

INFORMATION FRICTIONS IN GOVERNMENT-FIRM RELATIONSHIPS

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1. INTRODUCTION

Public procurement of goods and services represents the primary area of government investment. As a result, its potential as a driver of private sector development is massive. Yet, frictions in the functioning of procurement markets can lead to low competition, with a limited number of firms competing to obtain a contract, potentially resulting in an inefficient allocation of resources. Our project aims to estimate various information interventions that have been conducted in collaboration with the Uganda Public Procurement and Disposal of Public Assets Authority (PPDA), i.e., the national public procurement supervisory agency. Here, we test whether an intervention aiming to increase transparency of public procurement opportunities affects firm-level outcomes.

2. CONTEXT AND DATA

2.1. Context and Data. All public procurement contracts in Uganda are initiated by a public entity (Procurement and Disposal Entity, henceforth PDE). PDEs are either local or central government agencies, and include a mix of public hospitals and schools, ministries, local municipalities, and specialized agencies like the Uganda National Roads Authority and the National Water and Sewerage Corporation. The context is characterized by significant information frictions. In particular, firms face difficulties to timely learn about potential public procurement opportunities that interest them, given the lack of a centralized online system to advertise bid notices. In fact, (a) bid notices are usually published in one of several potential newspapers, and in random parts of a newspaper, which makes spotting them difficult, and (b) tenders are usually published in close proximity to the bidding deadlines, thus making it essential that firms are aware of them as soon as they are up.

The data we use in the analysis consists primarily of face-to-face surveys with business owners and high-level managers. The baseline took place around the summer of 2019, while the endline will take place at the end of 2021.

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3. EXPERIMENTAL DESIGN

Our firm-level intervention is aimed at reducing information frictions for firms interested in doing business with the government. Our main treatment consists of providing information about tender opportunities and calls for pre-qualification to half the firms in our sample. Specifically, for the full duration of the intervention (i.e., approximately end of 2019 to end of 2021), our research team manually collected all information about tender opportunities and calls for pre-qualification published in all Ugandan newspapers on a daily basis. We also monitored different online sources (individual PDE websites, the Government Procurement Portal and several specialized websites and aggregators). This information was then shared with treated firms through email/sms/WhatsApp twice a week. For a subset of treated firms, we strengthen the treatment with a small nudge. Specifically, half the treated firms were also given the possibility of claiming a one-time financial reimbursement for the purchase of bidding documents, in case they purchased them from a PDE they did not do business with before, as anecdotal evidence suggested many firms are reluctant to initiate new business relationships with PDEs they are not familiar with.

3.1. Randomization. The randomization was done using Stata. We use strata for firm location (Kampala vs other), sector (works, supply, services), and size (above and below sample median). 1,526 firms are allocated to the treatment group and 1,523 to the control group.

3.2. Analysis and Hypothesis Testing. Our main analysis of the experimental results will consist of running regressions of the form:

$$Y_{i1} = \alpha + \beta T_i + Y_{i0} + X_i' \gamma + \epsilon_i$$

where Y_{it} is the given outcome variable for firm i measured after the treatment, and T_i is an indicator equal to one if firm i is treated. Therefore β tests the effect of increasing information about public procurement opportunities. Y_{i0} is the baseline value for the outcome variable.¹ X_i is a vector of stratification variables (location, sector, size) and ϵ_i is the error term. This equation will allow us to measure the ITT of our treatment on the outcomes of interest. We will additionally estimate the LATE by instrumenting take-up with the offer of the treatment using the IV estimator. We will use robust standard errors.

We also collected basic information through phone surveys in the midst of the covid 2020 lockdowns, which we plan to use to complement the analysis over time. We will also look separately at whether the effects for the nudge subgroup are different than those who only received the information messages.

¹When the baseline value for our outcome is not available, following McKenzie (2012), we will impute its value using the average value of the outcome in the sample, and including in the regression a dummy equal to 1 if we imputed its value for observation i .

In terms of heterogeneity analysis, we plan to study whether the effects are stronger or weaker for firms with higher information frictions, for firms which lack personal connections to PDEs, for firms that have won at least a contract in the past, and for smaller firms.

3.3. Outcomes. The main analysis will focus on studying the following question: **Does the the treatment increase firms' participation in public procurement?**

We look at the following outcomes, measured using questions from our endline survey.²

- *Bids for open bidding public procurement contracts*
- *PDEs with which the firm pre-qualified and bid*
- *Tenders for which the firm purchased the bidding documents*
- *Tenders for which the firm asked for more information* (ranging from inspecting or purchasing the bidding documents, to the simple request of more information)
- *Contracts won*

Secondary public procurement outcomes include:

- *Adoption of public procurement practices within the firm*, such as whether the firm has a person in charge of preparing the public procurement bid documentation. Relatedly, we also plan to test whether the intervention changes the activities that the firm undertakes in order to learn about available procurement opportunities (the type of sources that the firm uses, and the amount of time that the firm dedicates to look for opportunities).
- *Number of "new" PDEs with which the firm interacted.* This tests whether the intervention led a firm to be more involved with PDEs with which the firm had not done business in the past.
- *Invitations for restricted bidding public procurement contracts.*
- *Subcontracts received.*

We will also attempt to measure whether the intervention increases firm-level information about public procurement opportunities, by looking at the impact on questions asking whether lack of information about procurement opportunities was a major frictions and by qualitatively analyzing the feedback firms provide about our information delivery product.

With the caveat that these measures are not always disclosed by firms, in a further secondary analysis we will study whether the intervention affects firm-level outcomes, and specifically: *Employment, Firm survival, Revenues, Profits.*

Finally, we will also analyze several survey questions that aim to unpack qualitatively the mechanisms for why firms may or may not have changed outcomes following our information intervention. These questions include reasons for not bidding or winning more, decisions to take actions to increase their participation in public procurement, and expected levels of competition.

²We look both at the extensive margin, and at the intensive margin (constructing an indicator equal to one if the outcome is greater than zero).