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Government demand and firm growth

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Abstract

Public procurement in developing countries accounts for approximately 13% of GDP, offering a significant market opportunity for domestic firms, especially those facing demand constraints. This paper explores the impact of selling to government entities on firm performance in Uganda, leveraging detailed administrative data and an event study methodology that corrects for firm self-selection and heterogeneity in the timing of the treatment. The results reveal that while firms increase their total sales after entering government contracts, they do not see improvements in productivity (measured by value added per worker). Moreover, sales to non-government customers drop sharply. This reallocation effect is persistent. This effect is not observed when firms sell to large private-sector buyers. Drawing on an original survey of firms engaged in public procurement, we highlight potential drivers of these dynamics, including capacity constraints and profitability differences between public and private sector sales.

Keywords: Public procurement; Private sector development; Firm performance; Uganda.

JEL Classification: E62; H32; D22

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1 Introduction

Public procurement represents an important market for domestic firms in developing countries. In 2018, on average, government purchases of goods and services in low-income economies accounted for 13% of GDP (Bosio and Djankov, 2020). In many countries, public procurement is designed to pursue objectives in addition to obtaining value for money, such as distributional equity or industrial development.[1] More generally, as government expenditures on goods and services are an important component of GDP, public procurement will impact on economic activity. Firms in developing countries often find it difficult to increase and sustain growth because of limited demand for their products and constraints impeding product differentiation, technology adoption and the realization of scale economies (Woodruff, 2018; Goldberg and Reed, 2023; Verhoogen, 2023; Bassi et al., 2022). Access to procurement contracts may help firms obtain external financing needed to expand supply capacity, improve quality and increase productivity.[2] Another channel for improving performance is that firms may benefit from learning by doing that leads to more efficient use of inputs or adopting new products/techniques in order to satisfy the terms of a government contract (Carrillo et al., 2023; Ferraz et al., 2021). Such benefits may have knock on effects on subsequent sales to the private sector.[3] Government demand can have drawbacks, too. Large demand shocks relative to firms' size can *crowd-out* sales to the private sector. This is especially true for (financially-constrained) smaller firms with limited production capacity that may have to decrease the amount of output sold to the private sector in order to deliver their government contracts (di Giovanni et al., 2022). Also, there might be differences in the prices paid by the government relative to private buyers that may introduce distortions in the market and that are usually related to the features of the procurement process (Bandiera et al., 2009).

In this paper, we study the performance of Ugandan firms that sell to government entities, analyzing the implications for their growth, labour productivity and sales to and purchases from other firms in the economy. We also consider what happens when firms stop selling to the government.

[1] This may be reflected in price preferences or earmarking of certain types of contracts for domestic firms ("buy national" policies) (Day and Merkert, 2021).

[2] In the context of advanced economies, studies find that obtaining government contracts may facilitate access to credit, especially for enterprises most likely to be financially constrained – i.e. smaller firms (Hebous and Zimmermann, 2021; di Giovanni et al., 2022; Coviello et al., 2022).

[3] Lee (2022) finds that Korean firms selling to the Government increase their sales to the private sector because of a reputational effect associated with success in the public procurement market.

In Uganda, public procurement is of above average importance, accounting for as much as 30% of GDP (Colonnelli et al., 2024). The government has emphasized the role that public procurement can play in fostering private sector development (NPA, 2020; Behuria, 2021). This is reflected in procurement regulations that aim to increase the share of projects allocated to domestic companies, fostering their participation in procurement (PPDA, 2018b,a, 2019).[4]

We exploit administrative micro data provided by the Uganda Revenue Authority on firm-to-firm transactions from value added tax (VAT) declarations which are matched with balance sheet information from the corporate income tax (CIT) and employment level information from the pay as you earn (PAYE) dataset, allowing us to assess different measures of firm performance. VAT declarations pertain to *all* of a firm's buyers and suppliers, including sales to (purchases by) government bodies.[5] This permits identification of whether and when a firm sells goods or services to a government entity and the value of any such transactions. This feature of the data marks an important difference between our analysis and studies that evaluate the effect of participation in public procurement using quasi-experimental settings based on the design of procurement auctions (e.g. Ferraz et al., 2021; Carrillo et al., 2023). Unlike these studies, we can precisely track the period when firms report sales to government entities and exploit differences in the relationship over time with the government as a buyer. Some firms sell to the government for most of the sample period, while others start or cease to sell to the government, allowing us to identify what happens when they "enter" and "exit".[6] This feature of the data also implies the analysis is not affected by issues such as uncertainty regarding when awarded contracts are implemented, which can be an issue when using auction data.[7]

[4]Although domestic firms obtain over 95% of all government contracts, these account for only half of the total value of public procurement (PPDA, 2019). The National Development Plans (NDP I, II and III) make specific reference to the importance of raising local content provisions in public procurement. The potential to raise the contribution of domestic factors of production is specifically identified for large-scale projects, such as the construction and energy sectors, but also for smaller-scale projects involving the supply of goods and services to the health, education and defence sectors (PPDA, 2019). The Buy Uganda Build Uganda (BUBU) policy, launched in 2014, aims to increase the value of procurement that goes to local firms (with a specific focus on micro and small firms, representing some 90% of all firms).

[5]One third of the firms in the VAT registry had at least one transaction with a government entity during the sample period (2012-2019). On average, the associated transactions are almost three times larger than the average firm-to-firm transaction.

[6]The richness of the bilateral VAT transaction data permits us to identify four different patterns: (1) the majority of firms (43%) reports positive sales to a government entity throughout the whole period (*Regular* suppliers); a quarter of the treated firms start and stop selling any time during the period covered by the data (*Irregular* suppliers); (3) one fifth keep selling to the government for all periods after the first transaction (*Stayers*); and (4) about 10% of the firms stopped selling to the government on a definitive base relative to the period covered by our sample (*Exiters*).

[7]For instance, project implementation delays may imply that the date of an official award is an imprecise measure of the start of treatment. Similarly lack of information on the actual duration of a project implies that the length of procurement projects may differ from what is stated in tender documentation.

In addition, we cover firms that may not be captured by public procurement auction data, e.g., smaller purchases awarded at the discretion of purchasing authorities. These are likely to be especially relevant to SMEs.

Our baseline specification links indicators of firms' performance to either the value of their sales to the government or to a dummy variable that switches to one in the year in which they start selling to a public body. Identification is based on the inclusion of firm fixed effects, along with industry-specific time trends, i.e., we evaluate the within-firm change in performance that can be associated with selling to government entities. To address potential endogeneity due, for instance, to possible self-selection by firms, we exploit information for a sub-sample of firms that start providing goods or services to the government after 2012. Given the differences between firms that sell to government entities and firms that do not, we construct the control group based on not yet treated firms (i.e. firms that will start selling to the government in subsequent years). This reduces concerns about potential self-selection of some types of firms into government contracts, allowing for more precise identification of the effect of starting (or stopping) to sell to the public sector. As the distribution of the treatment timing is heterogeneous across firms over time, we exploit recent advances in the two-way fixed effects literature that address potential biases in event study coefficient estimates stemming from the presence of negative weights under parallel trends and no anticipation effect assumptions (De Chaisemartin and D'Haultfoeuille, 2022; Roth et al., 2023).

Selling to government entities leads to increases in total sales but we do not observe an increase in value added per employee. For treated firms, government contracts do not simply add a new revenue stream that expands sales relative to what was realized before. Firms that start selling to the government reduce sales to other buyers both within the period in which sales to the government commence and thereafter. Transaction-level information reveals this *crowding-out* of private sales is associated with a shift in the composition of existing buyers, with an increase in their number and a drop in the average size of each transaction. When firms *stop* selling to government buyers and do not start again we observe a symmetric relationship: total sales drop as firms are unable to fully replace lost procurement contracts with sales to private buyers. This pattern is specific to transactions involving the government. When replicating the analysis using the first contract with either a (i) large domestic buyer or (ii) foreign-owned firm, we find evidence of total sales increasing without an accompanying drop in sales to other

private buyers.

We identify two potential mechanisms that may drive our main findings: (1) capacity and credit constraints, and (2) differences in the profitability of sales to public vs. private buyers. To explore their salience we provide qualitative evidence based on a survey of 236 Ugandan firms with experience with public procurement, and draw on the survey findings to undertake additional data analysis. The survey confirms the prevalence of capacity constraints in many firms that may hamper the possibility of expanding production after obtaining government contracts. We document that firms in services sectors, which rely less on fixed assets and thus may have less need to fund investment in plant and equipment to expand production, experience a smaller crowding out effect, consistent with potential (short-term) capacity constraints.[8] However, a significant share (40% of surveyed firms) expanded production capacity. Moreover, most surveyed firms did not regard access to finance as a significant factor inhibiting growth. In contrast, a majority of surveyed firms report that relative to private buyers, government entities pay higher prices and that this motivates reductions in sales to other firms. We provide suggestive evidence for this hypothesis using customs clearance (trade transactions) data for firms engaged in distribution activities (wholesale and retail trade). Firms in this sector rely extensively on imports, which can be decomposed into quantity and unit prices. Using information on the share of imports in total sales we show that for this subsample of firms sales to the government are associated with higher prices.

Related research. Our paper speaks to the literature on the barriers to firm growth in developing countries. Most extant research has focused on the supply-side (see Woodruff, 2018, for a review). Our contribution is on demand-side constraints (Goldberg and Reed, 2023)[9] and the potential role of sales to the government in alleviating such constraints. Much of the work on the role of government demand is on the design of procurement processes to ensure the realization of value for money and public policy objectives (e.g. Bosio et al., 2022) or on how to tackle information barriers and increase participation (Colonnelli et al., 2024; Hjort et al., 2024). Less attention has been given to the role participation in procurement as such can play as an instrument to promote private sector development. The evidence from developing countries is

[8] di Giovanni et al. (2022) also discuss the reallocation of supply by firms. In their model, this is driven by short-run capital constraints which are resolved by procurement contracts acting as collateral.

[9] Egger et al. (2022) document an increase of revenues for firms following a demand shock due to large transfer to local households. At the same time, they do not find increases in investments by firms, due to constraints in access to credit.

generally consistent with what we find, i.e. a positive effect of procurement on several dimensions of firms' performance (Ferraz et al., 2021; Fadic, 2020; Hoekman and Sanfilippo, 2020).[10] An important dimension we emphasize in this paper is that the relationship with total sales may not be transitory, a result in line with what Ferraz et al. (2021) and Hjort et al. (2024) find for Brazilian and Liberian firms, respectively.[11]

To our knowledge, the observed reallocation of supply by firms that start to sell to government entities has not been a focus of analysis in the literature on the firm-level effects of participation in public procurement. This reallocation effect is a central feature of the seminal paper by Baldwin and Richardson (1972), who focus on the aggregate (economy-wide) effect of procurement preferences and argue that in perfectly competitive markets where government demand is small relative to total market demand, directing procurement to preferred suppliers will have no effect on prices and simply serve to reallocate demand between public and private sector. As government demand is relatively large for many sectors in Uganda procurement policy may have effects on prices.

Our paper provides firm level evidence of the reallocation effect. This marks a difference with the findings by Ferraz et al. (2021) and Carrillo et al. (2023), who show no evidence of sales to private sector being displaced by sales to the government in their samples of Brazilian and Ecuadorean firms.[12] For developing countries, our findings parallel those of Alfaro-Urena et al. (2022) for Costa Rican firms that start selling to foreign multinationals, which is accompanied with a drop in sales to other buyers. They attribute the decrease to short-term capacity constraints[13] that push firms to raise their marginal costs (with a similar mechanism to that proposed by Almunia et al., 2021a), making prices less attractive to private buyers. The majority of firms in our survey report that the government pays higher prices and that this is mostly relevant for firms with high fixed costs. This survey result is consistent with their model.

[10] Hoekman and Sanfilippo (2020) show for a sample of sub-Saharan African countries, that the positive association between selling to government buyers is heterogeneous across firm characteristics, but seem to be more salient for younger, smaller and domestically owned firms.

[11] Fadic (2020), in contrast, finds that positive performance effects of entering into procurement is transitory for firms in Ecuador.

[12] Ferraz et al. (2021) do not find sales to private sector are displaced by sales to the Government. Rather, they find the two to be complementary. A difference is that they report that Government contracts are fulfilled in less than 1 year, whereas the average exposure of firms to transactions with Government entities in our sample in Uganda is on average around 3 years. Also Carrillo et al. (2023) find no evidence of short-term declines in sales to other buyers for a sample of Ecuadorian firms winning procurement contracts in the construction sector.

[13] There is a rich literature on capacity constraints, especially concerning trade (e.g. Atkin et al., 2017; Soderbery, 2014).

However, contrary to their conclusion that the decline in private sector sales is transitory, the Ugandan firms in our sample do not show a recovery in subsequent years. This might imply that firms in Uganda cannot invest in new fixed assets, consistent with evidence from a previous survey of small firms in Uganda by Bassi et al. (2022), or do not have sufficient incentives to do so.

The remainder of the paper proceeds as follows. Section 2 presents the data and descriptive statistics on the extent to which firms in Uganda sell to government entities. Section 3 introduces the empirical framework used for analysis and descriptive evidence of the relationship between selling to government entities and firm performance. Section 4 provides a causal interpretation for our findings, using event study estimators that also correct for heterogeneity in treatment timing. Section 5 reports robustness checks. An analysis of potential mechanisms, based on administrative data and a survey of Ugandan firms that participate in procurement, is presented in Section 6. Section 7 concludes.

2 Data

The transactions data used in this paper come from administrative records compiled by the Uganda Revenue Authority (URA) and span the 2009-2019 period. We use masked (i.e. pseudo-anonymized) records from the Ugandan VAT registry as the main source of data.[14] The VAT was introduced in Uganda in 1996, with a basic 18% rate and a set of exemptions. In a country with a tax-to-GDP ratio of just 14%, four percentage points below the Sub-Saharan Africa average,[15] the VAT accounts for over 30% of national tax revenues (Almunia et al., 2021b; Brockmeyer et al., 2024). As of 2012, all registered firms above a certain size threshold were required to provide VAT declarations on a monthly basis using an electronic form.[16] The data therefore provide a representative snapshot of all formal bilateral transactions between registered firms in the country. They span 18,938 reporting firms, for a total of 73,778 firm-year observations over the period considered.[17] We create a dataset of bilateral (firm-to-firm) transactions start-

[14] Each record is a precise VAT return event by a given registered entity, and might involve several distinct invoices and partner entities at once.

[15] See the UNU-Wider Government Revenue Dataset, accessed on July 2024.

[16] This threshold was in the order of UGX 50 million (some USD 13,700) up to 2015, and UGX 150 million thereafter (Almunia et al., 2017).

[17] Many firms report sporadically prior to 2012 and coverage is greater for more recent years. Over 76% of the firms report information for less than 6 years, slightly more than half for less than 3 years.

ing from the information reported in Schedule 1 of VAT declarations, focusing on transactions that involve identifiable registered entities as partners.[18]

We match the VAT data to the registry of taxpayers to obtain basic information on firm characteristics such as the year of incorporation, sector of activity (at the 4 digit level of the ISIC rev. 4 classification), and type of organization.[19] The data distinguish two categories of public bodies, "Government bodies and government-funded project" and "Local Authority". We use this information to identify the year a firm reports sales to an entity classified in one of these categories.[20] Table 1 provides descriptive statistics on the sectoral distribution of firms with a match in the VAT registry and the share of firms reporting at least one transaction with a government entity during the sample period – some 35% of all firms (6,385 of the 18,110 firms covered by the data). The number of firms selling to a government entity increased over time, but the share of all firms selling to the private sector remained relatively stable during the sample period (Appendix Figure A-1).

We integrate the records from the VAT declarations of a subset of firms with their financial and employment information from the Corporate Income Tax (CIT) and Pay-As-You-Earn (PAYE) datasets, respectively. Matching CIT and PAYE with VAT data reduces the size of the sample as the intersection between the datasets is imperfect. Out of the 18,110 unique firms in our dataset, 14,628 can be matched in the CIT, but only 8,202 in the PAYE. The total number of firms for which we can combine VAT sales, CIT and PAYE data is limited to 7,146. This results in 29,753 firm-year pairs.

While many firms sell to a government entity at some point in the sample period, transactions involving the government as a buyer represent only 4.3% of the total number of VAT transactions recorded over the period considered. The average value of a transaction involving a government entity as a buyer is UGX 100 million (approximately US$ 27,000), about 3 times larger than the average firm-to-firm transaction (UGX 36 million or US$ 9,700).

[18] Since the VAT returns report all sales declared by a registered firm, they also include total sales to unregistered entities and final customers (individuals).

[19] Not all firms in the VAT data match with an entry in the tax registry. More significant is a large number of unmatched entries on the declared partner side. In total, there are 15,150 matched reporting firms in the VAT data (accounting for 83.4% of the aggregated sample from Schedule 1 declarations). This discrepancy likely is due to the registry covering firms established up to 2018 (so that younger ones cannot be matched), as well as the possibility that some tax return forms report the wrong partner or reporter tax identification numbers.

[20] Other organization types defined in the registry include "Company", "International and Diplomatic Organization", "Non-Government Organization" and "Other".

Compared to other firms, those selling to the government (i) are more likely to be concentrated in distribution services, construction, manufacturing and high value-added services activities (ICT and Technical Professions) (Table 1); (ii) tend to be larger in terms of sales, a feature that is particularly evident for firms that keep on selling to the government from the time they become a supplier (Table A-1); (iii) have more partners to which they sell and from which they source (Table A-2); and (iv) are older (Figure A-2).

Table 1: Distribution of firms by sector and share with at least one government sale (%)

Sector	Number	Share in total (%)	Selling to Government (%)
Accommodation and food service activities	595	3.3	48.4
Activities of extraterritorial organizations and bodies	3	0	33.3
Activities of households as employers	40	.2	32.5
Administrative and support service activities	686	3.8	41.4
Agriculture, forestry, fishing	201	1.1	23.4
Arts, entertainment and recreation	110	.6	40.9
Construction	2157	11.9	52.9
Education	33	.2	39.4
Electricity, gas, steam supply	182	1	48.4
Financial and insurance activities	194	1.1	40.2
Human health and social work activities	108	.6	44.4
Information and communication	804	4.4	48
Manufacturing	1268	7	33.6
Mining and quarrying	77	.4	23.4
Other service activities	748	4.1	37.6
Professional, scientific and technical activities	1111	6.1	48.1
Public administration and defence	49	.3	44.9
Real estate activities	476	2.6	20.2
Transportation and storage	807	4.5	31
Water supply, sewerage, waste management	75	.4	50.7
Wholesale and retail trade, repair services	5084	28.1	32
Unknown	3302	18.2	20

Notes: Firms distribution by Industry Sector. Government and Local Authority related entities have been removed from the computation. Selling to Government (%) refers to the share of firms who sell to the government on the total number of firms in that industry.

The data allow us to distinguish four groups of firms that sell to government entities:

1. *Regular suppliers:* 43.7% of firms report transactions throughout the sample period;
2. *Stayers:* 20.2% of firms record a first sale to a government entity after they appear in the sample and keep recording transactions thereafter;
3. *Irregular suppliers:* 25.1% of firms record their first invoice to the government after they first appear in the sample but irregularly report sales to the government in following years;[21]

[21] For instance, a firm that reports its first sale to the government in 2013, then again in 2016, stops in 2017 and starts again in 2018.

4. *Exiters:* 11.1% of firms selling to a government entity the first time they appear in the sample, but stop doing so at some point subsequently.

In Section 4 we consider firms that start recording sales to the government within the period of interest (*Stayers* and *Irregular suppliers*) to estimate the effect of government purchases on firms' performance, as well as the effect of ceasing to sell to the government by exploiting the variation between *Exiters* and *Regular suppliers*.

3 Descriptive Evidence

We begin with descriptive evidence on the relationship between selling to the government and firm performance. We estimate the following regression using OLS:

$$Y_{it} = \beta_1 Gov_{it} + \lambda_i + \theta_{st} + \varepsilon_{it} \tag{1}$$

where Y_{it} is an outcome for firm i in year t. Specifically, we look at sales to different partners using the full sample from the VAT data. We also include information on the domestic network of firms, i.e. the number of buyers and the average size of transactions with private domestic buyers. For the sample of firms that can be matched across the other administrative datasets (CIT and PAYE), we include measures of labour productivity (sales and value-added per employee).

Our explanatory variable, Gov_{it}, measures either the (log) value of sales to government entities by firm i at time t or a dummy, taking the value 1 when a firm starts selling to the government and zero otherwise. λ_i, and θ_{st} are firm fixed effects and sector time trends, respectively.[22] Firm fixed effects account for firm-specific unobserved factors, while the addition of sector-specific fixed effects accounts for industry-specific factors that may influence firm performance, such as sector-specific trade or industrial policies. Standard errors are clustered at the firm level. Equation (1) allows us to identify within-firm changes in performance associated with selling to government entities. While including a broad set of fixed effects helps to account for omitted variables, both reverse causation due to the self-selection of certain types of firms

[22] Sectors are defined using the 4 digit ISIC classification.

and measurement error are potential sources of bias that we cannot account for. In our main analysis in Section 4 we therefore implement an event study approach that also corrects for heterogeneity in treatment timing.

Estimates based on equation (1) are reported in Appendix Table C-1 for both the discrete definition of the treatment (selling to the government) and a continuous definition of the treatment (value of firm sales to the government). Results are consistent across the two treatment specifications. Selling to government entities is associated with (i) higher levels of total sales and (ii) lower levels of sales to non-government buyers. The latter finding suggests that sales to government entities come at the expense of sales to other buyers, i.e., involve some reallocation of capacity instead of being additional.[23] Selling to the government is associated with an improvement in labour productivity, defined as sales per worker, and in value-added per worker.[24]

4 Event Study Analysis

The results from equation (1) cannot be interpreted in a causal manner given that firms that sell to government entities are unlikely to have performed similarly to firms that do not, absent the treatment. Table 2 compares the characteristics of treated firms before the first transaction with the government with firms that never sell to the government. The differences between treated and never treated are substantial for the variables included.[25] There are also relevant differences among firms that sell to the government. Table 2 illustrates that firms in the *Stayer* group are larger and have higher turnover and assets than those in the irregular supplier group.[26] We therefore implement an event study approach to examine if the trajectory of the estimated effect on firm performance changes discretely in response to the first sale to a government buyer.[27] The event study design also enables us to identify if there is a persistent effect of

[23] We also observe changes in the composition of the group of private buyers after a firm obtains a government contract. While the firm expands its network of private sector buyers, there is a negative effect on the average size of transactions with private sector buyers.

[24] The results are robust to (a) using a sub-sample of firms that is the same across all specifications (Appendix Table C-2); and (b) a sub-sample of firms with a balanced panel (Appendix Table C-3).

[25] Table A-3 in Appendix shows that firms selling to the government tend to have fewer buyers and are more profitable relative to firms that never sell to the government, even before they start selling to the government (Panel b vs Panel a). Table A-4 reports similar statistics for suppliers using the pattern identified in Section 2.

[26] These groups are defined in Section 2.

[27] In the recent FDI literature, event study designs have been used to study the effect of becoming a supplier to multinational corporations in Costa Rica and Belgium (Alfaro-Urena et al., 2022; Amiti et al., 2024).

receiving government contracts on firm performance. To rule out any pre-trends in the performance across firms that begin selling to the government and those that never do so, as appears to be the case (Table 2 and Appendix Table A-3), we restrict the control group to firms that *will* sell to the government in the future, that is, the not-yet-treated firms.

Even in the absence of pre-trends, estimates could be contaminated by the treatment effects from other periods (see Roth et al., 2023; De Chaisemartin and D'Haultfoeuille, 2022). As the treatment is heterogeneous over time across different units, the effects we find may not provide the correct weighted average of treatment effects across units (and time). This is because, with heterogeneous treatment, we end up comparing treated units with not yet treated units, which is correct, and with already-treated units, which is not. The introduction of the latter type of comparison results in negative weights for some of the coefficients estimated. We address this issue by using the method proposed by Callaway and Sant'Anna (2021), which estimates group- and time-specific average treatment effects on the treated using two-period/two-group difference-in-differences estimators and then aggregates them to produce summary treatment effect estimates, weighting by the size of each treatment group.

Table 2: Group difference (Before first sale to the government)

	Total Sales (UGX mln)	Total Assets (UGX mln)	Number of Employees	Number of Buyers	Number of Suppliers
Stayers	5076.85	9083.93	41.50	16.19	18.87
Irregular sellers	1959.96	3438.35	35.30	16.89	18.50
Stayers or Irregular sellers	3563.68	6702.27	38.41	16.53	18.69
Never sellers	1099.40	1966.54	21.96	6.89	10.25
Stayers vs Never	0	0	.00007	0	0
Irregulars vs Never	.09232	.08046	.00703	0	0

Notes: Mean values for selected outcomes across groups, defined by the type of economic relationship over the period of interest. Row 4 and 5 report the p-value from a two-tailed Wald test for mean difference across groups for stayers vs never sellers and intermittent vs never sellers respectively. Stayers consist of firms that switched to selling to the government at some point during the sample period and continued doing so. Irregular sellers comprise firms that sold periodically to the government since they switched to selling to the government in our sample.

More specifically, we use the doubly robust estimator proposed by Sant'Anna and Zhao (2020) as generalized by Callaway and Sant'Anna (2021) to a setting with multiple periods and multiple groups. This method combines the outcome regression approach and the inverse probability weighting using pre-treatment characteristics to either condition parallel trends or weight the control group by the probability of being treated. To improve the matching between treated and untreated units, we include a set of pre-treatment characteristics: the sector of the firm, the level of exports and imports registered by the firm, and the size of the economic network of a

firm as proxied by the total number of buyers and suppliers.[28]

4.1 Sales

Figure 1 plots the estimates of the evolution in firms total sales (left-hand panel) and sales excluding government contracts (right-hand panel) around the first year in which they start selling to government entities. The same information is provided in Figure 2 for those that continue to sell to the government in all the periods after the first sale. Each point denotes the annual estimate relative to the year before participation in procurement, while the vertical lines denote the 95% confidence interval. We find no significant differences in the evolution of the outcomes across the treated and control groups before the treatment,[29] and a sharp increase in sales relative to the control group in the year of treatment. In Figure 2 the point estimate suggests that total sales increase by 51% in the year of the treatment, corresponding to a UGX 145.9 million (or USD 39,000) increase in value.[30] The difference in total sales disappears in subsequent years when we consider both *Stayers* and *Irregular suppliers*, while the difference in total sales persists for the *Stayers*. We find a consistent pattern of firms that sell to the government significantly reducing their sales to non-government customers in the year of the treatment.[31] This is not simply a short-term effect; sales do not begin to recover until three years after firms start selling to government entities. This applies to both *Irregular suppliers* and *Stayers*.

We can exploit the granularity of the transaction level data to unpack sales to the private sector into (i) the total number of buyers and (ii) the average size of transactions. To maintain consistency in the interpretation of findings we present results on such network effects for the *Stayers*.[32] Results for private sector sales are plotted in Figure 3. After the first transaction with the government, there are visible changes within the network: the number of private buyers increases (left-side panel), but the average size of transactions falls (right-side panel). Although the decline in the average size of transactions is mechanical, it also reflects a change

[28] We exclude the pre-treatment proxies of the economic network when we evaluate the effect of treatment on the buyers' network.

[29] Numerical estimates for the Average Treatment on Treated (ATT) for all groups across all periods are reported in Appendix Section E, alongside the cohort size in each exercise proposed in this and the next sections.

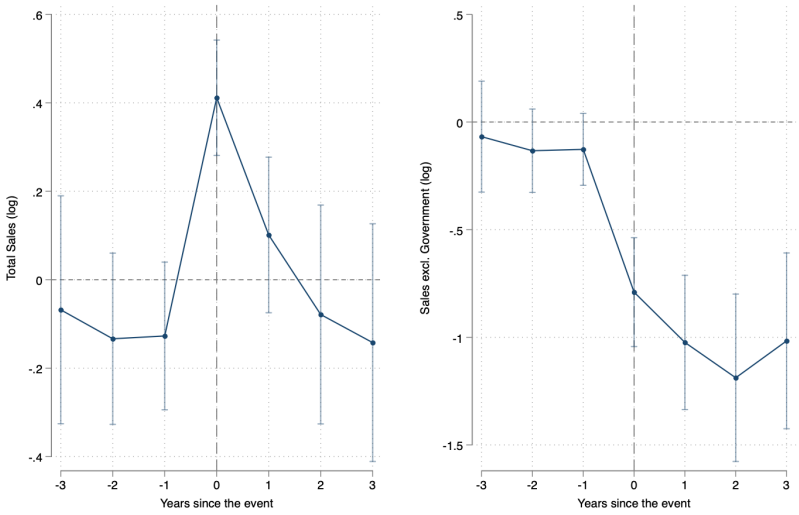
[30] The estimation sample median of total sales equals UGX 286 million (USD 77,000).

[31] Sales to non-government customers decline by UGX 153.6 million in the year of the treatment.

[32] We also do this for productivity (Section 4.2), while providing additional evidence on what happens when firms stop selling to the government in Section 4.3. The effect on linkages and productivity for both *Stayers* and *Irregular suppliers* is reported in Section D of the Appendix.

in the composition of the firm's private buyers. Appendix Table G-1 reports results from an OLS regression indicating that selling to the government is associated with having a smaller percentage of large private firms as buyers.[33] Selling to the government is also associated with a reduction in sales to pre-existing private buyers. Appendix Figure G-1 shows that firms selling to the government tend to have larger transactions with pre-existing private buyers than with private customers they acquire after they start selling to the government. These compositional changes suggest that firms drop big private buyers to create slack to cater to the government. The findings are consistent with the survey, suggesting this pattern reflects the greater attractiveness of selling to the government (we discuss this further in Section 6).

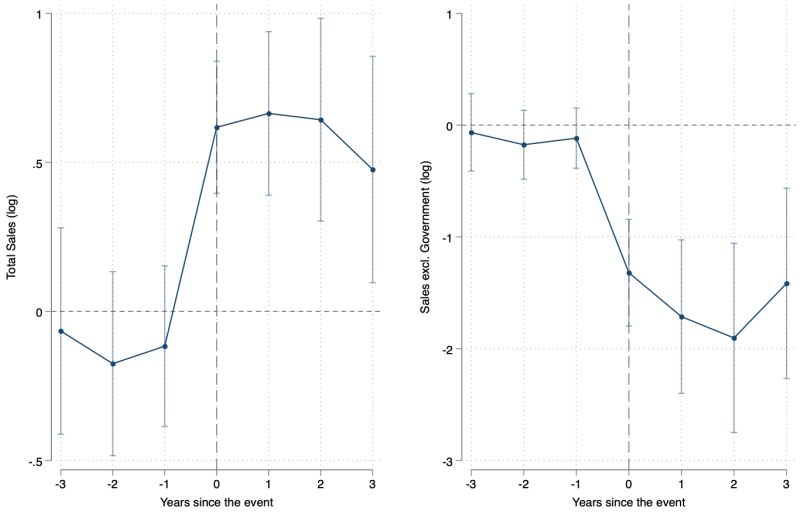
Figure 1: Sales – *Stayers* and *Irregular Suppliers*



Notes: The event study compares firms that start selling to the government to firms that will sell to the government in later years. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Sales outcomes are reported in logs.

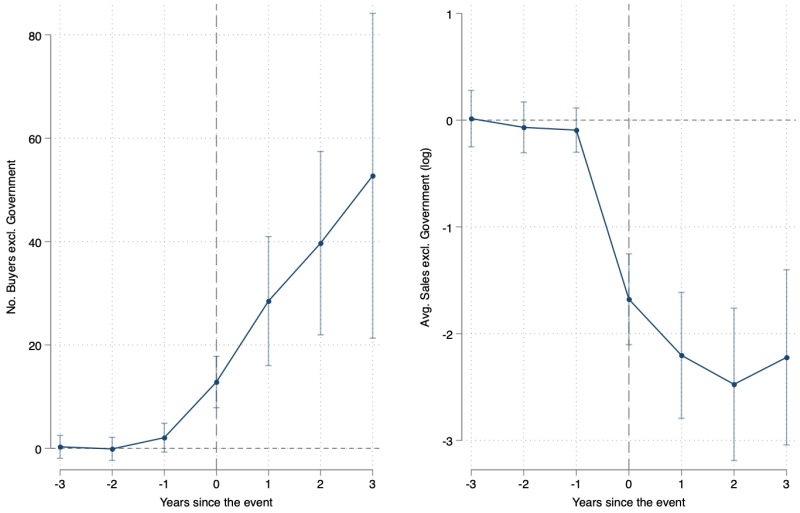
[33] We define a large private firm as one whose average income over the sample period was in the top 10 percentile of the distribution.

Figure 2: Sales – *Stayers* only



Notes: The event study compares firms that start selling to the government and continue doing so afterward to firms that will sell continuously to the government in the later years. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Sales outcomes are reported in logs.

Figure 3: Linkages

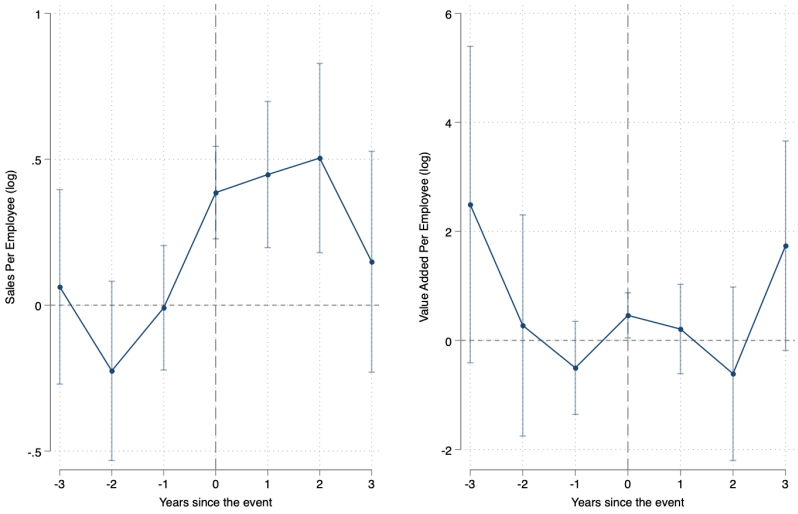


Notes: The event study compares firms that start selling to the government and continue doing so afterward to firms that will sell continuously to the government in the later years. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. The number of non-govt. buyers is reported in absolute values while the average size of the transaction with non-govt. buyers is reported in logs.

4.2 Productivity

As in our initial descriptive analysis, labour productivity, measured as sales per employee, increases for firms that sell to government entities (Figure 4, left-hand panel). However, we no longer find a corresponding increase in value-added per employee (Figure 4, right-hand panel). This might reflect an increase in total sales and revenues without a corresponding increase in capacity or efficiency. If productivity growth is driven by efficiency gains, we should also observe a corresponding improvement in wages. However, when we replicate our event study-based analysis using compensation per employee as an outcome, we do not find evidence of a significant improvement.[34] In Section 6, we explore potential channels that could underlie this finding, which include capacity expansion constraints and price differences between contracts for the public sector and those with private buyers.

Figure 4: Productivity



Notes: The event study compares firms that start selling to the government and continue doing so afterward to firms that will sell continuously to the government in the later years. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Both sales and value-added per employee are reported in logs.

4.3 Losing Government Contracts

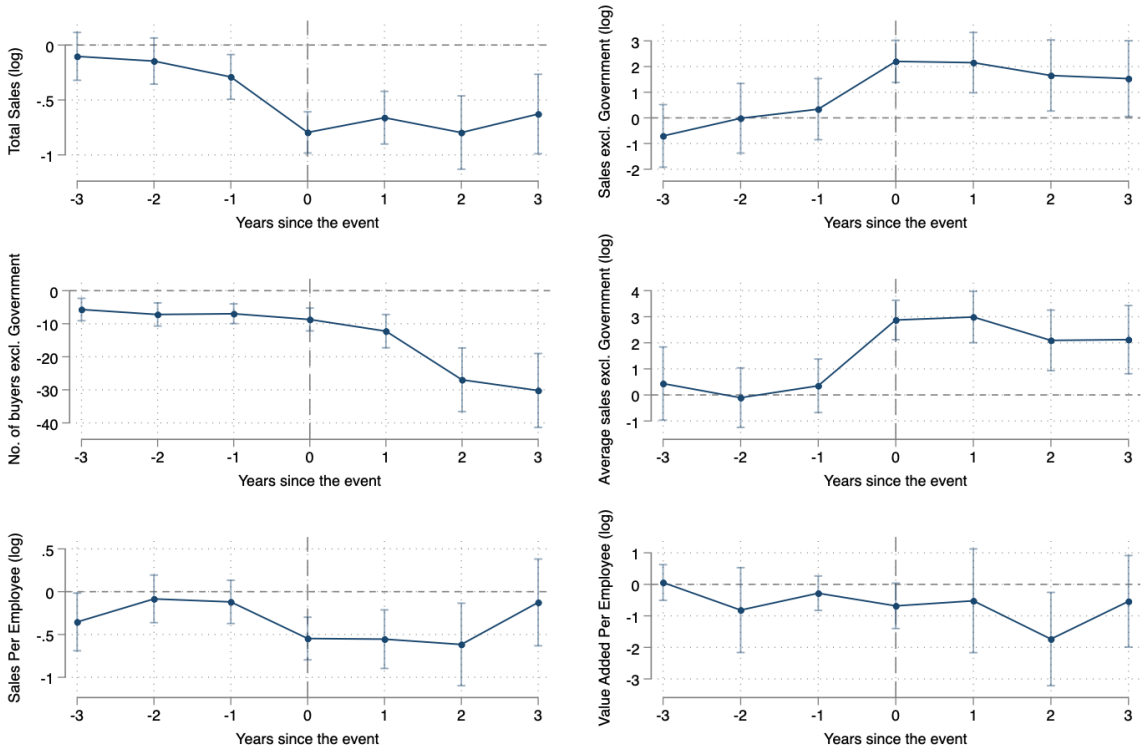
The transaction data also enable us to analyze what happens when firms *stop* selling to the government. Figure 1 showed that the positive effect of selling to the government fades away

[34] Numerical estimates of the average ATT for all groups across all periods are reported in Appendix Section E.

after the first transaction if we include firms that sell irregularly to the government. Analyzing the behavior of firms that stop selling to government entities provides some intuition on how firms adjust. Figure 5 reports the results for all the outcomes of interest in a setting in which a firm is considered treated when it *stops* selling to the government and does not obtain a contract again in the future (the *Exiters*). The control group comprises those firms that report transactions with the government throughout the entire period of analysis.

Results mirror our previous findings. Exiting from government contracts is associated with a drop in total sales (Figure 5). For instance, in the year when firms exit, their total sales decline by UGX 443 million. The decline in overall sales due to losing government as a buyer is not sufficiently compensated by a contemporaneous gain in private sales. When losing government contracts, firms adjust by reducing the number of interactions and increasing the size of each transaction with private buyers. This may reflect an effort to start building longer-term relationships with fewer but larger buyers to replace the lost sales to government entities. Exit negatively affects sales per employee, but has no effect when productivity is measured as value added per employee.

Figure 5: Exit



Notes: The event study compares firms that stopped selling to the government to firms that continue selling to the government throughout the sample period. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Total sales, Sales excl. govt., Average sales to the private sector, Sales per employee, and Value-added per employee are reported in logs. The number of non-govt. buyers is reported in absolute value.

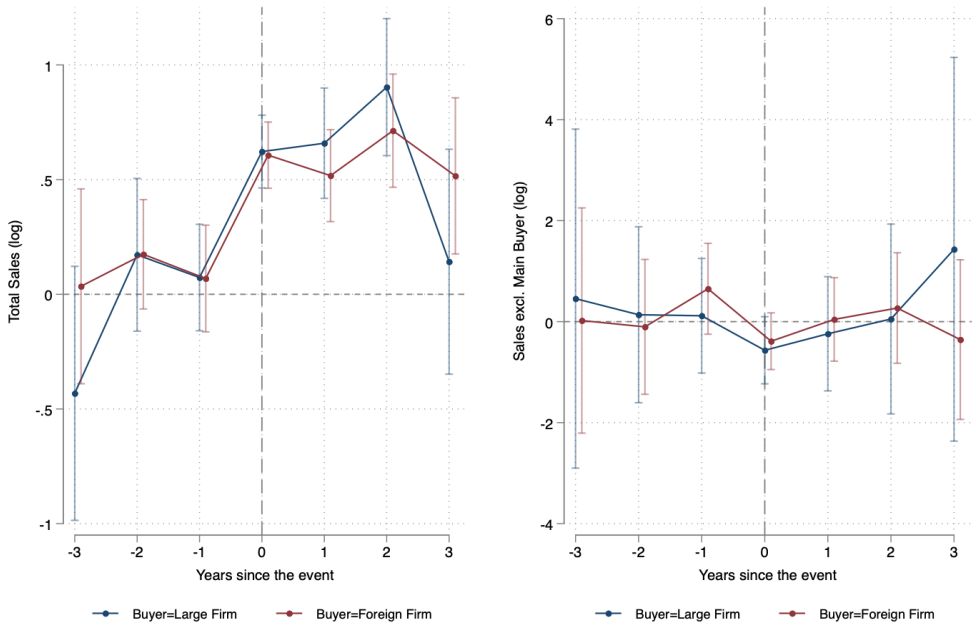
4.4 Placebo: Selling to other large buyers

An important question in interpreting our findings is to understand whether they are specific to selling to the government or generalize to instances involving success (or cessation) of obtaining contracts to supply large non-government buyers. To assess this we replicate the analysis by adopting two alternative definitions of the treatment, based on either (i) the first transaction with a large domestic non-government buyer, defined as one whose average sales over the sample period was in the top 10 percentile of the distribution; or (ii) a foreign buyer based in Uganda.[35] Results reported in Figure 6 show that the drop in sales to other private partners is unique to the case in which the government is a buyer. No such relationship is observed for firms that begin selling to other large domestic buyers or foreign firms. The absence of a drop in sales to other private buyers in the placebo estimations is not due to large domestic firms and foreign firms being less relevant buyers than the government entities. In related

[35]The extant literature on FDI finds that inward foreign investors may give rise to positive spillovers in both firm size and efficiency, reflecting a transfer of resources and technologies from the buyers to the supplier (Alfaro-Urena et al., 2022).

estimation samples, average sales to the government (9% of total sales) are not significantly higher than the average sales to large domestic firms (10% of total sales) or the average sales to foreign firms (5% of total sales).

Figure 6: Placebo treatments



Notes: The event study compares the change in outcomes due to selling to the govt. against two placebo treatments: 1) Selling to large domestic buyers and 2) Selling to foreign firms relative to selling to the government. The treated group spans *Stayers* and *Irregular suppliers* for each buyer type. We exclude large domestic and foreign firms when computing the number of non-govt. buyers when we estimate the effect of selling to large domestic firms or foreign firms, respectively. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Both Total sales and Sales to private buyers are reported in logs. See Figure H-1 in the Appendix for the event study plot for firms Average sales, Number of buyers (incl. and excl. the government), and the sales/value added per employee.

5 Robustness

Alternative estimator. We check the consistency of our findings using an alternative event study estimator based on De Chaisemartin and d'Haultfoeuille (2020). Their estimator is a weighted average of the DiD estimands that compare the evolution of the mean outcome in two groups: those switching from no treatment to treatment between *t-1* and *t*, and those remaining untreated. The estimator assumes that the treatment is an absorbing state, that is, there are no groups that switch from treatment to no treatment. A limitation of the De Chaisemartin and d'Haultfoeuille (2020) DiD estimator is that it does not allow matching the treated

and control units based on pre-treatment characteristics. To better compare the results to our original approach, we also replicate the event study estimates by using the Callaway and Sant'Anna (2021) estimator, but without using the pre-treatment covariates used for matching (Figure F-2). The event study plots for both estimators are reported in Figures F-1 and F-2 in Appendix F. The two plots visually confirm the main findings presented in Section 4.1, suggesting that our results do not depend on the choice of the estimator.

Sample. Our analysis is based on the universe of firm-to-firm transactions recorded in the VAT data. These cover sales to VAT registered partners. Information on sales to unregistered partners, including final consumers, is reported as an aggregate separately in the VAT Schedule 1 declarations. On average, sales to unregistered and final customers account for roughly 21% of a firm's total sales (i.e., of the total domestic sales to registered and unregistered partners).[36] We replicate our main specification focusing on total sales, including those to unregistered partners for the *Stayers* sample. The related event studies for all outcomes (except for buyer linkages) are reported in Appendix Figure G-2.[37] The results are broadly in line with the patterns reported for registered buyers, except that the decline in sales to registered private buyers is partially offset by sales to unregistered partners in the year following treatment. These are not large enough to reverse the declining pattern in subsequent years.

6 Mechanisms

The foregoing analysis generates four findings. First, firms that begin to sell to the government tend to grow larger. Second, there is an increase in revenue-based labour productivity, but no changes in value-added productivity. Third, selling to government buyers is associated with a reduction in sales to the private sector and a re-organization of the domestic supply chain towards more buyers but smaller transactions. Finally, after firms exit from selling to government entities, they do not attain previous levels of total sales, i.e., the loss of government sales is not offset by increasing sales to private companies.

[36] Unregistered buyers account on average for over 30% of total sales in sectors like "Manufacturing", "Health and Social", "Agriculture, Forests and Fisheries" and "Hospitality". They account for less than 10% in sectors such as "International and NGO activities", "Defense", and "Constructions". Still, there is an high heterogeneity in the distribution, and the median value is just 1%.

[37] Since information on unregistered partners is reported in aggregate we can not identify the number or the type of unregistered buyers.

These findings raise several questions. What makes the government a preferred buyer relative to private customers and what prevents firms from keeping relationships with other private buyers at scale once they start selling to the government? What can explain the absence of improvement in efficiency, proxied by value added per worker in our analysis? To gain greater insight into the mechanisms that underlie our findings we undertook an ad-hoc survey of Ugandan firms that participate in public procurement bids. The goal was to gather qualitative information on their strategies, with a focus on assessing whether and why firms shift away from sales to private buyers following transactions with the government to motivate additional analysis using available administrative data sources.

6.1 Qualitative firm survey evidence

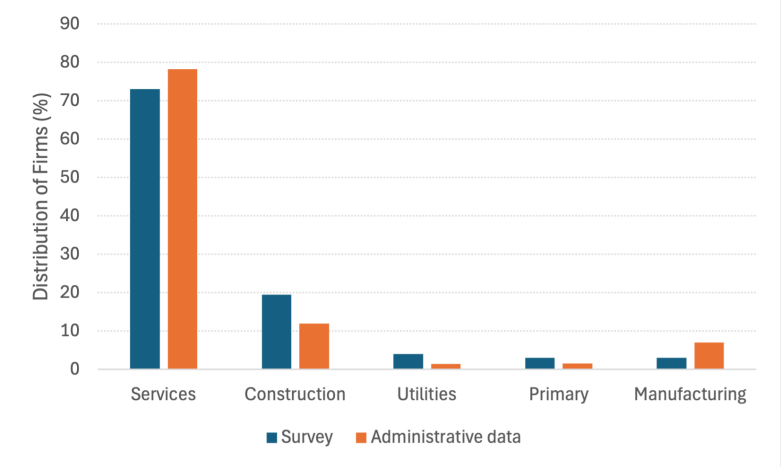
The survey was designed and piloted in the fall of 2023 and conducted in the first quarter of 2024, targeting firms with experience with public procurement. The sampling frame was based on a list of firms that pre-registered with the Ugandan Public Procurement and Disposal of Public Assets Authority (PPDA). We focused on firms located in the Greater Kampala area (Kampala, Wakiso, and Mukono) that were awarded at least one government contract during the period 2017-2022 and excluded firms whose contact details provided to the PPDA were no longer valid.[38]

The selection procedure resulted in a sample of 282 firms, of which a total of 236 firms were successfully interviewed. The sectoral distribution of the firms in the survey sample is similar to that in the VAT database, with most firms active in services sectors (Figure 7). The survey sample comprises a somewhat higher share of firms in construction, while manufacturing firms are slightly underrepresented relative to the VAT data. Consistent with our main findings, 49.7% of the firms interviewed see the government as their main client, and 85.7% regard government entities as potential buyers of their goods or services. Almost 95% of respondents obtained more than one government contract over the period considered, and 54.7% indicated their firm regularly supplies government entities. Appendix Table K-1 provides summary statistics for the surveyed firms.

Government purchases on average accounted for approximately half of the respondents' turnover

[38] For additional details on the survey, see Section K in the Appendix.

Figure 7: Sectoral distribution of firms (surveyed firms vs. administrative dataset)



Notes: The figure compares the sectoral composition of firms in Uganda's administrative data to the sectoral composition of procurement firms in our survey.

in the previous year (Appendix Figure K-1). Additionally, firms that define themselves as (a) continuous; or (b) frequent government suppliers tend to be larger than firms that see the government as a marginal source of demand (i.e that only sell to the government once over the period of interest). Government entities tend to be larger buyers (91% of respondents), provide longer-term contracts (78%), and pay higher prices (64%).

6.2 Analysis of potential mechanisms

We draw on the survey findings to evaluate two potential explanations for why sales to private buyers fall following entry into government procurement: (1) capacity constraints; and (2) price differentials across public and private sector buyers.

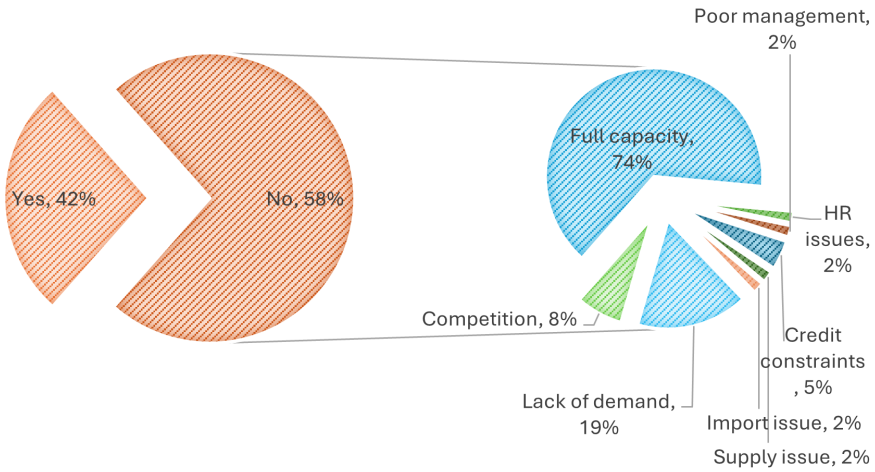
6.2.1 Capacity constraints

Two-fifths of respondents (42%) report that their firm expanded production following award of a government contract, indicating that for many of the surveyed firms capacity constraints were not a major factor (Figure 8).[39] Of the firms that did not expand, three-quarters (74%) declared they were already operating at full capacity (Figure 8). Respondents for these firms also mentioned lack of demand and competition as other factors that restricted investment.

[39] Among the firms that expanded capacity following a government contract, 55% invested in their workforce (hiring more employees), while 71% invested in assets (Figure K-2 in Appendix). Shares sum up to more than 100% since some firms did both.

Only 5% of firms cited access to credit as an impediment to expanding production capacity.

Figure 8: Expanding capacity following government contracts

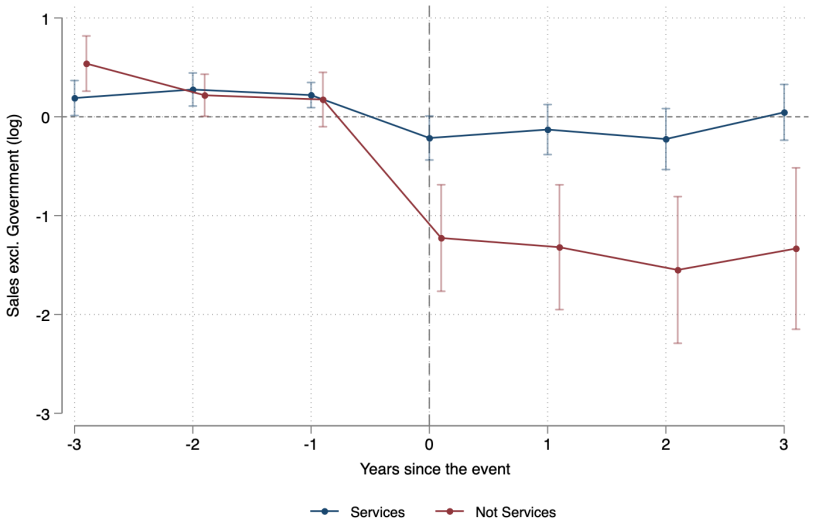


Notes: The left side pie chart reports the responses to the following question: *"Regarding your last contract awarded, did you expand production after obtaining the contract?"*. The right side pie chart lists reasons given for not expanding production (multiple choices were possible). Only firms responding "no" to the first questions were asked to respond to the second question. Overall, 217 firms responded to the first question and 125 to the second.

We cannot directly evaluate to what extent capacity constraints drive the decline in sales to private buyers that we estimate using the VAT data, but we can use the administrative data to provide supportive evidence by differentiating between firms based on sector of activity and associated average capital intensity of production. Services firms comprise a majority of those expanding capacity (62%). Firms engaging in relatively low-skill labour-intensive activities (e.g., cleaning services) will tend to have lower fixed asset ratios than manufacturing or mining activities. In principle, they may therefore be less constrained in expanding production in response to a positive demand shock. We investigate this hypothesis by exploiting the variation in capital intensity across sectors under the assumption that firms in sectors with higher fixed asset ratios may be more constrained in expanding output in the short run if capacity utilization rates are high. Firms in services are less capital intensive (see Appendix Figure J-1), making it easier to expand in the short run after obtaining a contract to supply government entities. Figure 9 shows that the contraction in sales to non-government buyers increases sharply around the time of the treatment among non-services firms relative to firms that supply services. This effect persists over time. Services firms appear to make a smaller reallocation away from private sector partners after they start selling to the government.[40]

[40]Numerical estimates for the ATT for all groups across all periods are available in Appendix Section J.

Figure 9: Sales excluding government, services vs. non-services firms



Notes: Baseline compares early participants in procurement to late participants in procurement. The decline in sales (net of sales to government) is compared across Services and Non-Services sectors. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Sales excluding government is reported in logs.

6.2.2 Government as a more profitable buyer

As noted previously in Section 6.2, 64% of respondents state that relative to private buyers the government pays higher prices for their goods or services. Related, when asked why they reduce sales to other firms following a government contract, a majority of the firms (60%) indicate this is because private firms pay lower prices. It is difficult to test this channel using the VAT data due to the absence of information on prices and quantities.[41] We nonetheless can provide some evidence on this potential channel by exploiting Customs clearance transactions data. These data include information on the quantity and the value of goods that are exported and imported by a given firm. We focus on the group of firms in the "Wholesale and Retail" sector where input quantities, proxied by imports, can be expected to be highly correlated with sales, as their activity does not generally involve transformation. If a firm imports most of what it sells, the quantities imported should approximate the quantities that are sold, and

[41] Suggestive support for the price mechanism is provided by changes in the pattern of purchases of firms selling to the government from its suppliers. If the overall sales growth observed in the VAT data is due to the government offering higher prices, the firm's purchase of inputs should be relatively stable. Appendix Figure I-1 shows that there is no effect on total purchases from suppliers in the year a firm begins selling to the government, and while we observe an increase in later years, these effects are imprecisely estimated. Further, there is no significant increase in the number of suppliers from the time a firm starts selling to the government and continues doing so.

any difference in the value of sales after beginning to sell to the government should then reflect a change in prices.

We use two thresholds for the share of imported inputs in total purchases: (i) greater than or equal to 65%, and (ii) greater than or equal to 95%. Table 3 reports results of an OLS regression estimating the relationship between the value of sales and import quantities subsequent to a firm in the "Wholesale and Retail" sector obtaining a government contract. Columns (1) and (2) use the 65% threshold and columns (3) and (4) show results when using the 95% threshold ratio of import value to total sales. There is a positive relationship between commencing to sell to the government and the value of total sales, but not for imported quantities. This suggests that sales to government entities are associated with higher prices.

Table 3: Value of sales to government and imported quantities (firms in the Distribution sector)

	(1) Total Sales (value)	(2) Import Quantity	(3) Total Sales (value)	(4) Import Quantity
After First Sale	0.714***	-0.120	0.458**	-0.175
	(0.147)	(0.190)	(0.230)	(0.322)
Sample	3525	3525	1480	1480

Notes: This table reports the relationship between a dummy indicating the year in which firms in the wholesale sector (ISIC rev. 4 Section G, Divisions 45, 46, and 47) start selling to the government, their value of sales and imported quantities. Columns 1 and 2 (3 and 4) report estimates for wholesalers with a share imports in total purchases above 65% (95%). Standard errors are clustered at the firm level. Estimates include firm and sector-year fixed effects. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$

6.2.3 Price differentials, capacity constraints and uncertainty

While higher prices for government contracts appear to play a role in the observed reallocation of supply capacity away from private buyers, there is also evidence that capacity constraints may play a role. A potential explanatory factor for both decisions not to expand capacity when this involves fixed costs (investment in tangible assets) and for the observed price differentials is uncertainty associated with the procurement process. Four fifths of surveyed firms (81%) report that the government is unlikely to pay them on a timely basis. When asked about their *last* contract with the government, 64% of the firms stated that it was not paid on time. The average delay in payment was five months, with a maximum delay of more than two years (Appendix Figure K-3). Such delays have potential consequences for investment planning and

may have an effect on the ability of firms to expand capacity. Expected payment delays can also be expected to be reflected in contract prices, as firms factor in likely payment delays into their bids.

7 Conclusion

This paper contributes to the literature analyzing the relationship between government demand and firm performance, using detailed administrative data for Ugandan firms. Using an event study approach where we account for self-selection of some types of firms, as well as the heterogeneity in the timing of the treatment, we find evidence of positive effects on sales and output per worker in firms that start to sell to government entities. The positive association with total sales is accompanied by a reduction in sales to non-government entities, i.e., overall sales growth is partly at the expense of a reallocation of firm-level supply to government buyers. The analysis identifies a sustained reduction in sales to non-government buyers following entry into procurement.

Understanding the reasons underlying these patterns is important both for the design of procurement processes, an issue our paper does not engage with, and for the effectiveness of efforts to use public procurement as an industrial policy instrument. If the government pays higher prices to firms for their goods and services than private companies do, an implication is that value for money objectives are not achieved. If policy also aims at private sector development goals the observed shift away from selling to private companies may be problematic.

Our findings suggest that many firms are limited in their ability to expand capacity and/or that government contracts are more profitable. We find some suggestive evidence for the capacity constraint hypothesis, reflected in the reallocation of sales away from private buyers being associated with differences in factor intensity of production: it is less pronounced for firms in services that are less capital intensive and that may be able to expand output in the short run by increasing employment. While the firm-level survey provides support for the existence of capacity constraints, some 40% of respondents active in the procurement market report an increase in production capacity during the period considered. This suggests capacity constraints are not a major driver of the sustained reduction in sales to the private sector. This assessment is bolstered by most interviewees indicating that access to finance was not a major

concern. Instead, most respondents reported that relative to private buyers, the government pays higher prices and that this was the main motivation for reducing sales to other firms.

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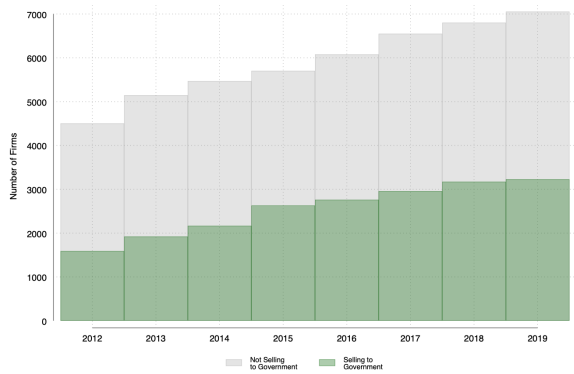
Appendix

Table of Contents

A Additional statistics on supplying the government

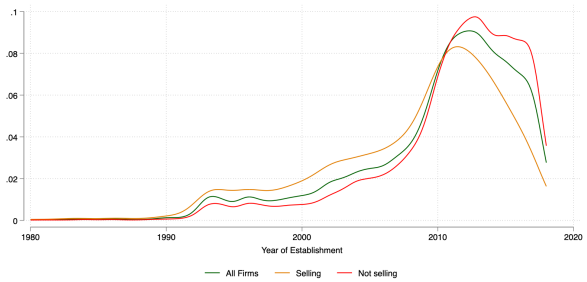
This section provides some evidence comparing firms that sell to the government and firms that do not sell to the government. Additionally, we provide some comparative details on firms with different type of relationships with the government. Figure A-1 shows the temporal distribution of firms that sell to the government versus firms that do not sell to the government. Figure A-2 shows the age distribution of firms that sell to the government versus firms that do not sell to the government. Table A-1 compares the evolution of sales between firms that never sold to the government, firms that always sold to the government, and firms that started selling to the government in a given year. Table A-2 compares the average linkages between firms that sell to the government and firms that do not sell to the government. Table A-3 compares the evolution of various outcomes of interest between firms that never sold to the government, firms that started selling in a given year, and firms that will sell in the future. Table A-4 compares the outcomes of interest for 1) Always sellers 2) Stayers 3) Intermittent sellers and 4) Exiters in the year before and year after treatment.

Figure A-1: Government suppliers over time



Notes: The figure plots the distribution of firms selling and not selling to the government over the period of interest in the full sample. Source: Authors' elaboration on VAT data.

Figure A-2: Age distribution of firms



Notes: The figure plots the age distribution of firms selling and not selling to the government in the full sample. Source: Authors' elaboration on VAT data.

Table A-1: Average total sales

	Never Selling	Selling to govt. throughout	Start selling to govt.
2012	2609.4	13832	5286.5
2013	3268.8	17103.2	4737
2014	3205.8	17401.8	4664.7
2015	3675.5	15168.1	4876.4
2016	4640.2	14847.7	4788.4
2017	3708.9	15945.6	5169.7
2018	3813	15764.4	4868.4
2019	3968.6	15063.5	4823.3

Notes: Values in constant 2017 UGX million. Column 2 considers only firms that sell to the government in all years in which they are observed, while column 3 includes firms that started selling to the government at some point during the sample period.

Table A-2: Network of buyers and suppliers

	Buyers	Suppliers
Never sell to government	9	13
Sell to government	39	21

Notes: Data show the average number of buyers and suppliers for firms that sell or do not sell to the government over the sample period.

Table A-3: Group difference by treatment cohort: Not Treated vs Treated vs Not Yet Treated

	2012	2013	2014	2015	2016	2017	2018	2019
Never Treated								
Number of Buyers	7	8	8	9	9	10	11	12
Number of Private Buyers	6	7	7	8	9	9	10	10
N. Invoices to any Partner	79	111	129	143	135	147	169	180
N. of Invoices to Private Comp	72	100	116	128	122	135	153	157
Sales to any Partner	1053297	1409817	1452201	1717838	1734158	2008308	2099290	2277762
Sales to Private Companies	975456	1277974	1314678	1556654	1579476	1859527	1935213	2059617
Not Yet Treated								
Number of Buyers	13	15	15	14	15	20	19	
Number of Private Buyers	12	14	13	13	15	19	17	
N. Invoices to any Partner	246	258	263	312	323	312	240	
N. of Invoices to Private Comp	220	225	229	274	287	276	207	
Sales to any Partner	3249915	4298005	4608195	6114397	7149687	6927492	1682031	
Sales to Private Companies	3011714	4031795	4312444	5801123	6811899	6570807	1518730	
Treated								
Number of Buyers	30	28	27	28	20	21	37	27
Number of Private Buyers	25	24	23	24	18	19	32	22
N. Invoices to any Partner	308	427	342	270	171	328	552	294
N. of Invoices to Private Comp	264	376	298	227	144	292	492	237
Sales to any Partner	2371291	2497735	3772876	2352840	2584111	7114352	1.20e+07	1910153
Sales to Private Companies	1986494	1966060	3314334	1962374	2310579	6813314	1.12e+07	1531869

Notes: Mean values for selected outcomes across groups, defined by the type of economic relationship over the period of interest. Sales and Profit related variables are reported in thousands UGX. The sample refers to the complete dataset and differs from the estimation sample we refer to in Section 4. Since the sample ends in 2019, there are no firms becoming supplier 2019. For this reason, column 2019 in the "Not Yet Treated" block is mechanically empty.

Table A-4: Group difference by buying pattern

		Before	After
Regular Suppliers	Invoices to Private Comp		316
	Invoices to any Partner		394
	Number of Buyers		28
	Number of Private Buyers		39
	Sales to Private Companies		1436793
	Sales to any Partner		2913391
Stayers	Invoices to Private Comp	272	466
	Invoices to any Partner	302	550
	Number of Buyers	16	39
	Number of Private Buyers	15	33
	Sales to Private Companies	4824231	7213375
	Sales to any Partner	5076733	8450352
Exiters	Invoices to Private Comp	139	69
	Invoices to any Partner	160	81
	Number of Buyers	15	11
	Number of Private Buyers	14	11
	Sales to Private Companies	755708	313549
	Sales to any Partner	1122647	413694
Irregular Suppliers	Invoices to Private Comp	175	268
	Invoices to any Partner	195	304
	Number of Buyers	17	27
	Number of Private Buyers	15	23
	Sales to Private Companies	1811672	2323190
	Sales to any Partner	1959962	2645880

Notes: Mean values for selected outcomes across groups, one year before and one year after a firm starts selling to the government. For Exiters, the switch is considered in the opposite direction. The "Before" column for firms that are only observed selling to the government throughout the sample (labelled Always) is missing by definition since we cannot observe them before they started selling to the government. All group averages have been rounded to the closest integer. The sample refers to the complete dataset and differs from the estimation sample we refer to in Section 4.

B Description of the variables

Table B-1: Variables description

Variable Name	Source	Description	Construction
Total Sales	VAT Schedule 1	Total sales to any type of partner	Total value of all transactions reported by a firm to the URA aggregated at Reporter×Year level
Sales excl. Government	VAT Schedule 1	Total sales to non-Government partners	Total value of all the transactions not involving a government partner reported by a firm to the URA aggregated at Reporter×Year level
No. Buyers excl. Government	VAT Schedule 1	Number of partners excluding government partners	Number of distinct non-government related partners as identifiable from the related invoices reported to the URA, aggregated at Reporter×Year
Avg. Sales excl. Government	VAT Schedule 1	Average sales to non-Government partners	Average value of all the transactions not involving a government partner reported by a firm to the URA aggregated at Reporter×Year level
Sales per Employee	VAT Schedule 1 PAYE	Total Sales per Employee	Total sales to any type of partner, divided by the number of employees in a given year
VA/Value added per Employee	VAT Schedule 1 Custom Data (ASYCUDA)	Value Added per Employee	Total sales to any type of partners net of the value of the inputs declared (including domestic purchases and direct imports), divided by the number of employees in a given year

Notes: The table describes the main variables used in the empirical section. URA = Uganda Revenue Authority. All variables are the result of an aggregation at Reporter×Year after basic data processing.

C TWFE estimates

Table C-1 presents the TWFE estimates for different outcomes of interest, using equation 1. Tables C-2 and C-3 replicate our baseline specification from equation 1, focusing respectively on (a) the sample of firms for which all the outcome variables were non-missing; and (b) a balanced sample over time. The results are consistent across specifications, suggesting that the results highlighted in Table C-1 are not sensitive to sampling issues.

Table C-1: Extensive vs intensive margins of supplying government entities

Panel (A): Discrete Treatment

	Total Sales (1)	Sales excl. government (2)	# private buyers (3)	Average sales excl. Government (4)	Sales per worker (5)	VA per worker (6)
After First Sale	0.803***	-0.977***	12.126***	-1.437***	0.453***	0.346***
	(0.040)	(0.095)	(1.948)	(0.088)	(0.038)	(0.064)
Sample	56301	56301	56301	56301	26054	14666

Panel (B): Continuous Treatment

	Total Sales (7)	Sales excl. government (8)	# private buyers (9)	Average sales excl. Government (10)	Sales per worker (11)	VA per worker (12)
Total sales to govt.	0.048***	-0.067***	0.719***	-0.086***	0.026***	0.022***
	(0.001)	(0.005)	(0.069)	(0.004)	(0.001)	(0.002)
Sample	56283	56283	56283	56283	26039	14655

Notes: Panel A reports a specification in which the independent variable of interest is a dummy variable taking 1 when the firm starts selling to the government. Panel B reports a specification in which the independent variable of interest is a continuous variable reporting the amount (in log) each firm sells to the government. All the variables of interest, except the number of buyers, are expressed in logs. For a description of all the variables, see Table B-1 in the Appendix. Standard errors are clustered at the firm level. Firm and Sector-Year FE are included in estimations. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C-2: Baseline Results: Common sub-samples across specifications

Panel (A): Discrete Treatment

	Total Sales (1)	Sales excl. government (2)	# private buyers (3)	Average sales to private (4)	Sales per worker (5)	VA per worker (6)
After First Sale	0.421***	-0.465***	9.115**	-0.785***	0.377***	0.346***
	(0.052)	(0.147)	(3.812)	(0.141)	(0.051)	(0.064)
Sample	15322	15322	15322	15322	15322	15322

Panel (B): Continuous Treatment

	Total Sales (7)	Sales excl. government (8)	# private buyers (9)	Average sales to private (10)	Sales per worker (11)	VA per worker (12)
Total sales to govt.	0.026***	-0.035***	0.621***	-0.049***	0.023***	0.023***
	(0.002)	(0.006)	(0.119)	(0.006)	(0.002)	(0.002)
Sample	15311	15311	15311	15311	15311	15311

Notes: These specification are based on an estimation sample that is the common to all estimates. Panel A reports a specification in which the independent variable of interest is a dummy variable taking 1 when the firm starts selling to the government. Panel B reports a specification in which the independent variable of interest is a continuous variable reporting the amount (in log) each firm sells to the government. All the variables of interest, except the number of buyers, are expressed in logs. For a description of all the variables, see Table B-1 in the Appendix. Standard errors are clustered at the firm level. Firm and Sector-Year FE are included in estimations. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Table C-3: Baseline Results: Balanced Panel

Panel (A): Discrete Treatment

	Total Sales (1)	Sales excl. government (2)	# private buyers (3)	Average sales to private (4)	Sales per worker (5)	VA per worker (6)
After First Sale	0.408***	-0.258**	10.401***	-0.623***	0.176***	0.159**
	(0.055)	(0.104)	(3.709)	(0.096)	(0.045)	(0.078)
Sample	21640	21640	21640	21640	13381	8383

Panel (B): Continuous Treatment

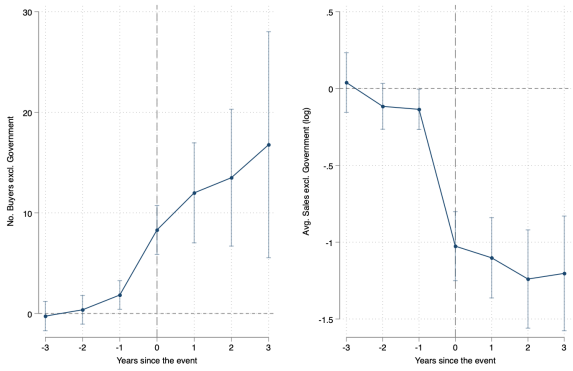
	Total Sales (7)	Sales excl. government (8)	# private buyers (9)	Average sales to private (10)	Sales per worker (11)	VA per worker (12)
Total sales to govt.	0.031***	-0.014***	0.903***	-0.032***	0.014***	0.016***
	(0.002)	(0.005)	(0.119)	(0.004)	(0.001)	(0.002)
Sample	21628	21628	21628	21628	13370	8375

Notes: These specifications are based on a sample of firms reporting for all the years covered in the sample. Panel A reports a specification in which the independent variable of interest is a dummy variable taking 1 when the firm starts selling to the government. Panel B reports a specification in which the independent variable of interest is a continuous variable reporting the amount (in log) each firm sells to the government. All the variables of interest, except the number of buyers, are expressed in logs. For a description of all the variables, see Table B-1 in the Appendix. Standard errors are clustered at the firm level. Firm and Sector-Year FE are included in estimations. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

D Additional Event Study plots for *Stayers* and *Irregular Suppliers*

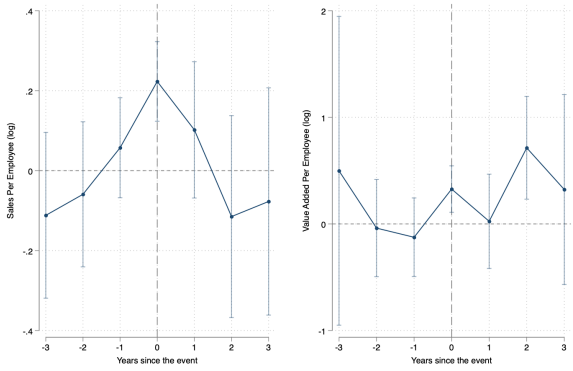
Figures D-1 and D-2 show how selling to the government affects linkages and productivity. These results complement the results reported in Figure 1, where the sample of treated firms includes both those that keep selling after the first contract and those who sell intermittently. Coherently with the rest of the results discussed throughout the paper, the control group is limited to the not-yet-treated cohorts. Numerical estimates for the static ATT are reported in Appendix Section E.

Figure D-1: Linkages



Notes: Baseline compares early participators in procurement to late participators in procurement. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing.

Figure D-2: Productivity



Notes: Baseline compares early participators in procurement to late participators in procurement. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing.

E Numerical estimates from the main event studies

Tables E-1 to E-10 report the static ATT estimates referred to the event study plots discussed in Section 4 and Appendix D. For consistency, we report the static ATTs for all the outcomes of interest across all treatment definitions discussed throughout the paper.

Table E-1: ATT - Stayers and Intermittent Sellers

	(1) Total Sales	(2) Sales excl. Government	(3) No. buyers excl. Government	(4) Avg. Sales excl. Government	(5) Sales x Employee	(6) Value Added x Employee
ATT	0.080	-0.975***	11.652***	-1.101***	0.037	0.257
	(0.081)	(0.118)	(2.738)	(0.103)	(0.072)	(0.246)

Notes: All outcomes of interest excluded the number of buyers are expressed in log. Standard errors are clustered at the firm level. ATT from Callaway and Sant'Anna (2021) doubly robust estimator. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ATT refers to the event-study design reported in Section 4, Figures 1, D-1, and D-2.

Table E-2: Observations by Time period - Stayers and Intermittent Sellers

Outcome	T-3	T-2	T-1	T0	T+1	T+2	T+3
Total Sales	623	945	1651	1456	1103	864	613
Sales excl. Government	623	945	1651	1456	1103	864	613
No. buyers excl. Government	757	1184	2001	1819	1388	1086	795
Avg. Sales excl. Government	757	1184	2001	1819	1388	1086	795
Sales per Employee	354	536	895	782	596	477	340
VA per Employee	139	207	380	298	215	166	121

Notes: Observations in the estimation sample, divided by each time period observed in the event-study plots (Figures 1, D-1, and D-2).

Table E-3: ATT - Stayers Only

	Total Sales	Sales excl. Government	No. buyers excl. Government	Avg. Sales excl. Government	Sales x Employee	Value Added x Employee
ATT	0.595***	-1.464***	30.304***	-2.030***	0.343***	-0.048
	(0.119)	(0.236)	(6.480)	(0.211)	(0.108)	(0.483)

Notes: All outcomes of interest excluded the number of buyers are expressed in log. Standard errors are clustered at the firm level. ATT from Callaway and Sant'Anna (2021) doubly robust estimator. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ATT refers to the event-study design reported in Section 4, Figures 2 to 4.

Table E-4: Observations by Time period - Stayers only

Outcome	T-3	T-2	T-1	T0	T+1	T+2	T+3
Total Sales	341	488	819	654	419	310	212
Sales excl. Government	341	488	819	654	419	310	212
No. of Buyers excl. Government	413	608	996	814	515	380	265
Avg. Sales excl. Government	413	608	996	814	515	380	265
Sales per Employee	191	279	433	332	214	169	120
VA per Employee	74	112	176	128	69	54	24

Notes: Observations in the estimation sample, divided by each time period observed in the event-study plots (Figures 2 to 4).

Table E-5: ATT - Exiters

	(1) Total Sales	(2) Sales excl. Government	(3) No. buyers excl. Government	(4) Avg. Sales excl. Government	(5) Sales x Employee	(6) Value Added x Employee
ATT	-0.753***	2.079	-20.345***	2.776***	-0.502***	-0.732
	(0.096)	(0.440)	(3.540)	(0.387)	(0.126)	(0.469)

Notes: All outcomes of interest excluded the number of buyers are expressed in log. Standard errors are clustered at the firm level. ATT from Callaway and Sant'Anna (2021) doubly robust estimator. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ATT refers to the event-study design reported in Section 4.3, Figure 5.

Table E-6: Observations by Time period - Exiters

Outcome	T-3	T-2	T-1	T0	T+1	T+2	T+3
Total Sales	183	270	498	421	252	156	122
Sales excl. Government	183	270	498	421	252	156	122
No. of Buyers excl. Government	210	324	626	501	340	213	163
Avg. Sales excl. Government	210	324	626	501	340	213	163
Sales x Employee	93	134	212	154	93	61	41
VA x Employee	57	79	106	57	31	17	15

Notes: Observations in the estimation sample, divided by each time period observed in the event-study plots (Figure 5).

Table E-7: ATT - Sales to Large Companies

	(1) Total Sales	(2) Sales excl. Government	(3) No. buyers excl. Government	(4) Avg. Sales excl. Government	(5) Sales x Employee	(6) Value Added x Employee
ATT	0.712***	-1.135*	3.280***	-0.094	0.448***	10.025***
	(0.122)	(0.611)	(0.504)	(0.082)	(0.139)	(3.122)

Notes: All outcomes of interest excluded the number of buyers are expressed in log. Standard errors are clustered at the firm level. ATT from Callaway and Sant'Anna (2021) doubly robust estimator. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ATT refers to the event-study design reported in Section 4.4, Figure 6.

Table E-8: Observations by Time period - Sales to Large Companies

Outcome	T-3	T-2	T-1	T0	T+1	T+2	T+3
Total Sales	109	190	285	336	258	205	153
Sales excl. Government	108	187	284	335	256	200	147
No. of Buyers excl. Government	130	241	358	417	327	256	193
Avg. Sales excl. Government	126	226	332	348	265	201	150
Sales per Employee	42	81	107	134	106	86	57
VA per Employee	12	18	26	40	30	26	17

Notes: Observations in the estimation sample, divided by each time period observed in the event-study plots (Figure 6).

Table E-9: ATT - Sales to Foreign Firms

	(1) Total Sales	(2) Sales excl. Government	(3) No. buyers excl. Government	(4) Avg. Sales excl. Government	(5) Sales x Employee	(6) Value Added x Employee
ATT	0.543	-0.248	10.032***	-1.728***	0.167	0.425
	(0.081)	(0.497)	(1.104)	(0.116)	(0.106)	(1.464)

Notes: All outcomes of interest excluded the number of buyers are expressed in log. Standard errors are clustered at the firm level. ATT from Callaway and Sant'Anna (2021) doubly robust estimator. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ATT refers to the event-study design reported in Section 4.4, Figure 6.

Table E-10: Observations by Time period - Sales to Foreign Firms

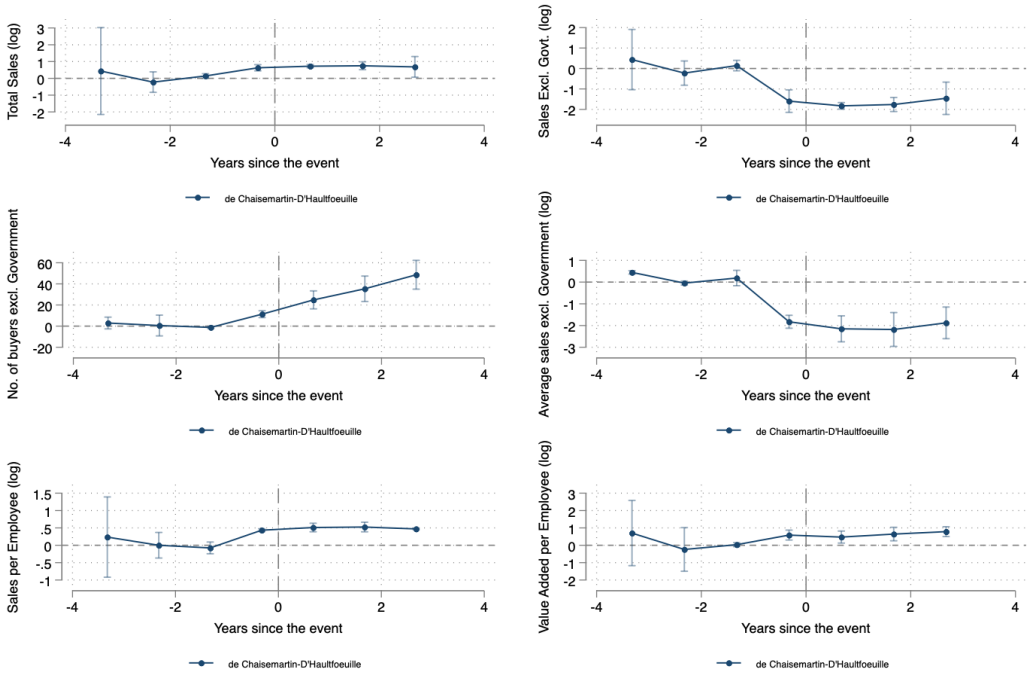
Outcome	T-3	T-2	T-1	T0	T+1	T+2	T+3
Total Sales	155	250	384	421	341	285	207
Sales excl. Government	154	247	380	415	333	283	204
No. Buyers excl. Government	201	328	502	557	447	369	272
Avg. Sales excl Government	191	309	473	473	376	311	227
Sales per Employee	67	106	152	166	138	118	86
VA per Employee	23	31	44	57	50	33	34

Notes: Observations in the estimation sample, divided by each time period observed in the event-study plots (Figure 6).

F Alternative Models and Estimators

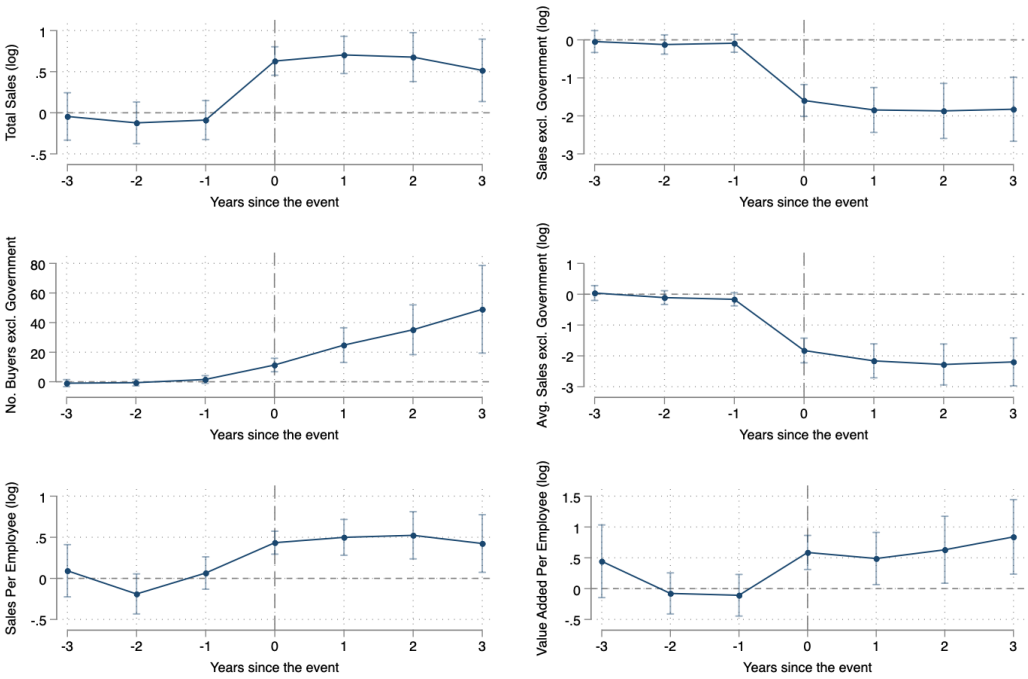
This section reports the event study plot from the DID estimator developed by De Chaisemartin and d'Haultfoeuille (2020), which proposes a different approach to account for heterogeneity in treatment timing. Since the estimator by De Chaisemartin and d'Haultfoeuille (2020) does not allow for the inclusion of control variables, we also report below the event study plot obtained using the estimator by Callaway and Sant'Anna (2021), without including all the controls discussed in Section 4.

Figure F-1: All Outcomes - *Stayers* only



Notes: Replication of our main results using De Chaisemartin and d'Haultfoeuille (2020) estimator to account for heterogeneity in treatment timing.

Figure F-2: All Outcomes - *Stayers* only



Notes: Replication of our main results using Callaway and Sant'Anna (2021) estimator without matching on observable covariates.

G Selling to the government and buyers' composition

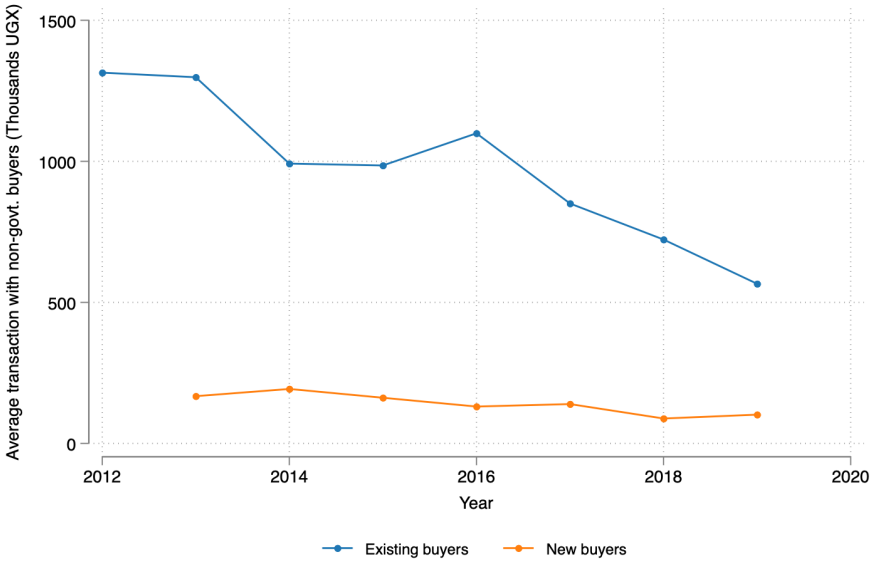
Table G-1 uses an OLS to estimate the effect of selling to the government on the composition of firms' private buyers. Column 1 suggests that selling to the government is associated with a smaller share of large private buyers. Column 2 suggests that selling to the government is associated with a decline in sales to already existing private buyers. Figure G-1 shows for firms that start selling to the government their average transaction with existing private buyers versus their average transaction with private buyers they link up with after treatment.

Table G-1: Buyers composition

	Share of Large Partners (1)	Average Sales excl. government (Existing buyers) (2)
After First Sale	-2.149***	-0.420***
	(0.585)	(0.045)
Sample	52422	11150

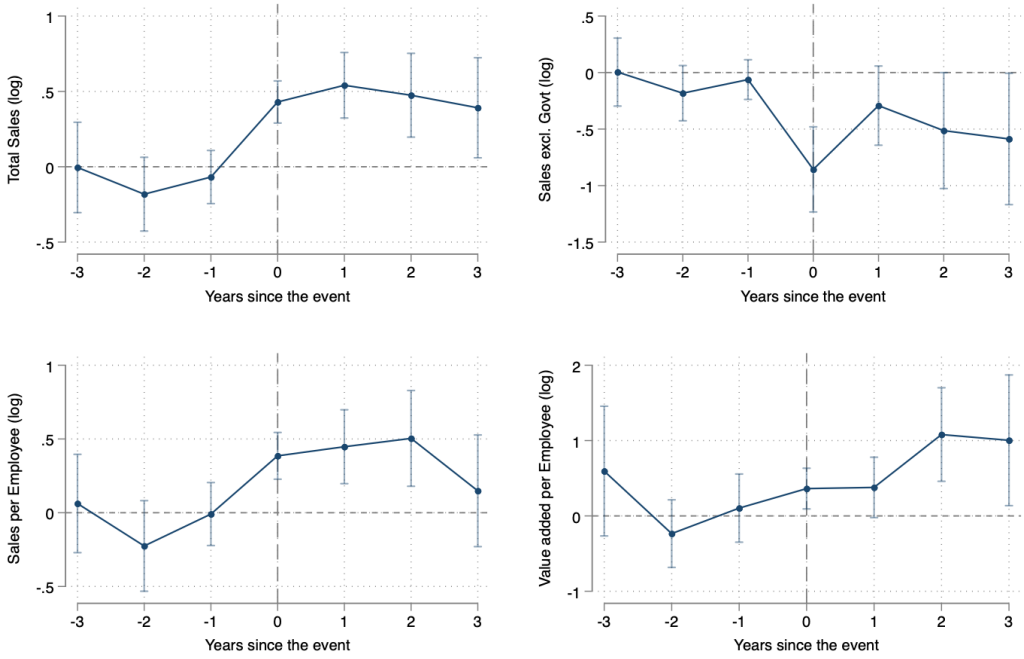
Notes: Share of large partners is expressed in percentage and it measures the number of large buyers as a percentage of the total number of buyers in a year. Sales figure is expressed in logs. Standard errors are clustered at the firm level. Firm and Sector-Year FE are included in estimations. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$.

Figure G-1: Average sales to non-govt. buyers (Existing vs New Buyers)



Notes: The graph compares the average transaction with pre-treatment private buyers to the average transaction with post-treatment private buyers.

Figure G-2: Including sales to unregistered partners (*Stayers* sample)

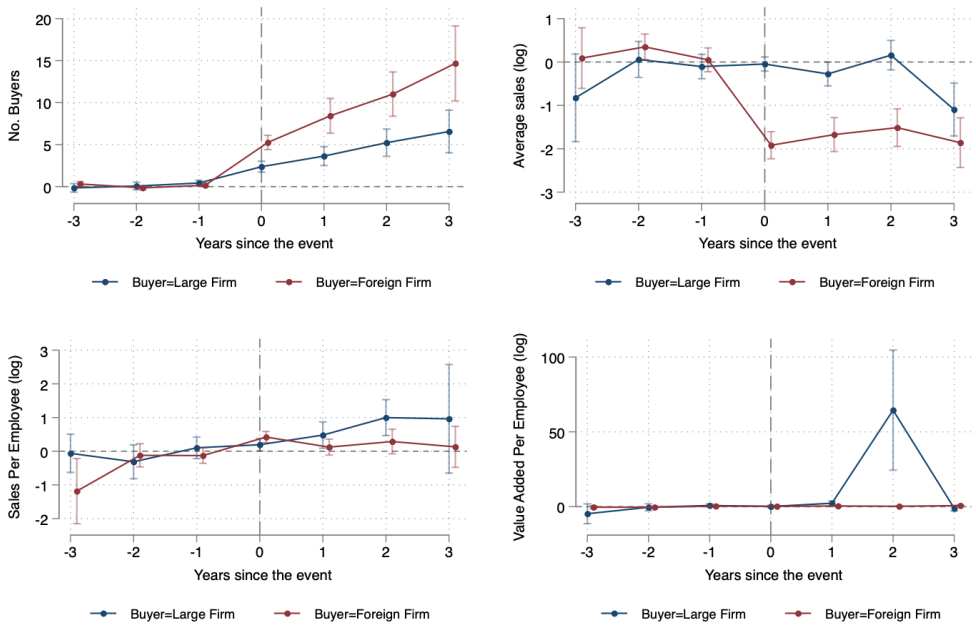


Notes: Replication of our main results using Callaway and Sant'Anna (2021) estimator on the Stayers-only sample. The dependent variable includes sales to all registered customers and all sales to unregistered VAT entities and final customers. Since the VAT data only report aggregated sales to unregistered entities, it is not possible to identify the exact number of distinct unregistered partners a firm interact with. For this reason, we do not report the event study for the average sales to - or number of - non government partners.

H Placebo Estimations

This section compares the evolution of the buyer network and the productivity of firms that sell to the government versus those that sell to large domestic firms or foreign firms. The difference in the evolution of sales between the three groups is reported in Figure 6.

Figure H-1: Placebo treatments - Other outcomes of interest

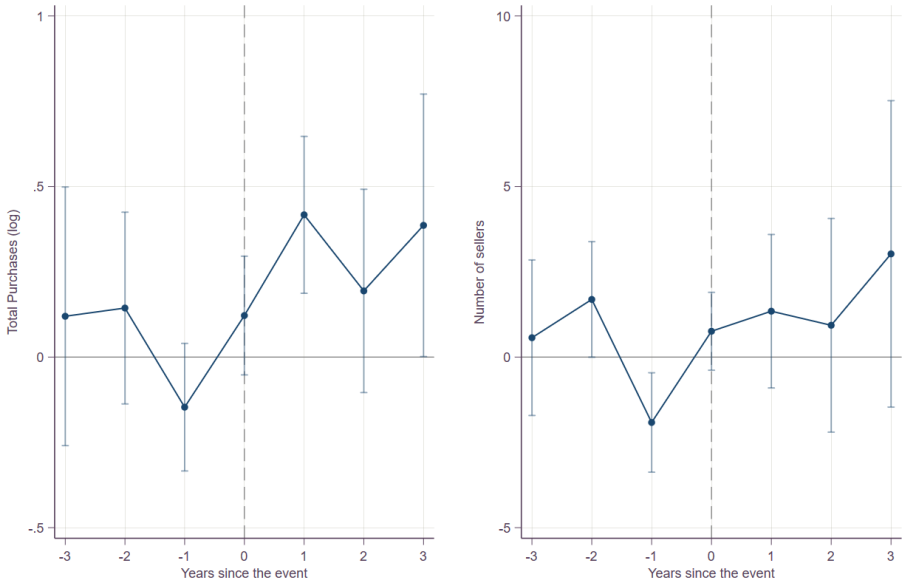


Notes: The event study complements Figure 6, and compares the change in outcomes due to selling to the govt. against two placebo treatments: 1) Selling to large domestic buyers and 2) Selling to foreign firms relative to selling to the government. The treated group spans *Stayers* and *Irregular suppliers* for each buyer type. We exclude large domestic and foreign firms when computing the number of non-govt. buyers and the average size of sales to the non-govt. buyers when we estimate the effect of selling to large domestic firms or foreign firms, respectively. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. In the case of Value Added per employee as the outcome, the event study with sales to foreign firms as the treatment can only be estimated after excluding the firm-level controls. Average sales to the private sector, Sales per employee, and Value-added per employee are reported in logs. The number of non-govt. buyers (excl. main buyer) is reported in absolute value.

I Effect on suppliers

This section shows the effect selling to the government has on a firm's suppliers. Figure I-1 shows the effect on total purchases and the number of suppliers of firms that start selling to the government and continue selling to it thereafter. There is no effect on total purchases in the year a firm begins selling to the government, while we observe an increase in later years, these effects are imprecisely estimated. Further, there is no significant increase in the number of suppliers from the time a firm starts selling to the government and continues doing so.

Figure I-1: Effect on suppliers (*Stayers* only)

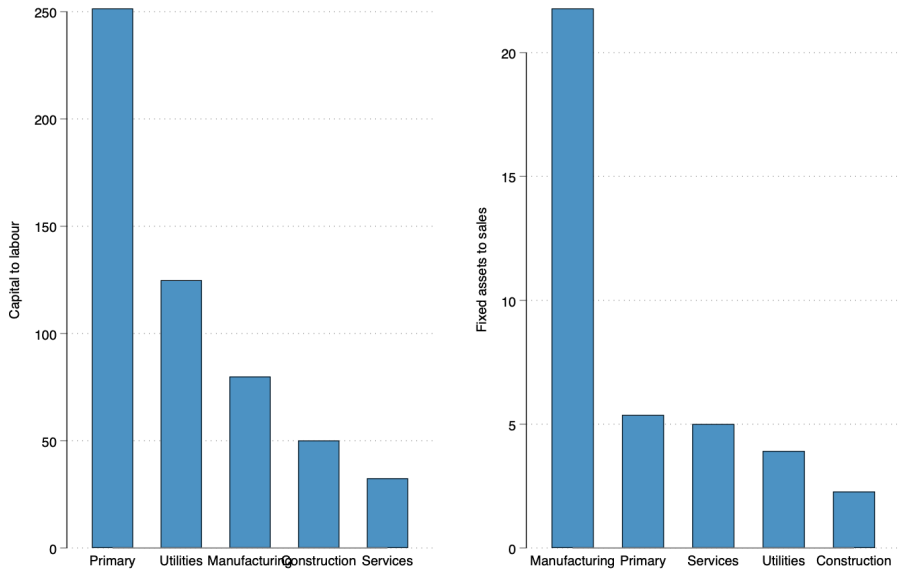


Notes: The event study compares firms that started selling to the government and continue doing so afterward to firms that will sell continuously to the government in the later years. Callaway and Sant'Anna (2021) correction is applied to account for heterogeneity in treatment timing. Total Purchases are reported in logs.

J Capital requirement across sectors

This section provides additional context supporting the discussion on capacity constraints highlighted in Section 6.2.1. Figure J-1 shows that firms in services tend to employ less capital compared to firms in other sectors in Uganda. Tables J-1 and J-2 provide the static ATT's estimate for services vs non-services firms respectively.

Figure J-1: Capital requirement across sectors



Notes: Capital Requirement across sectors in the economy. Both "Capital to Labor" and "Fixed Assets to Sales" refer to ratios. Information on Capital and Fixed assets come from the Company Income Tax (CIT) declaration forms. Sales refer to Total sales to any partner and has been constructed aggregating VAT return information. Labor refer to the total employee compensation as declared in PAYE (Pay as you earn) data.

Table J-1: ATT - Services vs non-Services sector

	Services	Non-Services
ATT	-0.138	-1.282***
	(0.096)	(0.234)

Notes: All outcomes of interest excluded the number of buyers are expressed in log. Standard errors are clustered at the firm level. ATT from Callaway and Sant'Anna (2021) doubly robust estimator. $^{*}p < 0.10$; $^{**}p < 0.05$; $^{***}p < 0.01$. ATT refers to the event-study design reported in Section 6.

Table J-2: Observations by Time period - Services vs non-Services sector

Outcome	T-3	T-2	T-1	T0	T+1	T+2	T+3
Services	444	666	1234	1185	942	721	551
Non-Services	176	275	488	480	389	317	236

Notes: Observations in the estimation sample, divided by each time period observed in the event-study plots.

K Additional details on the survey

We conducted a survey, which was piloted in the fall of 2023 and implemented in the first quarter of 2024, targeting firms with experience with public procurement.[42] We started by collecting data on firms that had won contracts in Uganda in the period 2017-2022, as reported on the PPDA website.[43] From the PPDA we obtained a list of pre-registered firms. The list contains the addresses and telephone numbers of the registered firms. We used a fuzzy-matching code to obtain a list of firms that had won procurement contracts recently and whose contact information we could ascertain. Focusing further on firms that were located in Greater Kampala area (Kampala, Wakiso, and Mukono), we narrowed down to a list of 1,296 firms of potential interest. Out of these, 31 firms had shut down and 90 firms only preferred to participate in an online survey. 189 firms did not respond positively due to time commitments. Approximately 700 firms could not be located and were excluded from the survey sample. We narrowed down to a sample of 282 firms that agreed to participate in the survey, out of which a total of 236 firms were successfully interviewed.

Table K-1 reports the summary statistics of the surveyed firms. Figure K-1 reports the market-share of key partners of the firms surveyed. Figure K-2 shows whether firms changed their production structure following a procurement contract, while Figure K-3 shows the extent of delay in receiving payment from the government according to the firms surveyed.

Table K-1: Summary Statistics

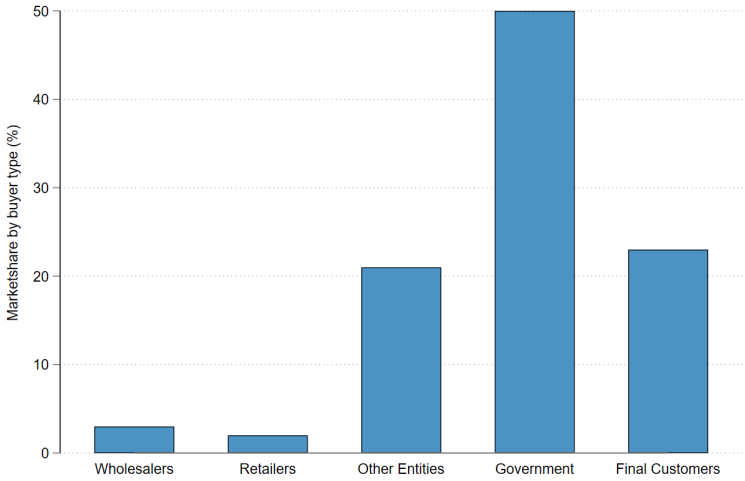
	count	mean	p50	p90	sd	min	max
Output (in million UGX)	236	2073.86	380	3600	8318.89	0	102600
Number of Employees	236	54.93	12.5	80	329.64	1	5000
Registered Abroad	236	0.08	0	0	0.27	0	1
Exporter	236	0.08	0	0	0.27	0	1
Importer	236	0.59	1	1	0.49	0	1

Notes: Import status is determined by whether the firm had ever imported inputs, while output, number of employees and exporter status is recorded for the last financial year.

[42] The survey was conducted by International Growth, Research and Evaluation Centre (IGREC), a survey firm based in Uganda.

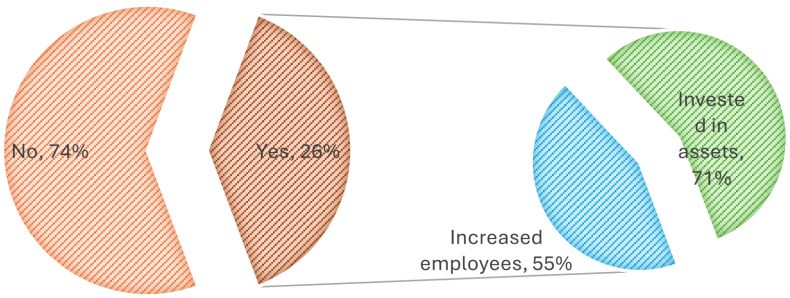
[43] The awards data can be accessed from https://gpp.ppda.go.ug/public/open-data/ocds/awards.

Figure K-1: Market Share of main partners of firms in the survey



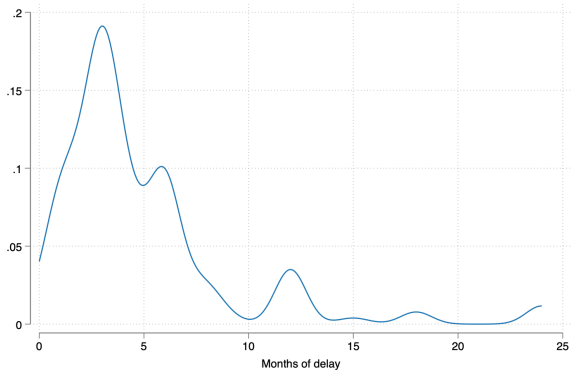
Notes: Average market composition by buyer type for the firms in the survey, obtained by pooling all respondents answer (236 out of 236) to the following question: *With reference to the main market in which your firm operates, can you estimate what is the CURRENT SHARE of the following buyers (%).*

Figure K-2: Permanent changes to production structure



Notes: The pie on the left reports the distribution of respondents' answers to the following question *Did your firm experience any permanent change to the production structure?*. The pie on the right shows the percentage of firms that invested by expanding/changing the workforce or in assets, for the respondents who experience a change in their production structure. The sum of the percentages in the pie on the left is more than 100% since some firms added more employees as well as invested in assets. (Number of firms reporting permanent changes: 63. 44 firms reported to have invested in assets, 34 to have expanded workforce.)

Figure K-3: Months before receiving the compensation for the government contract



Notes: Months of delay in receiving compensation for the procurement contract as reported by firms who answered "No" to the following question: *With reference to your last contract awarded, Did your firm receive payment for the government procurement project on time?*. The number of respondents who reported late payment is 138 against 79 who reported to have been paid in time (217 answers). The average delay reported by respondents is 5 months, with a maximum of 2 years.

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