The Civil Society Organizations effect: A mixed-Methods analysis of bottom-up approaches in Brazilian public policy.

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This paper examines the effect of bottom-up accountability on public service delivery. We differentiate between information-driven interventions and the mobilization and monitoring efforts of organized Civil Society Organizations (CSOs), and argue that the latter type of interventions can can drive significant policy change. The study evaluates the effectiveness of the Obra Transparente project by Brazilian NGO Transparência Brasil, engaging 21 local CSOs in South and Southeast Brazil. Our findings emphasize the importance of sustained, coordinated efforts by socially embedded CSOS. These efforts, involving direct engagement with municipal officials and ensuring that their complains cannot be ignored lead to more substantial outcomes when compared with citizens information-driven. Keywords: accountability, Civil Society Organizations, mixed methods, community-driven development, public policy.

A. Introduction

Accountability is a crucial element in democratic systems, ensuring the efficient delivery of public services (Besley and Ghatak 2003; Cameron 2004; O'donnell 1998). Initially defined as the process of holding authorities responsible for their actions (Mulgan 2000; O'Loughlin 1990), the literature has since broadened to include various oversight mechanisms for politicians and the bureaucracy. Some authors focus on formal institutions (O'donnell 2003; Kenney 2003), known as horizontal accountability, while others examine how politicians respond to voters, the media, and civil society organizations (Bertelli and Van Ryzin 2020; Relly 2012; Paul 1992), referred to as vertical accountability.

Recent studies have highlighted the role of "bottom-up accountability" (also known as social accountability, Fox, 2015), in which citizens receive information about public policies and use it for social control. The pioneering study 'Power to

the People' (Björkman and Svensson 2009), which demonstrated the impact of local community engagement in monitoring the provision of health services, inspired subsequent literature that tested similar interventions in different contexts.

The mechanism would work like this: constituents have firsthand information about the outcomes of local policies, giving citizens incentives to combat corruption that directly affects them. Since policymakers are sensitive to social feedback from their own communities (Serra 2012), bottom-up accountability could influence local public policies

A series of recent studies have raised doubts about the effectiveness of "bottom-up accountability" strategies based on interventions aimed at increasing the monitoring capacity of ordinary citizens regarding public policies (Freire, Galdino, and Mignozzetti 2020; Raffler, Posner, and Parkerson 2019; Fox 2015).

However, not all types of interventions that promote citizen's voices are the same. We argue in the present paper that we need to differentiate between information-led tactical interventions and active mobilization and monitoring by Civil Society Organizations (CSOs). By their very nature, established CSOs are embedded in society and politics and, as such, can have "teeth" of their own, in the sense that they cannot be easily ignored by local authorities (Buntaine and Daniels 2020; Gong and Xiao 2017; Joshi and Houtzager 2012).

By targeting CSOs instead of individual citizens, we enhance the ability of the CSOs to overcome their collective action problem (Mattoni and Odilla 2021; Odilla 2023), which in turn improves their effectiveness.

The present paper provides evidence supporting this argument. We reassess the evidence provided by Freire, Galdino, and Mignozzetti (2020), considering a different intervention than the one they evaluated. They provided experimental evidence that a mobile app (Tá de Pé) made available to citizens did not improve the delivery of school and nursery construction works. Here, we assess the efficacy of a sister project, called "Obra Transparente," also developed by the Brazilian NGO Transparência Brasil. This project targeted 21 local Civil Society Organizations in 21 municipalities in the South and Southeast regions of Brazil, with the aim of improving access to education by addressing mismanagement and delays in the construction of public schools and nurseries. Both projects were developed in parallel, with similar goals, but achieved strikingly different results.

The "Obra Transparente" project consisted of strengthening a network of local CSOs to share experiences and information on monitoring the construction works, providing a technical support system for monitoring the process of constructing public schools and nurseries, and training on monitoring biddings, contracts, and constructions of public schools and nurseries.

Our findings emphasize that it is the sustained and concerted efforts of organized civil society, such as repeated meetings with municipal officials, persistent follow-ups, and on-site visits, that lead to more significant outcomes, in contrast to interventions providing information and generating sporadic citizen actions.

B.   The project Obra Transparente

The project was initiated in May 2017 by Transparência Brasil (TB) to address delays in school and nursery construction projects funded by the federal government and carried out by municipal governments. TB partnered with Observatório Social do Brasil, an NGO coordinating a network of local (municipality-based) NGOs focused on local government oversight. The Obra Transparente project concluded on June 30, 2019.

During the project, TB monitored construction plans, resource allocation, procurement processes, and work execution. They also tracked the monitoring and accountability procedures conducted by government bodies to ensure adherence to technical and legal guidelines.

Transparência Brasil collaborated with the Controladoria Geral da União, a federal government agency responsible for overseeing federal public spending, to develop training materials and provide courses to a network of local CSOs. Courses reached 270 participants, with a mix of online and in-person modules over several weeks along the duration of the project. These modules covered topics related to public bidding, construction monitoring, and contracting procedures.

C.   Research Design and Methods

We employ an integrated inference approach (Humphreys and Jacobs 2023) to analyze qualitative data within the framework of causal queries. As this approach is relatively innovative within qualitative research, we'll provide a comprehensive explanation.

The methodology outlined by (Humphreys and Jacobs 2023) mandates the creation of a causal model encoded in Directed Acyclic Graphs (DAGs), a framework developed by Pearl (2009). Bayesian inference, recently promoted in qualitative data analysis (Fairfield and Charman 2022), serves as the foundation for deriving quantitative estimates for causal queries constructed using the proposed DAG.

In the qualitative analysis, we investigate the impact of Civil Society Organization (CSO) monitoring on two aspects: the completion of construction works and the rectification of issues and irregularities found in construction facilities. Formally, the first research question relates to a causal relationship between monitoring (M) and completion (C), indicated by the DAG (M -> C). The second research query delves into whether monitoring (M) causes the fixing of issues (F), or the (DAG M -> F). To accommodate the qualitative nature of our variables, we treat them as binary.

Within this approach, a given DAG allows us to pose causal queries, which can yield estimands like the average treatment effect (ATE) or types, which we explain below. Types are the focal estimands in our study.

This approach hinges on the notion that each case can belong to a specific type, denoting different causal relationships. In our current investigation, let's focus on the (M -> C) DAG. To clarify what a type is, we'll employ the Potential

Outcomes (PO) notation (Rubin 2005; Imbens and Rubin 2015). Within the PO framework, every case has two potential outcomes: one when the treatment (in this case, CSO monitoring, M) is absent and another when the treatment is present. In simplified notation, if a city only completes construction works in the absence of monitoring, we express this in PO notation as $C(1) = 0$. If there is no monitoring (M = 0) and no completion, then we write $C(0) = 0$. Conversely, if there is monitoring (M = 1) and completion, we write $C(1) = 1$, and $C(0) = 1$ if there is completion without monitoring.

We can categorize a city into one of four types based on what happens when they do or do not receive the treatment (monitoring): Adverse (type "a"): A city that completes construction only if it doesn't receive the treatment (monitoring). Beneficial (type "b"): A city that completes construction only if there is monitoring. Chronic (type "c"): Cities that never complete construction, regardless of monitoring. Destined (type "d"): Cities that always complete construction, regardless of monitoring. The PO notation is instrumental here, as we can rewrite the types based on the following notation: Type "a" is one in which the potential outcome is 0 if M = 1 and 1 if M = 0. Therefore, we express it as θ_{10}, where the first subscript denotes the outcome when the treatment is 0, and the second denotes the outcome when the treatment is 1. We employ analogous notation for all other types: $b = \theta_{01}$, $c = \theta_{00}$, and $d = \theta_{11}$.

When analyzing a case study of what happened in a given municipality, we can use the data to answer, for example, the following causal query: what is the probability that the city if type "b", i.e, benefits from the monitoring and would have not completed the construction work if not for the monitoring of the local CSO?

The advantage of this approach is that all assumptions and restrictions imposed to identify the parameters of interest are transparent. It also allows the user to update posterior probabilities based on qualitative data. One reason for this is that with Bayesian inference, we do not need to rely on asymptotic theory to make inferences. Thus, there is no need for a large-n study. Formally speaking, one can make causal queries without any data, based only on prior probabilities for the parameters. Obviously the answer to such causal queries will be vague enough to be almost useless. But the point is that, once you have a prior and a causal model, encoded in a DAG, you can answer causal queries. As one collects data (any data, be it qualitative or quantitative), one can make assumptions about its nature (such as the data generating process), and then update the model and provide new answers to the causal queries, which hopefully will be informative enough to be useful for the task at hand. And even when the model or hypothesis is not completely identified, it can be partially identified (Manski 2003), which is still a useful answer to causal queries.

When comparing rival hypothesis, a comparison of posterior odds is a way to assess the probability of each hypothesis Fairfield and Charman (2022). We adopt this approach when comparing the probability of each type in the case studies.

D. Data

The evidence gathered is primarily based on documented reports collected by Transparência Brasil and produced by the local OSBs over the course of the project. We also use evidence collected on semi-structured interviews and an online survey with representatives of the 21 CSOs conducted by an independent evaluator of the project. For the quantitative analysis, we use administrative data about construction works by municipalities and socio-demographic data on municipalities.

E. Case Studies

Delivery of the construction works

In our first case study, we highlight an impressive achievement in ensuring the completion of construction work. In Taubaté, four construction projects were underway, which the local OSB began monitoring as part of Obra Transparente. By the project's conclusion, their efforts played a crucial role in facilitating the successful delivery of these schools and nurseries to the city, ensuring they were ready for use in the field of education

To put in perspective what was accomplished regarding the completion of all four projects, by the end of the project, of all 135 construction works planned for all 21 municipalities, only 25 were effectively delivered, a 18.5% delivery rate. In Taubaté, before the monitoring by the local CSO, the delivery rate was zero. After that, the delivery rate was 100% and one of the construction work was a previously paralyzed construction. According to a report by Transparência Brasil (Coelho, Galdino, and Sakai 2021), out of 771 stalled construction projects that were eventually completed, over 50% of them took more than two years to be delivered and 25% took three years or more. As we can see, the odds were against finishing the construction works.

The local CSO monitoring the construction work in Taubaté did one of the best jobs among all 21 municipalities covered in the project. In fact, it was mostly the work of a single volunteer with support from the local OSB and Transparência Brasil throughout the project. She monitored four ongoing construction works on a periodic basis, she was very knowledgeable and insistent in demanding response from contractors and the local government. To give a single example of the quality of the social monitoring going on, in an email sent on 17th January of 2018 to the local government, the local OSB volunteer wrote: "Fazendinha Daycare: a. construction log verified. There have been a few more construction workers on the site since December 15, 2017, but not enough, especially considering the extensive amount of work to be completed by the new delivery date in April 2018. b. (...). c. Lack of roof sealing, leading to water entering the classrooms (a situation that already existed on November 14, 2017)..." . She was by far the most knowledgeable and zealous volunteer of the whole project.

All of the construction works were effectively finished and delivered by the end of the project, although overdue. One of them, a resumption of a then halted construction work, was delivered 2 months overdue. The remaining three were further delayed, but no amendments were made on prices, only deadlines.

From a causal perspective, we are interested in comparing two rival hypotheses (Fairfield and Charman (2022)): the probability of Taubaté being a beneficial type ($b = \theta_{01}$) versus a "destined" type $d = \theta_{11}$. In particular, we assess the relative likelihood of each one with posterior odds. This explores the probability that monitoring caused the completion of construction works in Taubaté (M -> C) relative to completion without monitoring (due to a potential confounding variable, not measured, i.e., M <-> C). Employing a simple model and eight within-case instances, we conduct the causal query, estimating the mean posterior odds of type b over d.

Assuming uniform priors over the two hypotehsis, and ruling out the possibility of a type "a", i.e, that monitoring decreases the probability of completing a construction, and type "C", i.e, that it would never complete a construction work no matter what (we actually know this is false, since it completed four construction works), the probability that Taubaté is a type θ_{10}^{D}, i.e, it is a city in which the treatment has a positive effect is 65%, with 95% credibility interval around [23%, 95%]. As we can see, a wide interval, due to the low sample size, and yet, a positive effect nonetheless with 95% of certainty.

The table below presents the results of the posterior odds and the probability that the posterior odds is higher than 1.

Mean Posterior odds $\frac{\theta_{01}}{\theta_{11}}$	$Pr(\frac{\theta_{01}}{\theta_{11}}) > 1$
3.96	0.82

As we can see, It is almost four times more likely that Taubaté is type "b" than type "d", and the probability of this being so is more than 80%. The qualitative evidence, thus, suggests that the project was beneficial to the completion of the construction works.

<center>PREVENTING PROBLEMS BEFORE PROJECTS STARTED</center>

The local OSB monitoring in Auraucária story is one when oversight arrives at the right moment to prevent a costly government procurement.

In 2017, the Brazilian municipality of Araucária conducted bidding processes seeking to hire companies to build three nurseries. The project sent technical experts to the 3 planned construction sites, together with volunteers from the local Observatório, to check whether plans were consistent with the physical conditions observed on site. The experts' assessment was that high-cost contention walls included in the construction plans were unnecessary or could be replaced by low-cost solutions through adjustments. Originally, the contention walls would

cost R$ 1,577,338.57 (US$ 419,504.9, at the nominal exchange rate in 2019). The analysis was first directed to the local administration, suggesting changes to the construction plans, which were rejected. The bidding processes went on as initially planned. Subsequently, the experts' findings were submitted to the Brazilian Supreme Audit Institution, Tribunal de Contas da União (TCU), by Transparência Brasil and Observatório Social do Brazil (see annex 1). TCU recommended that the bidding process should be redone, and construction plans were to be redesigned, with more cost-effective solutions for the contention walls. In the new bidding process, their cost plummeted to R$ 416,883.17 (USD 110,873.2), a reduction of USD 308,631.7 — or 74% less. To give a sense of the impact on the city budget, the amount saved on these three constructions alone represents about 3% of all capital investments of Araucária in 2018. In short, in a single municipality, the project resulted in savings higher than the cost of the entire project funded by the grantee UNDEF (US$ 220,000.00).

Fixing defects in ongoing projects

Another impact of the project was the correction of the irregularities and construction failures, improving the quality of the delivered construction work. During their monitoring activities, the OSBs found defects and issues, promptly reported them to municipality administration, which then acted in order to fix them. The project partners ended up substituting government inspectors and making up for their shortcomings in ensuring contract compliance through supervision. This was the case in both the four constructions in Taubaté (SP) and three that were going on in Foz do Iguaçu (SC). In both cases volunteers performed monitoring activities very frequently, which allowed for a thorough investigation and revealed a series of defects in projects and execution.

Fixing defects in finished projects

In Palhoça (SC), is an example when oversight came too late. One of the daycares completed before the monitoring period started was delivered with a wall of perforated elements without proper grouting, with pieces that were already coming loose. The daycare was put into operation without addressing the issue, which led the staff to isolate the area to minimize the risk of injuries to the children. In other words, part of the building cannot be used due to a failure for which a solution should have already been demanded from the responsible company.

In Goioerê, the story had a more happy ending. Volunteers visited an already delivered school building and noticed improperly installed windows, rendering them non-functional. A series of finishes were also lacking, such as grab bars and handles in accessible restrooms for persons with disabilities or reduced mobility. These shortcomings compromised adequate use of the building and exposed its users - mainly children - to potentially dangerous situations. These flaws were mostly corrected by the contractor after being reported by the local Observatório.

F.   Quantitative observational evidence

We have already observed qualitative evidence indicating that local OSB monitoring played a crucial role in expediting the completion of construction projects. Now, we present quantitative evidence regarding the impact of this monitoring on delivery rates.

To do so, we collected data on school and nursery construction projects across the entire country, encompassing over two thousand municipalities and more than 14 thousand construction projects, spanning all phases from planning to execution and completion. The (**ref?**)(tab:table1) below provides descriptive statistics for these construction projects.

When comparing "treated" and "untreated" units, there is difference between the groups, as show below by the percentage of construction works within both groups before the project started.

Table 1—: Table 1 - Percentage of finished construction works before the project. Situation in August 2017 and August 2019

# of participating cities	% (Before Project)	% (After Project)
0	0.49	0.59
1	0.29	0.42

Note:

Construction projects in states SP, MG, SC, PR and RS.

Our primary objective is to compare the project's effects on the rate of delivery. To estimate the Average Treatment Effect on the Treated (ATT), we employed a matching strategy (Ho et al. 2007; Rubin 1973) with a Bayesian logistic regression to create the propensity scores. Balance was successful after matching. We also applied the same procedure to pre-project data to ensure that there were no substantial differences between the treated and control groups.

We estimate all models using the a varying-intercept regression equation (Gelman and Hill 2006):

$$Y_i = \alpha + \beta_1 T_i + \gamma X_i + \theta Z_i + \epsilon_i$$

Where i indexes the construction units, Y_i is 1 if a construction work is finished and 0 otherwise. α represents the intercept, β denotes the average treatment effect on the treated (ATT), and T_i is a binary treatment indicator (whether the municipality is part of Obra Transparent or not). Symbol γ is a vector of varying intercepts, X_i is a matrix of random effects for Brazilian municipalities, θ is a vector of control variables, and Z_i is an array of control variables for case i. The error term is represented by ϵ_i. We employed a Bayesian model with rstanarm

(Goodrich et al. 2023) with default weakly informative priors on the parameters (Gelman et al. 2008).

The table below presents estimates for the causal effect on the treated units regarding the change in completion rates before and after the project.

Table (insert ref number) summarizes the main results of the regression. The first row presents the results for the regression before the project started, where we expect the effect of the project to be zero, since it didn't exist. The second row shows the effect after the end of the project, when we expect the impact to be positive. The first column is an estimate of the posterior mean of the impact of the project and the second one is the posterior standard deviation of the estimate. We also present posterior median and 2.5 and 97.5 quantiles, in order to quantify the uncertainty around the estimates with a 95% credibility interval.

The hypothesis are corroborated, and we did not find an effect before the starting of the project, but found an effect aftet the end of the project. On average, a city that received the project Obra Transparente increases its delivery rate by almost 10%. These results support our argument and the qualitative evidence we presented that sustained and costly bottom-up accountability improve public policies.

Effect of local OSB social monitoring on construction delivery rates

Posterior probabilities

Variables	Mean	Sd	Median	2.5% CI	97.5% CI
ATT before project	0.025	0.042	0.026	−0.059	0.108
ATT After project	0.099	0.049	0.099	0.001	0.194

452 observations for the pre-treatment period and 320 observations for the post-treatment period, resulting from the matching procedure, and encompassing municipalities in the same states as municipalities of Obra Transparente

G.   Discussion of Results

One of the reasons identified for some of the problems with the construction works is lack of qualified personnel from the government to monitor the contractor work. As a result, the local government does not properly oversight the work of contractors. And this is a task that requires technical expertise and is time consuming, involving going multiple times to the construction site, comparing the construction log with the schedule to assess if there is potential delay and what is specified in the contract, to assess if the materials used are correct, if everything demanded is being done etc.

The fact that an intervention like Tá de Pé (Freire, Galdino, and Mignozzetti 2020), which provided information to citizens about construction work, but did not produce a meaningful impact does not mean that bottom up accountability does not have any effect. The evidence we gathered here, assessed with multiple

methods, clearly shows that costly and consistent oversight by civil society can produce results that are quite impactful, be it increased rate of project completion, improved quality of the construction works or decreasing in governmental spending.

The detection of evidence of procurement fraud cases also shows local administrations are not diligent enough in conducting procurement procedures, and the local partners of TB contributed to addressing that gap as well. Moreover, as federal audit agencies lack the capacity to adequately oversee and analyze the immense volume of contracting procedures conducted at the local level, the social monitoring resulted in the identification of high-risk cases that otherwise might not have been assessed by the competent bodies.

H. Concluding Remarks

Accountability, as a fundamental element in democratic systems, plays a pivotal role in ensuring the efficient provision of public services. Recent studies have brought to light the concept of "bottom-up accountability," where citizens receive information about public policies and utilize it to exert social control.

While tactical interventions aimed at providing information to citizens have shown limited impact, it would be a mistake to dismiss the potential of citizen voices in governance entirely. Our research has differentiated between information-led tactical interventions and active mobilization and monitoring by Civil Society Organizations (CSOs). We argue that organized CSOs, deeply rooted in society and politics, hold the capacity to bring about substantial policy change.

This paper provides evidence in support of this argument. By assessing the effectiveness of the "Obra Transparente" project developed by Transparência Brasil, we illustrate the significant role that organized CSOs can play in shaping government behavior and improving public service delivery. Unlike interventions solely focused on providing information, this project aimed at creating a network of local CSOs, offering technical support, and providing training on monitoring public school and nursery construction projects.

Our findings underscore the importance of sustained, concerted efforts by organized civil society, including direct engagement with municipal officials, persistent follow-ups, and on-site visits. These endeavors yield more substantial outcomes compared to interventions that merely deliver information and generate sporadic citizen actions.

In a world where accountability mechanisms continue to evolve, the role of organized civil society remains paramount. The ability to foster collective action, create informed oversight, and influence policy change is an essential aspect of accountable and effective democratic governance. The journey toward enhancing bottom-up accountability is ongoing, and our research contributes to a more comprehensive understanding of how it can be achieved through the mobilization of organized civil society.

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