

State Paralysis: The Effect of Compliance Uncertainty on Government Effectiveness

Pre-Analysis Plan

Abstract

Regulation and enforcement around the use of public funds can reduce corruption, but does it also alter incentives to spend? In this paper, we investigate whether compliance uncertainty around spending rules can stifle valuable-to-the-public spending and distort policy choice. We leverage administrative data and a collaboration with the Brazilian Council of Municipal Health Secretaries (CONASEMS), which organizes large conferences with municipal health heads responsible for managing, on average, a USD 1 million health budget. We first present three descriptive facts of the context consistent with the importance of compliance uncertainty for aggregate public spending. First, 20% of municipalities have experienced substantial incomplete spending for more than 10 years. Second, around one-fourth of the mayors are convicted with large penalties, even when there is no incidence of corruption. Lastly, regulation complexity is associated with incomplete spending (in the administrative data and a policymakers' perception in a survey). We then establish the causal link between compliance uncertainty and the spending decision, in a low-stakes lab-in-the-field experiment at CONASEMS conferences. We offer management support to implement a valuable public policy, namely a children's kit to reward parents who complete the vaccination scheme. We vary whether the children's kit includes "toys" (vs. "hygiene") items to be purchased with health earmarked funds. Preliminary evidence from the pilot shows that the toys policy bundle is perceived to be equally effective, but has a 20% reduced willingness to pay. Consistent with a risk-effectiveness trade-off, the toys policy bundle is perceived to have a higher risk.

I. Introduction

In an attempt to limit moral hazard by the local bureaucracy, federal governments introduce strict regulatory rules, a practice prevalent in public spending systems often permeated with extensive regulation. Budget planning has to adhere to fiscal rules, execution is done through competitive public procurement, and there are multiple levels of auditing involved. While these mechanisms have the potential benefit of preventing corruption (Avis, Ferraz, and Finan 2018), they often focus too narrowly on avoiding wrongdoing rather than promoting high-quality spending, generating incentives that could result in a shift away from output-oriented spending, and ultimately hurt the ability of local governments to provide goods and services.

This project studies a puzzling phenomenon: substantial shares of government budgets are not spent despite a clear need for additional resources to improve the quality of public services. According to a World Bank report studying budget execution in the health sector, budget execution is closely associated with country income level. While in high-income countries the health budget execution rate was around 100% over the past ten years, in low-income countries, where the need for resources is presumably larger, budgets were executed at about 86% over the period 2009-2018 (Piatti-Funkirchen et al. 2021). The extent of incomplete budget execution is more severe for types of spending that are more heavily regulated, such as capital expenditure. Budget execution rates in health are systematically higher for wages and salaries than they are for goods and services or capital expenditures (Piatti-Funkirchen et al. 2021). This phenomenon tends to be overlooked by the literature due to the prevalent focus on policy choice at early stages and on policy implementation at later stages of policymaking. The intermediary step of budget execution is often ignored.

In this project, we investigate the role of compliance uncertainty with extensive budgetary regulation as a driver of incomplete budget execution by local governments in Brazil. A potential key mechanism for why budgetary regulation and monitoring might distort incentives and hurt public service delivery is compliance uncertainty: when passive waste is misinterpreted as active waste (Bandiera, Prat, and Valletti 2009), bureaucrats might decide that procuring goods and services is not worth the risk. Thus, we aim to answer whether compliance uncertainty around spending rules can stifle valuable-to-the-public spending and distort policy choice, reducing innovation, limiting capital (and other heavily regulated) expenditure, or constraining other policy instruments.

Our study focuses on the health sector in Brazilian local governments. In Brazil, the compliance uncertainty channel is perceived as so important that it even led to the popularization of the term “*Apagão das canetas*” (Blackout of pens), which refers to public officials being reluctant to sign expense documents due to fears of being scrutinized by the control bodies and leading to unfinished public work. Brazilian municipalities are responsible for the provision of several public services, with health and education representing the two largest sectors. Despite the local management of the health system, its financing is centralized, with federal and state governments providing funds and regulations around it. Some of these funds are subject to municipal discretion, while others are earmarked, leading to variations in rules and oversight accordingly.

For compliance uncertainty to be a relevant channel driving incomplete budget execution, we should identify some elements aligned with this narrative in the context that we are studying. First, we should actually observe substantial shares of incomplete budget execution not explained by precautionary savings. We define incomplete budget execution as the share of the budget that is initially allocated but does not get to the finish line of the spending process (i.e., the product is not delivered). Focusing on budget execution in the health sector in Brazilian municipalities over the period 2000-2019, we show that, while there is substantial dispersion in the share of the budget that is not executed, almost 40% of the municipality-years exhibit at least 15% incomplete budget execution. According to the World Bank's definition of chronic under-execution –repeated deviations below 15 percent, a considerable number of municipalities in Brazil have fallen within this categorization (Piatti-Funkirchen et al. 2021). And 20% of them have been chronic for at least 10 years. To rule out savings motives as the main explanation, we surveyed local officials about the perceived causes of incomplete execution. They ranked smoothing resources or electoral motives as a less relevant reason than implementation difficulties and compliance uncertainty, suggesting that precautionary savings do not fully explain this. We also find that incomplete budget execution is positively associated with regulation complexity and earmarked funding.

Second, for compliance uncertainty to be an important channel driving incomplete budget execution, there has to be substantial prosecution risk. We show that almost 23% of the mayors elected in 2000 were convicted by the Federal Audit Court (TCU) for mishandling public funds within 15 years after their term. This share remained stable in the following electoral cycles. Among the convictions, 60% are single conviction cases and only 6% include corruption charges. The average financial penalty received by those who were convicted only once is

equivalent to 12% of the mayor's salary and, in 84% of cases, it includes a prohibition to run for elections or have any public sector position in the subsequent 8 years. Local officials' perception of the prosecution risk closely aligns with empirical data. When asked their perceived share of municipalities that get their accounts rejected by the audit courts in a given year, their estimations closely resemble the administrative data.

We study the causal effect of compliance uncertainty on spending decisions in a lab-in-the-field experiment with municipal health heads, in partnership with the Brazilian Council of Municipal Health Secretaries (CONASEMS). We offer policymakers management support to implement a valuable public policy, namely a children's kit to reward parents who complete the vaccination scheme. Crucially, we introduce exogenous variation in the compliance uncertainty associated with the public policy while holding constant its perceived effectiveness. We vary whether the children's kit includes “toys” (vs. “hygiene”) items to be purchased with health earmarked funds. Preliminary evidence from the pilot shows that the toys policy bundle is perceived to be equally effective, but has a 20% reduced willingness to pay. Consistent with a risk-effectiveness trade-off, the toys policy bundle is perceived to have a higher risk. This result suggests that compliance uncertainty can lead to underspending and distort policy choices by discouraging innovation.

This paper contributes to the literature on the regulation of public funds. Previous findings suggest that regulation of public funds increases passive waste due to procedural costs (Gerardino, Litschig, and Pomeranz 2017) and higher prices (Bandiera, Prat, and Valletti 2009), while reducing active waste through decreased corruption (Carreri and Martinez 2022). We aim to provide novel evidence on whether compliance uncertainty around the regulation of public funds alters incentives to spend and distorts policy choice. Policy distortion is an important passive waste margin on how governments are perceived as inefficient. Also, it distinguishes from previous literature by focusing on the effect of policies de facto implemented.

Research Questions

1. *Does compliance uncertainty reduce spending for equally effective policies?*
2. *Does compliance uncertainty distort spending towards less effective policies?*
3. *Does the salience of prosecution risk increase the compliance uncertainty distortion?*
4. *Does offering management support that mitigates the prosecution risk reduce or eliminate the compliance uncertainty distortion?*

II. Intervention and experimental design

Intervention and our partner organization

The experiment will be implemented in collaboration with CONASEMS, the Brazilian Council of Municipal Health Secretaries. CONASEMS is an organization that brings together municipal health heads and their respective officials to promote the discussion of health policies and resource allocation, and has established credibility in advising them on practical problems. In the context of our study, CONASEMS is interested in rigorously understanding budget execution challenges, such that they can invest in public goods that could help municipalities deliver better

health services moving forward. Importantly for our purposes, CONASEMS organizes a variety of conferences throughout the year, in which thousands of local officials from all over the country participate, including all municipal health heads. These meetings provide an unusual opportunity to reach a large population of local officials in one place. To establish the causal link between compliance uncertainty and spending decisions, we run a self-administered survey experiment during CONASEMS conferences with municipal health heads, who manage the local budget and are personally legally responsible for wrongdoing.

Experiment

The survey experiment has the following structure. We begin by describing one of the main challenges that municipalities are dealing with in the health sector: decreasing rates of childhood vaccination due to low patient demand. We focus specifically on measles vaccination, which has experienced a dramatic decline in Brazil, from 99.69% of the target population completing the vaccination schedule in 2013 to just 65.84% by 2022. We include newspaper headlines that further illustrate how this issue is perceived as a serious public health concern.

We will present health officials with a valuable incentive public policy that aims to overcome this challenge. The policy consists of offering a children's kit to reward families who bring children of the appropriate age group to vaccination centers. This policy has been tested across diverse settings, consistently demonstrating its high effectiveness, information that we explicitly communicate to them. It will be presented along with a proposal for management support to facilitate its implementation. This management support proposal consists of two policy-specific services that would assist with implementing and managing the incentive public policy. The first service consists of the integration and framing of the incentive public policy into the Multi-Year Plan, a mandatory strategic plan that outlines the medium-term goals, priorities, and public policies of local governments in Brazil. The second service provides assistance in planning and organizing the health workforce needed to implement the policy during a vaccination campaign.

To introduce variation in compliance uncertainty, we leverage the complex and ambiguous regulation around transfers from the Brazilian National Public Health System (SUS). In the management support proposal, we state that the resources to fund the incentive policy come from SUS transfers. Brazilian municipalities receive substantial federal transfers through SUS, and local officials are responsible for managing these funds and implementing policies according to strict and often ambiguous federal regulations. Municipal health heads and mayors are personally accountable for noncompliance, facing fines and legal prosecution for administrative errors. SUS transfers are earmarked resources designated exclusively for health-related expenditures. They are prone to compliance uncertainty due to the ambiguity regarding which expenditures are considered qualifying. The existing guidelines are unclear and subject to frequent revisions, which exacerbate the uncertainty in discerning which expenditures qualify.

By randomizing the items included in the children's kit, our experiment introduces exogenous variation in the compliance uncertainty associated with budget execution. Participants in the treatment group receive a kit containing toys, while the control group receives a kit with hygiene items. This distinction generates variation in the compliance uncertainty associated with each

version of the policy. By including toys in the bundle to be procured with SUS transfers, we increase the uncertainty about whether the expenditures qualify under existing regulations.

We use the Becker-DeGroot-Marschak (BDM) method to elicit participants' demand for the proposed management support. This procedure recovers the maximum true willingness to pay by eliminating strategic issues. All survey respondents will participate in a lottery for R\$8,000 (equivalent to around \$1500 USD) in products for their municipality's health department. These products are selected from a pre-approved list of 100 premium office items, such as coffee machines, tablets, and office chairs. Participants will use this potential endowment to indicate how much they value the management support proposals. Each participant will specify the maximum amount of the R\$8,000 budget they would be willing to give up in order to receive the management support. Then, a random cut-off number between 0 and 8,000 will be drawn by the computer. If the amount the participant specified is greater than or equal to the cut-off number, and their municipality wins the lottery, they will receive management support and have the cut-off amount deducted from their product budget. If the amount is lower than the cut-off, they will not receive the support, and if they win the lottery, they will receive the full R\$8,000 in products. Participants first completed an initial round designed to help them become familiar with the survey format and ensure they understood the procedure.

Before measuring their WTP, we include in our survey a question to measure participants' understanding of budget execution rules in the health sector. The results of our pilot show that a more educated bureaucracy is associated with stronger treatment effects, suggesting that more qualified bureaucrats are more susceptible to compliance uncertainty and that differences in state capacity cannot fully explain the distortion. We will do a stratified randomization of our main treatment by knowledge level.

Additionally, we randomize information about prosecution risk using data from the Federal Audit Court (TCU). Participants in the treatment group are told that more than 25% of the mayors elected in 2000 were convicted by the TCU for mishandling public funds within 15 years after their term, that only 7% of the convictions involve corruption charges, and they are also given information on the size of the penalties in these cases. We aim to understand whether increasing the salience of the prosecution risk makes policymakers react more to compliance uncertainty. Next, we aim to understand how much participants value a proposal that helps reduce this risk. To do so, we randomize the content of the management support proposal, with some participants receiving a version that includes additional risk-reduction components. The additional services include guidance in preparing the terms of reference for procuring the children's kit with SUS transfers, as well as technical support in preparing one of the most commonly used instruments by the Federal Audit Court to monitor public funds allocated to health, to help ensure compliance with SUS transfer regulations.

The survey will conclude with a question about participants' perceptions of the effectiveness of the different versions of the public policy and the perceived risk associated with them. Finally, we include two questions to address experimenter demand effects and social desirability bias. First, we ask participants about their beliefs regarding the researcher's objectives, to verify that these beliefs responded as expected to the demand treatments (De Quidt, Haushofer, and Roth 2018). Second, to mitigate social desirability bias, we ask a social-circle (third-person) question

that allows us to infer respondents' behavior from their perceptions of others (Bursztyn et al 2025).

Pilot

We implemented a pilot version of our survey experiment with 178 municipal health heads during a congress of the Council of Municipal Health Secretaries in the state of Santa Catarina. This event was held in the city of Tubarao in Santa Catarina, Brazil, in April 2023. Results from this pilot show that the children's kit with non-health sector items is perceived to be equally effective but has a 20% reduced willingness to pay. Consistent with a risk-effectiveness trade-off, the children's kit with non-health sector items is perceived to have a higher risk.

Sampling frame

The survey experiment implementation will take place during the 2025 CONASEMS Annual Congress, in June 2025 in Belo Horizonte, Brazil. Our sampling frame consists of the 5,570 municipal health secretariats in Brazil. As of the beginning of June, over 2200 municipal health heads registered for the congress. Given the estimated average duration of these events (three days), the length of our questionnaire (20 minutes), and the number of enumerators (twelve per implementation), we expect to survey around 700 health officials in the congress.

Treatment

Randomization A:

Treatment A: Kit with toys: Kit with high compliance uncertainty

Control A: Kit with hygiene items: Kit with low compliance uncertainty

Randomization B:

Treatment B: Increased salience of prosecution risk

Control B: No salience of prosecution risk

Randomization C:

Treatment C: Management support with risk-reduction components

Control C: Management support without risk-reduction components

III. Hypotheses and empirical analysis

Our outcome variable will be participants' willingness to pay for the proposed management support. Since the intervention is randomly assigned, comparing outcomes across the treatment and the control group yields causal treatment effects on the outcomes of interest. We will conduct the following comparisons to test our hypotheses. We will include in our estimations the following controls and fixed effects: region fixed effects, enumerator fixed effects, and municipal vaccination rates.

Hypothesis 1: Compliance uncertainty introduces distortion in public policy decisions, consistent with a risk-effectiveness trade-off.

- If perceived effectiveness kit toys=perceived effectiveness kit health, $WTP\ TA < WTP\ CA$
- If perceived effectiveness kit toys>perceived effectiveness kit health, $WTP\ TA \leq WTP\ CA$

Hypothesis 2: Increasing the salience of prosecution risk amplifies the distortion caused by compliance uncertainty.

- $(WTP\ CA\ TB - WTP\ TA\ TB) > (WTP\ CA\ CB - WTP\ TA\ CB)$

Hypothesis 3: While offering management support that mitigates prosecution risk can reduce the distortion caused by compliance uncertainty, it does not fully eliminate it.

- $(WTP\ CA\ CC - WTP\ TA\ CC) > (WTP\ CA\ TC - WTP\ TA\ TC) > 0$

Hypothesis 4: The distortion introduced by compliance uncertainty is greater among participants with more knowledge of the regulation.

References

Avis, E., C. Ferraz and F. Finan (2018) "Do Government Audits Reduce Corruption? Estimating the Impacts of Exposing Corrupt Politicians," *Journal of Political Economy*, 126(5), 1912-1964

Piatti-Funfkirchen, Moritz, Helene Barroy, Fedja Pivodic, and Federica Margini. 2021. "Budget execution in health: concepts, trends and policy issues."

Bandiera, O., A. Prat, and T. Valetti (2009). "Active and Passive Waste in Government Spending: Evidence from a Policy Experiment," *The American Economic Review*, 99(4), pp. 1278-1308.

Gerardino, Maria Paula, Stephan Litschig, and Dina Pomeranz. 2017. "Can audits backfire? Evidence from public procurement in Chile." *NBER Working Papers*, no. 23978.

Carreri, Maria, and Luis Martinez. "Fiscal rules, austerity in public administration, and political accountability: Evidence from a natural experiment in Colombia." *Chicago: Becker Friedman Institute for Research in Economics* (2022).

De Quidt, Jonathan, Johannes Haushofer, and Christopher Roth. "Measuring and bounding experimenter demand." *American Economic Review* 108.11 (2018): 3266-3302.

Bursztyn, Leonardo, et al. *The Social Desirability Atlas*. No. w33920. National Bureau of Economic Research, 2025.