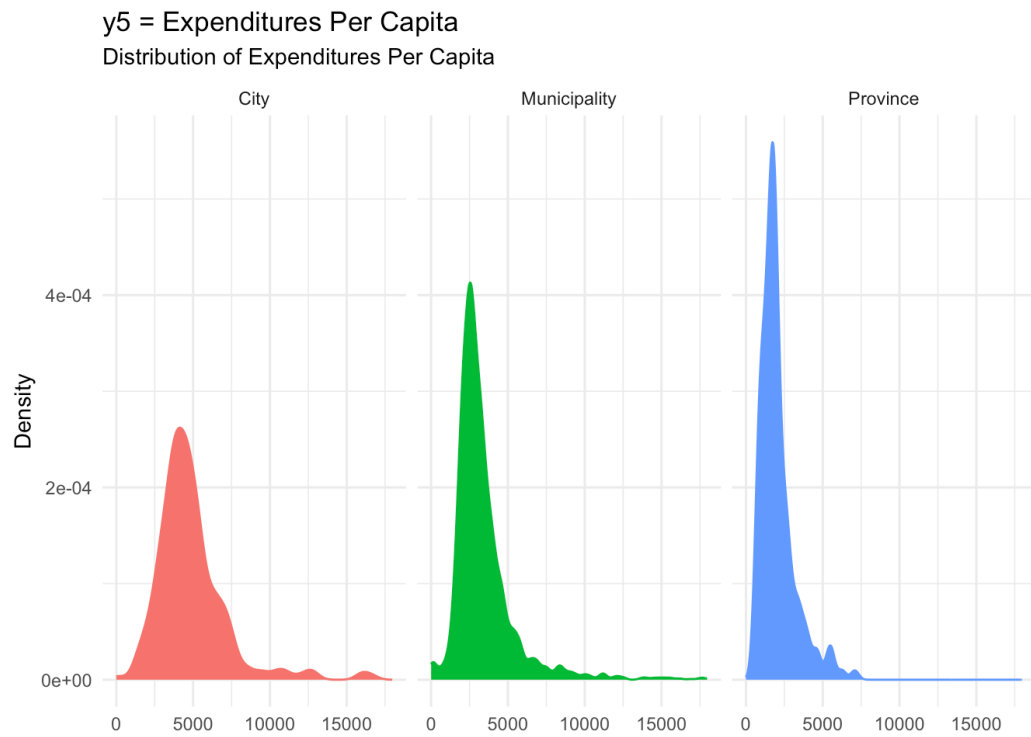
Mean Productive Shares (Non-GPS & Others)



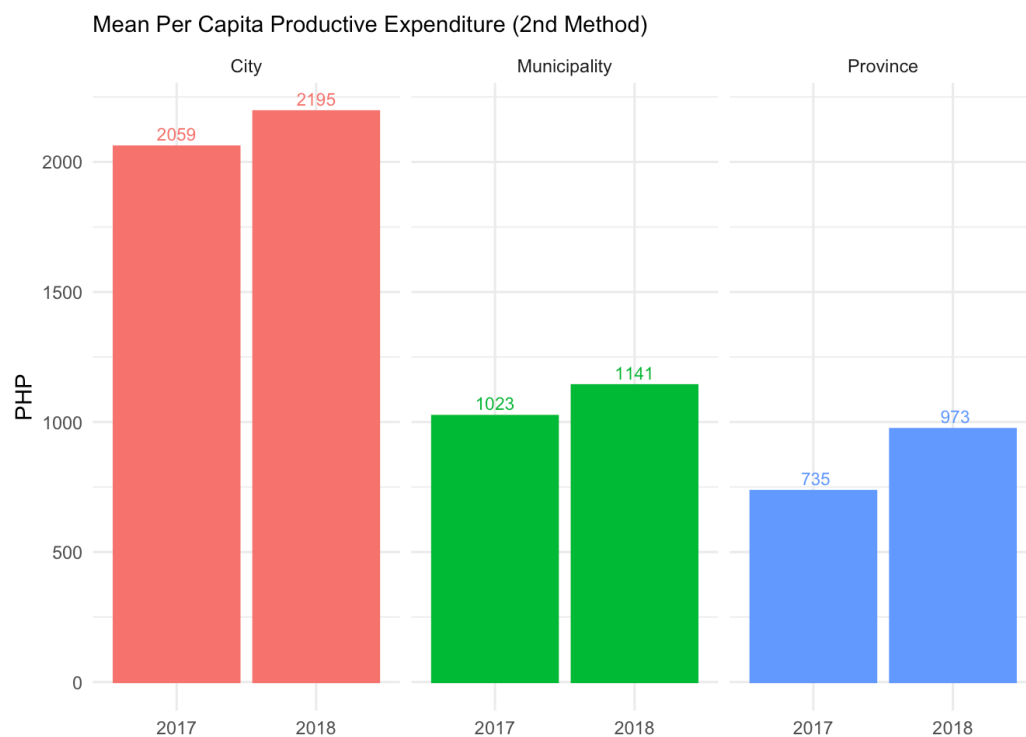
Mean Shares of Sectors & Funds in Total Budget



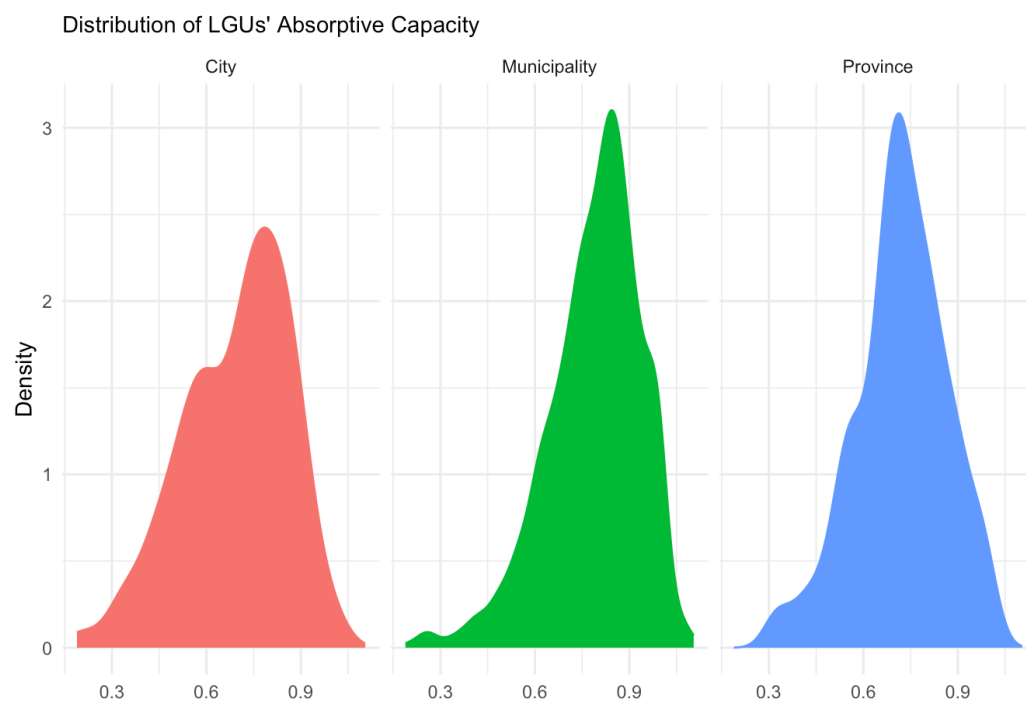
## 1.5 Expenditure Per Capita

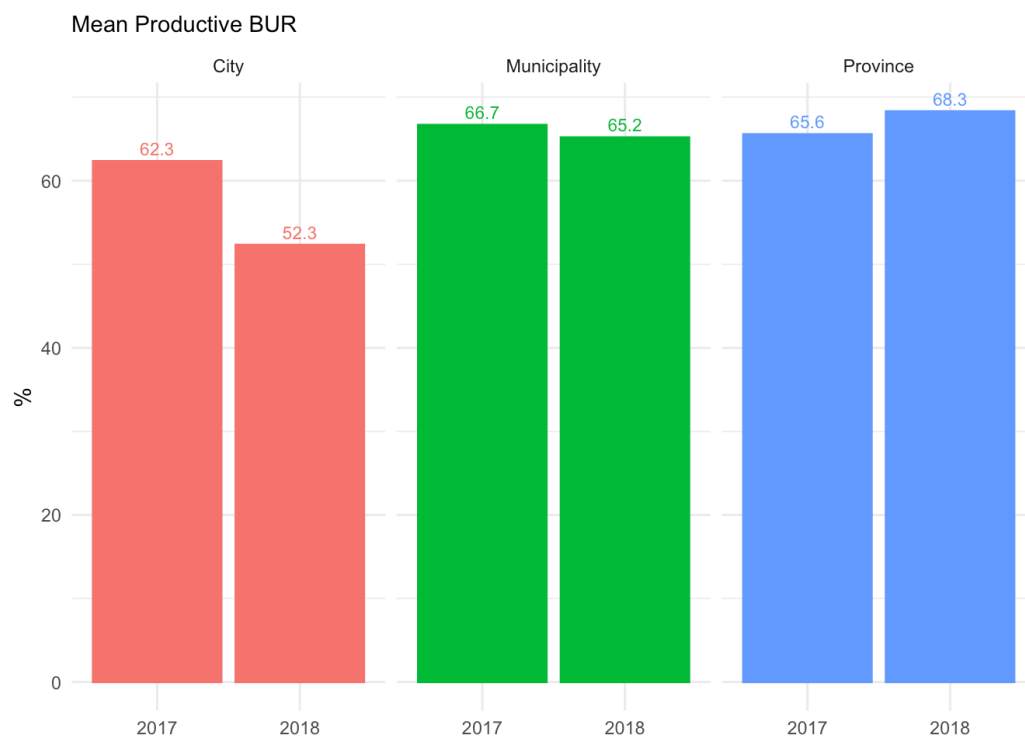
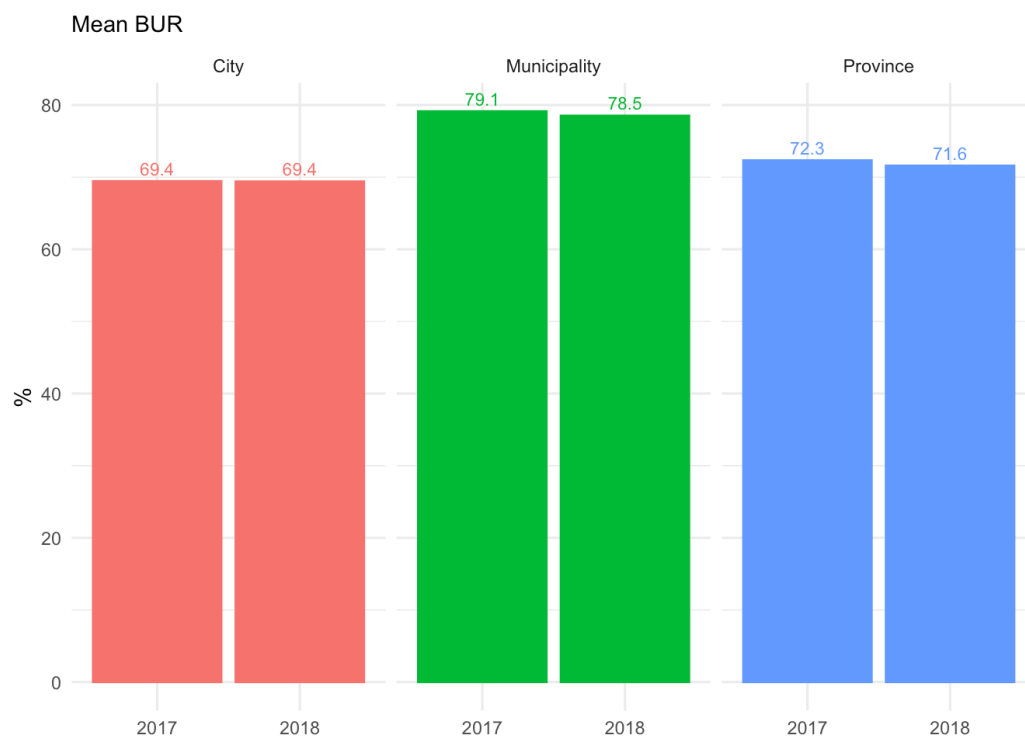






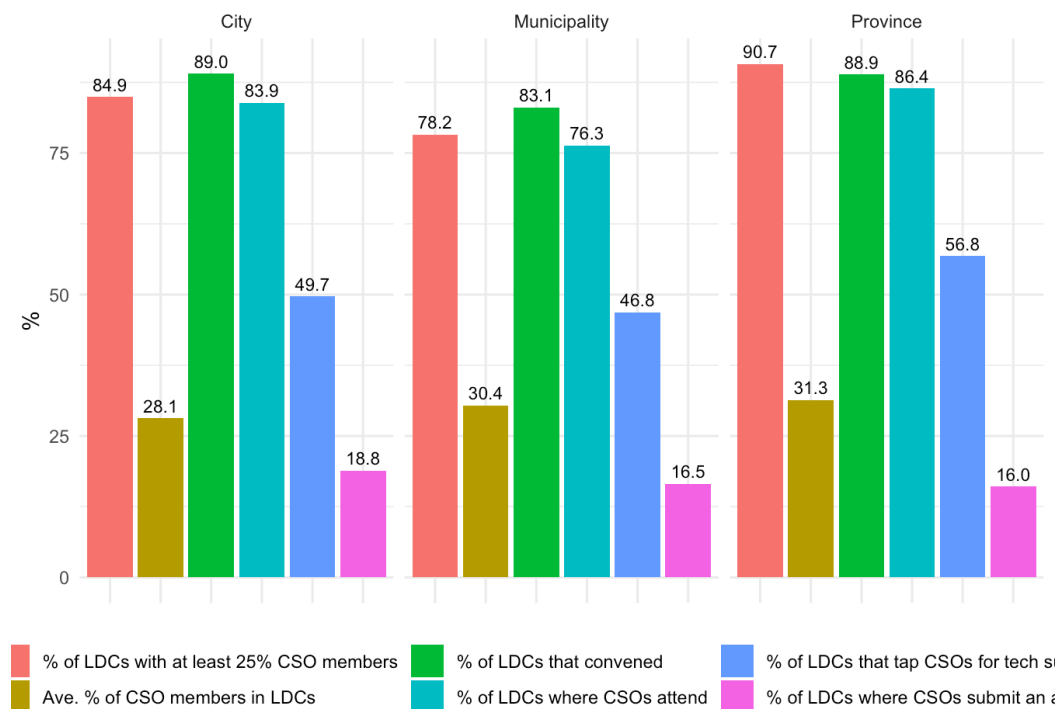
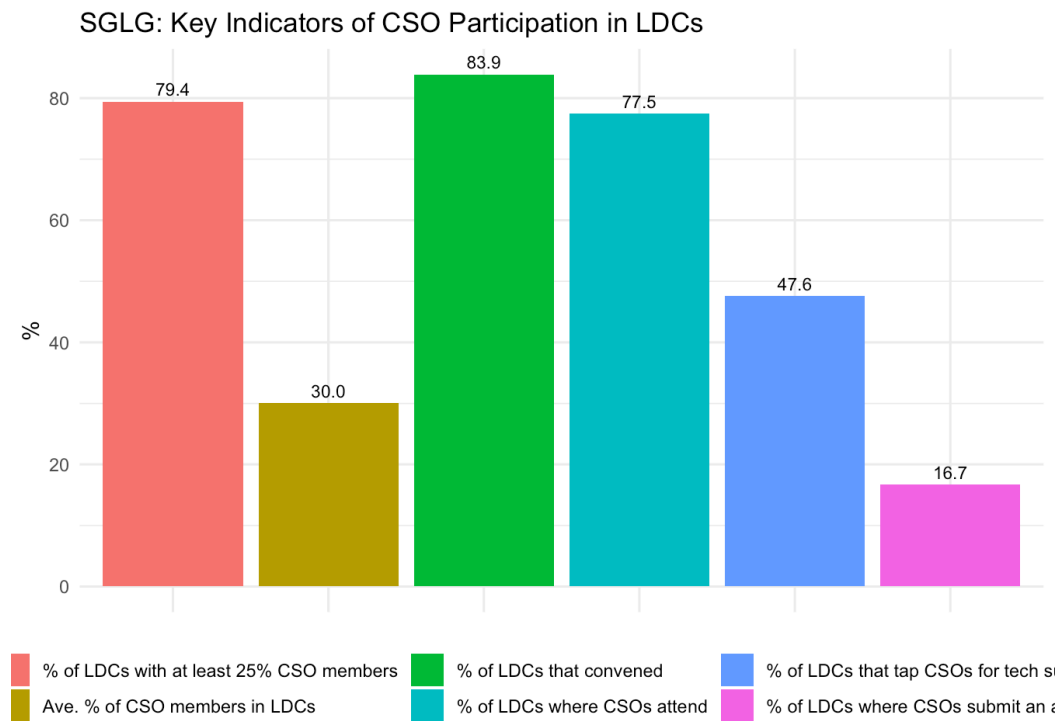
## 1.6 Budget Utilization Rate



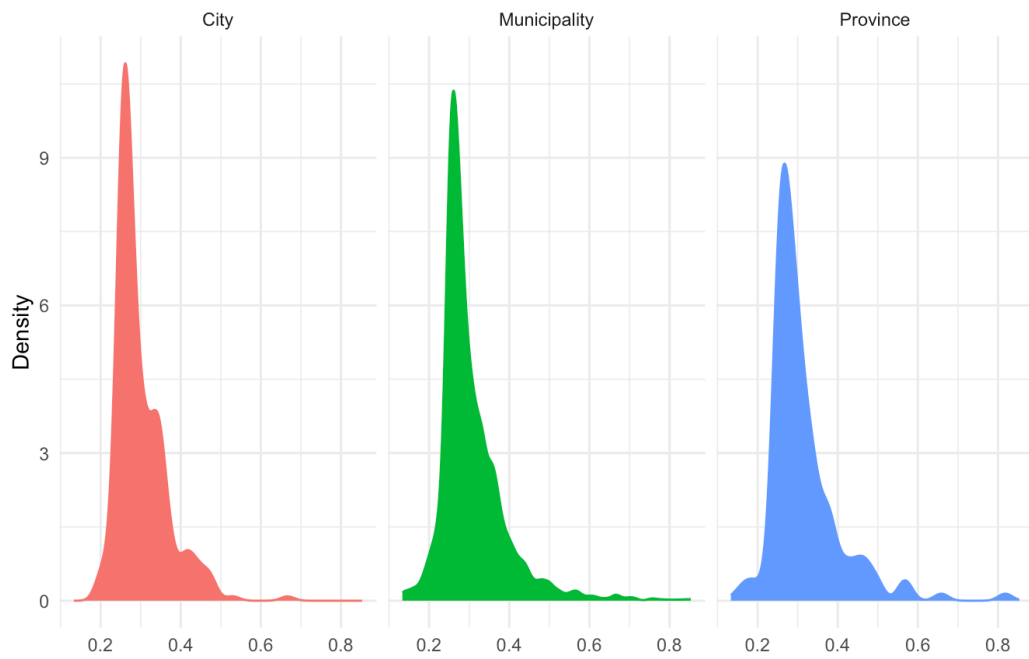


## 2. Explanatory Variables: CSO Participation

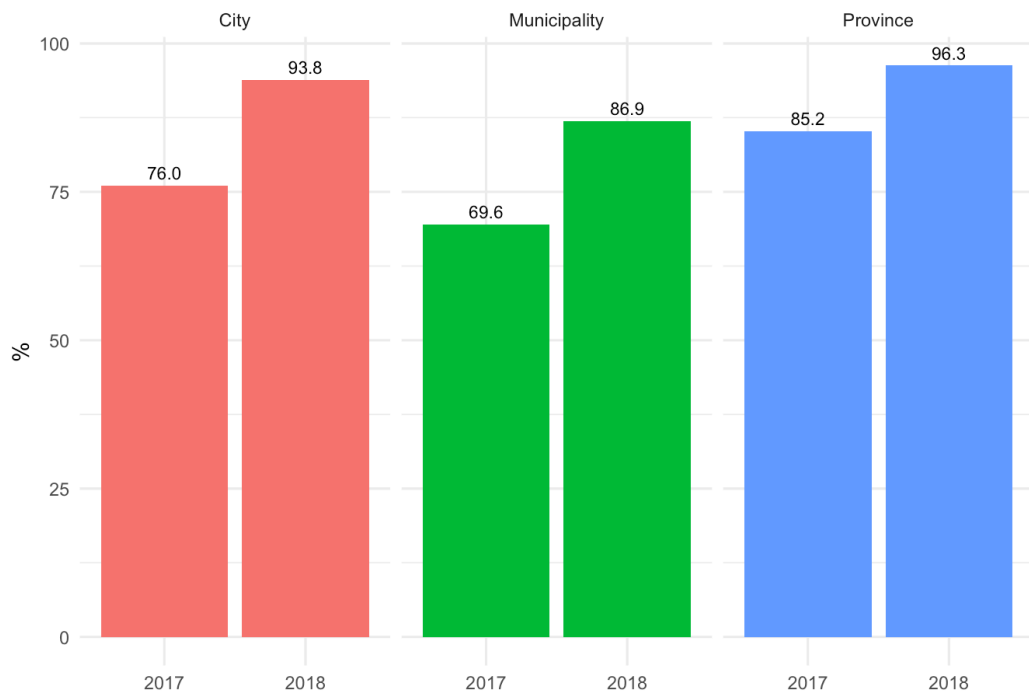
### 1.1 Local Revenue Growth



# SGLG: Participation in Local Development Councils Distribution of Proportion of CSOs in LDCs

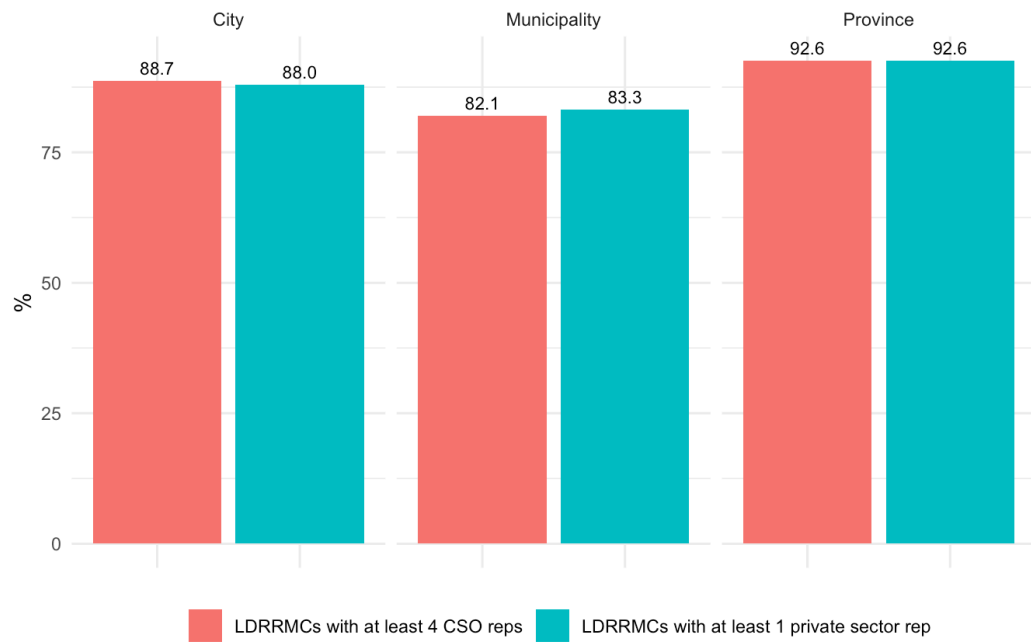


## LDCs that Meet Minimum 25% CSO Membership

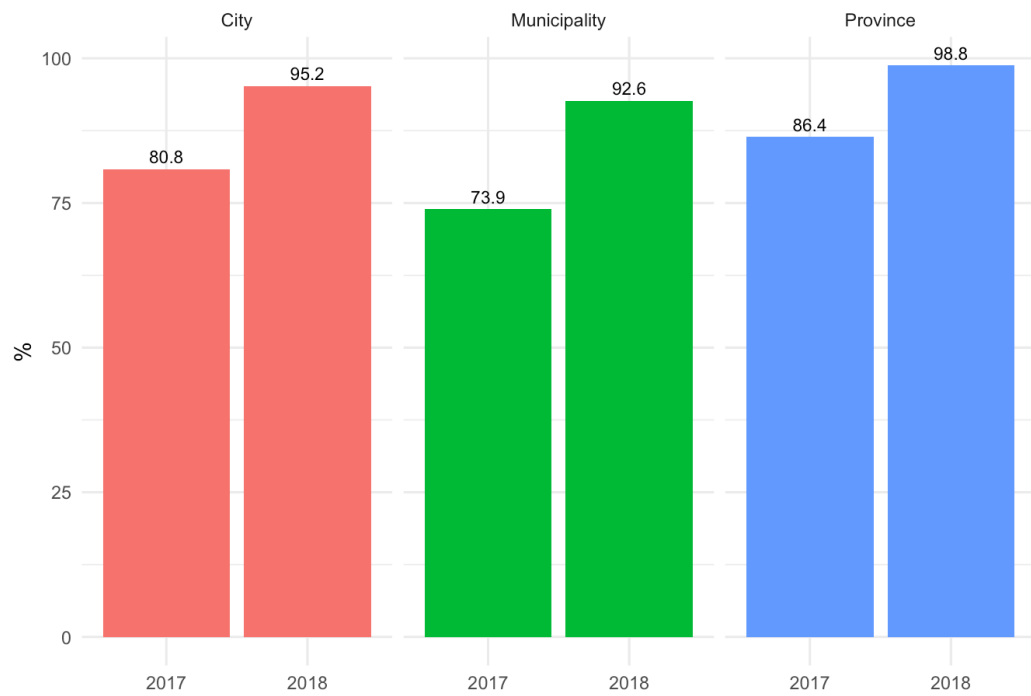


### SGLG: Participation in Local DRR Councils

#### LDRRMCs that Meet Minimum CSO & Private Sector Reps



#### LDRRMCs that Meet Minimum 4 CSO Representatives



## Annex B.2. Statistical Summary Tables

	All LGUs					Municipalities				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
y1_locrevgrowth	3,351	0.18	0.37	-0.7	3.27	2,909	0.19	0.38	-0.7	3.27
y2_ntadepend	3,388	0.8	0.2	0	1	2,935	0.82	0.18	0	1
y3_prodshare1	3,013	0.6	0.13	0.11	0.95	2,592	0.59	0.13	0.11	0.95
y3_mooeshare	3,013	0.4	0.12	0.01	0.77	2,591	0.39	0.12	0.01	0.77
y3_coshare	3,044	0.2	0.12	0	0.62	2,618	0.19	0.12	0	0.62
y4_prodshare2	3,044	0.41	0.15	0	0.93	2,619	0.4	0.14	0	0.92
y4_educshare	3,044	0.02	0.03	0	0.2	2,624	0.02	0.03	0	0.2
y4_healthshare	3,044	0.06	0.05	0	0.27	2,640	0.06	0.04	0	0.27
y4_socialshare	3,044	0.02	0.03	0	0.2	2,628	0.03	0.03	0	0.2
y4_econshare	3,044	0.08	0.08	0	0.58	2,622	0.07	0.07	0	0.58
y4_ldfshare	3,044	0.14	0.07	0	0.38	2,620	0.14	0.07	0	0.38
y4_ldrrmfshare	3,044	0.05	0.05	0	0.21	2,619	0.05	0.05	0	0.21
y5_spendpercap	3,036	3,448.76	2,063.43	2.02	17,964.14	2,611	3,389.35	1,998.60	2.02	17,964.14
y5_mooepercap	3,321	1,280.60	920.13	0	6,745.18	2,879	1,202.27	845.67	0	6,745.18

	All LGUs					Municipalities				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
y5_copercap	3,321	408.76	494.88	0	3,876.04	2,875	383.92	470.08	0	3,876.04
y5_educpercap	3,321	50.98	99.52	0	1,028.30	2,891	40.78	82.5	0	973.59
y5_healthpercap	3,321	221.02	199.72	0	1,289.39	2,888	200.04	178.82	0	1,233.61
y5_socialpercap	3,321	81.51	107.12	0	796.59	2,880	82.22	106.97	0	796.59
y5_econpercap	3,321	219.91	251.83	0	2,046.84	2,884	200.72	221.09	0	1,952.92
y5_ldfpercap	3,321	317.58	321.42	0	2,245.49	2,875	320.31	318.78	0	2,245.49
y5_ldrrmfpercap	3,321	127.42	186.89	0	1,246.85	2,877	131.11	192.11	0	1,246.85
y6_bur	3,013	0.78	0.15	0.19	1.1	2,591	0.79	0.15	0.19	1.1
y6_bur_mooe	2,961	4.71	9.84	0.08	85.52	2,540	5.1	10.49	0.08	85.52
y6_bur_co	2,990	0.54	0.33	0	2.98	2,568	0.55	0.34	0	2.98
y6_bur_educ	2,050	0.73	0.25	0	1.58	1,708	0.74	0.25	0	1.58
y6_bur_health	2,506	0.88	0.12	0.1	1.13	2,130	0.89	0.11	0.1	1.13
y6_bur_social	2,675	0.85	0.19	0	1.19	2,276	0.86	0.18	0	1.19
y6_bur_econ	2,715	0.79	0.23	0.01	1.41	2,309	0.81	0.22	0.01	1.41
y6_bur_ldf	2,676	0.57	0.29	0	1.01	2,310	0.58	0.29	0	1.01
y6_bur_ldrrmf	2,594	0.59	0.35	0	2.37	2,228	0.61	0.35	0	2.37
ldc_cso25pct	3,430	0.79	0.4	0	1	2,976	0.78	0.41	0	1
ldc_csopct	3,037	0.31	0.08	0.13	0.85	2,615	0.31	0.08	0.13	0.85
ldc_csoattend	3,421	0.77	0.42	0	1	2,967	0.76	0.43	0	1

	All LGUs					Municipalities				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
ldc_csoassist	3,421	0.48	0.5	0	1	2,967	0.47	0.5	0	1
ldc_csoplan	3,420	0.17	0.37	0	1	2,966	0.17	0.37	0	1
ldrrmc_cso4reps	3,422	0.84	0.37	0	1	2,968	0.83	0.37	0	1
fdp_posting	3,421	0.9	0.3	0	1	2,967	0.89	0.31	0	1
fdp_portal	3,421	0.87	0.34	0	1	2,967	0.86	0.35	0	1
coa_unqualified	3,421	0.07	0.26	0	1	2,967	0.07	0.26	0	1
coa_qualified	3,421	0.88	0.32	0	1	2,967	0.88	0.32	0	1
coa_disclaimer	3,421	0.02	0.13	0	1	2,967	0.02	0.14	0	1
coa_adverse	3,421	0.01	0.11	0	1	2,967	0.01	0.1	0	1
coa_noreptop	3,421	0.01	0.12	0	1	2,967	0.02	0.12	0	1
budget_percapita	3,355	5,202.77	12,728.24	0	400,698.00	2,908	5,103.77	13,553.36	0	400,698.00
log_gpsbudget	3,355	16.25	5.82	0	23.66	2,908	15.84	5.85	0	22.52
log_educbudget	3,355	9.31	7.48	0	22.08	2,908	8.65	7.23	0	20.48
log_healthbudget	3,355	12.51	7.08	0	22.27	2,908	11.95	6.98	0	20.14
log_socialbudget	3,355	12.34	6	0	21.85	2,908	11.89	6	0	21.51
log_econbudget	3,355	13.51	6.35	0	23.02	2,908	12.93	6.31	0	22.73
log_devfund	3,355	13.79	6.83	0	21.41	2,908	13.5	6.72	0	21.25
log_drrfund	3,355	12.33	6.65	0	21.08	2,908	11.97	6.56	0	18.92
log_psbudget	3,355	16.27	5.31	0	22.73	2,908	15.88	5.34	0	22.73



	All LGUs					Municipalities				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
log_mooebudget	3,355	16.39	5.35	0	23.22	2,908	15.95	5.34	0	22.52
log_cobudget	3,355	15.4	5.36	0	22.99	2,908	14.92	5.31	0	21.25
log_debtbudget	3,355	6.66	7.67	0	21.28	2,908	5.98	7.33	0	19.49
sglg_financial	3,430	0.28	0.45	0	1	2,976	0.25	0.43	0	1
sglg_disaster	3,430	0.25	0.44	0	1	2,976	0.23	0.42	0	1
sglg_social	3,430	0.27	0.45	0	1	2,976	0.25	0.44	0	1
sglg_eodb	3,430	0.69	0.46	0	1	2,976	0.68	0.46	0	1
sglg_peace	3,430	0.4	0.49	0	1	2,976	0.37	0.48	0	1
sglg_envi	3,430	0.57	0.5	0	1	2,976	0.54	0.5	0	1
sglg_culture	3,430	0.63	0.48	0	1	2,976	0.6	0.49	0	1
sglg_overall	3,430	0.19	0.39	0	1	2,976	0.17	0.38	0	1
pop_density_2018	3,430	776.2	3,045.19	0.65	72,798.68	2,976	428.71	883.9	0.65	18,390.78
poverty_2018	3,428	23.37	17.59	0.3	89.55	2,974	24.81	17.87	1.46	89.55
pop_urbanpct_2018	3,430	0.22	0.27	0	1	2,976	0.17	0.23	0	1

	Cities					Provinces				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
y1_locrevgrowth	287	0.13	0.16	-0.66	1.22	155	0.15	0.38	-0.61	2.33
y2_ntadepend	291	0.62	0.24	0	0.96	162	0.8	0.13	0.22	0.98
y3_prodshare1	260	0.68	0.12	0.12	0.93	161	0.68	0.1	0.17	0.92
y3_mooeshare	262	0.43	0.13	0.1	0.76	160	0.44	0.11	0.11	0.75
y3_coshare	265	0.25	0.12	0	0.59	161	0.24	0.11	0	0.56
y4_prodshare2	263	0.48	0.15	0	0.93	162	0.56	0.13	0.21	0.89
y4_educshare	258	0.05	0.05	0	0.2	162	0.02	0.03	0	0.19
y4_healthshare	262	0.07	0.05	0	0.23	142	0.14	0.09	0	0.27
y4_socialshare	259	0.02	0.03	0	0.2	157	0.02	0.04	0	0.2
y4_econshare	263	0.13	0.12	0	0.57	159	0.12	0.12	0	0.58
y4_ldfshare	264	0.1	0.08	0	0.38	160	0.14	0.07	0	0.35
y4_ldrrmfshare	263	0.03	0.03	0	0.18	162	0.05	0.04	0	0.2
y5_spendpercap	265	4,879.38	2,321.29	120.2	16,677.86	160	2,048.81	1,146.72	625.3	7,089.11
y5_mooepercap	282	2,251.72	1,192.16	0	6,557.38	160	978.37	588.4	0	4,542.53

	Cities					Provinces				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
y5_copercap	284	697.52	668.47	0	3,490.43	162	343.29	397.17	0	2,760.02
y5_educpercap	268	169.95	181.2	0	1,028.30	162	36.04	44.06	0	249.31
y5_healthpercap	276	340.5	237.34	0	1,289.39	157	397	305.45	0	1,279.07
y5_socialpercap	279	87.9	99.11	0	622.88	162	57.71	120	0	689.99
y5_econpercap	279	416.1	399.7	0	2,046.84	158	223.93	292.28	0	1,936.25
y5_ldfpercap	285	344.3	380.05	0	2,138.66	161	221.65	226.52	0	1,912.40
y5_ldrrmfpercap	283	114.77	162.17	0	858.36	161	83.78	112.17	0	858.8
y6_bur	262	0.69	0.17	0.19	1.02	160	0.72	0.14	0.32	1
y6_bur_mooe	261	2.37	3.25	0.16	30.58	160	2.34	3.38	0.09	33.78
y6_bur_co	262	0.45	0.28	0	1.62	160	0.46	0.27	0	1.45
y6_bur_educ	219	0.66	0.24	0	1.2	123	0.66	0.24	0.09	1.39
y6_bur_health	241	0.81	0.13	0.23	1.1	135	0.83	0.12	0.36	1
y6_bur_social	241	0.75	0.22	0.01	1.15	158	0.75	0.23	0.02	1.02
y6_bur_econ	247	0.63	0.28	0.03	1.25	159	0.7	0.25	0.03	1
y6_bur_ldf	220	0.51	0.31	0	1	146	0.56	0.29	0	1
y6_bur_ldrrmf	218	0.49	0.32	0	1.33	148	0.55	0.35	0	2.18
ldc_cso25pct	292	0.85	0.36	0	1	162	0.91	0.29	0	1
ldc_csopct	267	0.3	0.06	0.2	0.67	155	0.31	0.09	0.15	0.82
ldc_csoattend	292	0.84	0.37	0	1	162	0.86	0.34	0	1

	Cities					Provinces				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
ldc_csoassist	292	0.5	0.5	0	1	162	0.57	0.5	0	1
ldc_csoplan	292	0.19	0.39	0	1	162	0.16	0.37	0	1
ldrrmc_cso4reps	292	0.88	0.33	0	1	162	0.93	0.26	0	1
fdp_posting	292	0.91	0.28	0	1	162	0.96	0.19	0	1
fdp_portal	292	0.91	0.29	0	1	162	0.94	0.23	0	1
coa_unqualified	292	0.04	0.19	0	1	162	0.13	0.34	0	1
coa_qualified	292	0.9	0.29	0	1	162	0.85	0.36	0	1
coa_disclaimer	292	0.01	0.1	0	1	162	0.01	0.08	0	1
coa_adverse	292	0.04	0.2	0	1	162	0	0	0	0
coa_noreptop	292	0.01	0.08	0	1	162	0.01	0.11	0	1
budget_percapita	285	7,286.09	4,610.54	0	44,385.67	162	3,314.61	3,049.95	789.2	25,808.05
log_gpsbudget	285	18.32	5.74	0	23.66	162	19.92	2.33	0	22.12
log_educbudget	285	13.88	7.67	0	22.08	162	13.29	7.61	0	20.66
log_healthbudget	285	15.76	6.46	0	22.27	162	16.87	6.75	0	21.17
log_socialbudget	285	14.61	5.95	0	21.85	162	16.45	2.96	0	20.99
log_econbudget	285	16.47	6.19	0	23.02	162	18.71	2.34	0	22
log_devfund	285	14.64	7.76	0	21.2	162	17.48	5.84	0	21.41
log_drrfund	285	13.58	7.31	0	21.08	162	16.63	5.02	0	20.11
log_psbudget	285	18.21	5.21	0	22.35	162	19.92	1.65	0	21.41

	Cities					Provinces				
	N	Mean	St. Dev.	Min	Max	N	Mean	St. Dev.	Min	Max
log_mooebudget	285	18.64	5.34	0	23.22	162	20.34	1.75	0	22.04
log_cobudget	285	17.89	5.42	0	22.99	162	19.55	2.4	0	21.7
log_debtbudget	285	10.89	8.43	0	21.28	162	11.39	8.29	0	19.87
sglg_financial	292	0.48	0.5	0	1	162	0.36	0.48	0	1
sglg_disaster	292	0.44	0.5	0	1	162	0.33	0.47	0	1
sglg_social	292	0.43	0.5	0	1	162	0.35	0.48	0	1
sglg_eodb	292	0.79	0.41	0	1	162	0.68	0.47	0	1
sglg_peace	292	0.49	0.5	0	1	162	0.74	0.44	0	1
sglg_envi	292	0.74	0.44	0	1	162	0.83	0.38	0	1
sglg_culture	292	0.81	0.39	0	1	162	0.87	0.34	0	1
sglg_overall	292	0.33	0.47	0	1	162	0.21	0.41	0	1
pop_density_2018	292	4,565.02	9,242.16	120.2	72,798.68	162	330.31	458.15	27.16	2,672.49
poverty_2018	292	12.1	10.6	0.3	63.18	162	17.27	13.42	1.9	74.3
pop_urbanpct_2018	292	0.67	0.28	0.02	1	162	0.31	0.22	0	0.94

## **Annex C. Regression Analyses**

*These annexes containing regression tables and accompanying descriptive texts are also available on [kpicapistrano.github.io/MDE\\_Thesis](https://kpicapistrano.github.io/MDE_Thesis) as R Markdown documents (html):*

### **Annex C.1. Regression Analyses Covering All LGUs**

### **Annex C.2. Regression Analyses By LGU Type**