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Public support and enterprise performance: Evidence from firm-level data in
Ethiopia

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Public support and enterprise performance: Evidence from firm-level data in Ethiopia

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Abstract

The purpose of this study is to evaluate the impact of public contract to small and medium-sized enterprises on their performance. We use a rich firm-level dataset from the World Bank Enterprise Surveys and apply quasi-experimental approaches (endogenous treatment effect and propensity scores weighted difference-in-difference) to test the effect of public contract awards on small and medium-sized enterprises sales and employment growth. Our results indicate that public contracts enhance small and medium-sized enterprises sales and employment. The results highlight the positive role of public contracts to firms as a promotion strategy to improve firm performance and address the unemployment. Further, our results have implications for government supports to businesses in the era of COVID-19 crisis that affected businesses with demand shock. We conclude by providing policymakers advice to diagnose the challenges that firms face in low-income countries and craft a more targeted support policy to address the unemployment and firms' growth issues in developing countries such as Ethiopia.

Keywords: Firm performance, public support, quasi-experimental approach, Ethiopia.

JEL Code: D22, J21, J48, L25

1. Introduction

Small and Medium-sized Enterprises (SMEs) represent more than 90 percent of all firms (World Bank 2017) and provide over 70 percent of global employment (Ipinnaiye et al. 2017). In Africa, where more than 70 percent of the population is below the age of 30 (UN 2017), the contribution of SMEs to job creation, inclusive growth, and promoting sustainable development is of high interest among policymakers and researchers. Failing to provide more sustainable and decent jobs is likely to suffer a demographic vulnerability, which will affect the peace and security of the nations. Bigsten and Gebreeyesus (2007) argue that sustained employment cannot be achieved without the creation of new SMEs and strengthening the established ones. For SMEs to survive and grow, government's support is central in both normal times and during a crisis such as the COVID-19.

For instance, the recent COVID-19 crisis has forced small businesses to lose their jobs and livelihoods, projected to affect about 2.7 billion workers, representing around 81 percent of the world's workforce (ILO 2020). Through and beyond the crisis, a timely and proactive policy response is fundamental for SMEs to cope with the COVID-19 crisis. Maksimov et al. (2017) suggest that direct government support including public procurement can help firms' survival and growth. While Claessens et al. (2001) suggested for direct government support to firms during the East Asian financial crisis in view of the covariant shocks; Balloch et al. (2020) also suggest proposing innovative measures that could be different across sectors that ensure firms survival. A possible measure to support firms could be providing public contracts or procurements that create demand for the firms and retain their employees. This is important since other measures such as wage subsidies for protecting employees may not be financially and administratively feasible in the context of Africa.

Thus, in this study, we aim to investigate the role of a government contract to SMEs on their performance in terms of sales revenue and employment. Specifically, we pose the question: Is there evidence that public contract to SMEs improves employment and sales growth in Africa? To address the research question, we used the latest two rounds of firm-level data from the World Bank Enterprise Survey covering 1,492 firms from Ethiopia. Our analysis provides empirical evidence that government contract to SMEs significantly affects the two major indicators of firm

performance, sales, and employment growth. The results imply that governments in Africa could support SMEs by providing public contracts to the SMEs' goods and services.

The rest of the paper is structured as follows. The next section reviews previous literature on public support for SMEs development, followed by Section three, which presents the data and the descriptive statistics. Section four describes the econometric approach, and we present the results in Section five. The last section concludes and highlights policy implications.

2. Related literature

Existing empirical evidence documented that small and medium-sized enterprises are drivers of economic growth and employment creations (Ipinnaiye et al. 2017; Lilischkis 2011; Olawale and Garwe 2010), and hence viewing SMEs as a 'prime mover' for the development process of developing economies cannot be overstated (Coad and Tamvada 2012). Beck et al. (2005) argue that since SMEs offer a critical contribution to the policy goals of employment generation and equitable growth; direct government support to SMEs can help countries reap social benefits. In line with this Ritchie and Brindley (2005) argue that SMEs are not self-sufficient entities, their success largely depends on the government's effective support system (Beck and Demirgüç-Kunt 2004) and the microeconomic business environment they operate (Ayyagari et al. 2007; Porter 2003).

Some of the major public support systems that can strengthen SMEs and some other aspects of innovation and absorptive capacity are direct grant or tax incentives (Radas et al. 2015; Batra and Mahmood 2003), public procurement contract (Flynn and Davis 2017; Nicholas and Fruhmann 2014) and financial and credit availability (Beck and Demirguc-Kunt 2006; 2004). While the empirical evidence on the access to finance to SMEs growth are widely documented (Nagler and Naudé 2017; Bekele and Worku 2008; Loening et al. 2008), little is known on the extent to which the government support through a public contract to SMEs impact their turnover and employment growth. Besides, Loader (2013) indicates that governments procurement from SMEs are less than 15 percent.

Admittedly, there are some studies (Bellucci et al. 2019; Flynn and Davis 2017; Ferraz et al. 2015; Nicholas and Fruhmann 2014; Street and Cameron 2007; Loader 2005) that provide empirical evidence on SMEs access to public procurement or contract in the developed economies. SMEs

contracting with the government allows them to easily access the productive resource (Flynn and Davis 2017) and reduce some type of administrative burden (Nicholas and Fruhmann 2014). Others indicated that public procurement contracts can be a vital source of business for them (Peprah et al. 2016), encouraging entrepreneurship, their innovation capacity, and competitiveness that led to the contribution of job creation, economic growth, and support local and regional development (Nicholas and Fruhmann 2014; Szirmai et al. 2011). It can also motivate informal firms to formalize (Ferraz et al. 2015).

However, the evidence in Africa is scanty. Few exceptions are Peprah et al. (2016) in Ghana evaluate SMEs' access to public procurement contracts provides them flexibility in their operations and their adaptability to change either accidental or unexpected. They show that public contracts are a vital source of business demand for SMEs. Maksimov et al. (2017) recently show SMEs with government contract achieve a higher organizational efficiency, which turns out to increase employee wages in seven countries across Africa, Asia, and the Middle East. Thus, this study provides empirical evidence on whether government support in terms of a public contract to SMEs improves their employment and sales growth using data from Africa. The results could highlight whether African governments could support SMEs through public contracts that could boost their demand and allow them to stay afloat in the business in this time of crisis, with significant demand shock for businesses.

3. Data and descriptive statistics

3.1. The data and definition of key variables

The study uses firm-level data from the World Bank Enterprise Surveys collected in 2011 and 2015 in Ethiopia. The Enterprise Survey collected a range of economic data on 146,000 firms in more than 140 countries since early 1990. In Africa, Enterprise Surveys collected data in more than 42 countries focusing on investment climate including governance, regulations, and public services. In each country, the Enterprise Surveys data contains both cross-sectional and panel data which is compiled in multiple waves. Each country has also unique questionnaires reflecting specific conditions within each country.

In Ethiopia, the Enterprise Survey was administered on a representative sample of 1,492 firms from the four largest regions (Amhara, Oromia, SNNPR, Tigray) among the nine regional states

and two administrative cities (Addis Ababa and Dire Dawa). It covered non-agricultural private micro, small, medium, and large firms; with nearly 80 percent of the sampled firms are small and medium-sized enterprises. The survey collected data on a wide range of variables including enterprise characteristics, enterprise performance indicators, business environment, sales and supplies, and employers by occupational categories.

Firm performance (sales and employment): We measure firm performance using two indicators, sales revenue, and employment level. Sales revenue measures the annual sales volume by the firm during the last year, while the employment level measures the number of permanent employees of the firm during the survey period.

Government contract to firms: Our main interest variable, *firms with a government contract*, is an indicator variable that shows whether or not a firm received a government contract during the last 12 months. Since there are other explanatory variables that affect firm performance, we use these factors as controls. The survey contains information about firm characteristics such as firm age, firm initial and current size, domestic or foreign ownership, exporter, firm's top manager experience, firm's access to finance as well as obstacles to firms (such as power outage, regulation, corruption, and competition).

Firm age is measured as the number of years since establishment. *Initial firm size* is the number of permanent employees during the establishment of the firm, while the current firm size is a categorical variable classifying firms into *small*, *medium*, and *large* firms. Firms with the number of permanent employees below 20 are categorized as small, while those with permanent employees between 20-99 are medium and those firms with permanent employees above 99 are categorized as large. *A firm's top manager experience* measures the number of years of working experience of the firm's top manager in the sector. *Firm's access to finance* is an indicator that takes value 1 if a firm responds that access to finance is a minor or no obstacle. *Domestic ownership* measures the percentage of ownership by private individuals and companies, while *Exporter* captures the percentage of sales directly exported by the firm. *A power outage* is the number of power outages in a typical month experienced during last year. *Regulation* is proxied using the percentage of senior management time spent in dealing with government regulations. *Corruption* is proxied by the percent of total annual sales paid in informal payments. *Competition* is an indicator variable

that takes value 1 if a firm competes against unregistered or informal firms. The sector indicators of the firms are *Manufacturing*, *Construction*, and *Services*.

3.2.Descriptive statistics

Table 1 provides the summary statistics of the data. The average sales revenue is 55.1 million Birr. Comparing those firms with and without government contracts, those firms with government contracts report average sales of 103.5 million Birr and those without report 34.4 million Birr. The average employment level is about 96 employees. Firms with government contract employees on average 113, while those without government contract employee 89. Comparing the firm performance between the two groups shows a statistically significant difference and we explore in our econometric estimation whether this difference can be attributed to the government contracts awarded to the firms.

29 percent of the firms reported receiving government contract during the last fiscal year, while the rest 71 percent report not receiving government contracts. The average firm age is 14.7 years and the average initial firm size is 32 employees. Those firms with a government contract are slightly older (at 15.6 years) and with larger initial firm size (36 employees) compared to those without a contract at 14.3 years and 30 employees. Looking into the current firm size, 48 percent of firms are small, 31 percent are medium-sized, while the remaining (21 percent) are large firms. In the sample, the proportion of small, medium, and larger firms that have government contracts are 40.1, 32.3, 27.2 percent, respectively; while those without government contract are 51.2, 30.0, and 18.8 percent, respectively.

The average years of experience of the firm's top manager are 14 years and the firm's top manager working experience between the two groups is comparable (14 years). About 48 percent of firms have access to finance. The proportion of firms access to finance in the government contract sample is 49.3 percent compared to those without a government contract sample (47.3 percent). About 92 percent of the firms in both groups are owned by domestic investors. Nearly 5 percent of the firm's annual sales are directly exported; firms without government contract report higher exports at 6.1 percent whereas those with government contract report exporting 2.1 percent.

Table 1: Summary statistics of the key variables by treatment group

	Firms <i>without</i> government contract	Firms <i>with</i> government contract	Total
Sales revenue (log)	1.828 (1.610)	2.517 (1.886)	2.035 (1.726)
Employment (log)	3.120 (1.393)	3.514 (1.463)	3.235 (1.425)
Firm age (in log years)	14.28 (11.90)	15.63 (12.27)	14.67 (12.02)
Firm size (initial)	30.20 (111.0)	36.21 (112.9)	31.97 (111.6)
Top Manager experience	14.08 (10.03)	13.90 (9.710)	14.03 (9.936)
Access to finance	0.473 (0.499)	0.493 (0.501)	0.479 (0.500)
Domestic ownership (%)	92.66 (24.30)	91.63 (25.66)	92.36 (24.70)
Power Outages (average per month)	11.08 (17.06)	13.26 (13.34)	11.72 (16.09)
Exports (% of sales)	6.116 (21.49)	2.134 (10.90)	4.954 (19.10)
Competition (against informal firms)	0.361 (0.480)	0.357 (0.480)	0.360 (0.480)
Regulation (% of time spent)	5.453 (12.37)	10.84 (15.42)	6.940 (13.49)
Corruption (% of total annual sales)	0.256 (3.408)	0.617 (4.673)	0.359 (3.813)
Small	0.512 (0.500)	0.406 (0.492)	0.481 (0.500)
Medium	0.300 (0.458)	0.323 (0.468)	0.306 (0.461)
Large	0.188 (0.391)	0.272 (0.445)	0.212 (0.409)
Manufacturing	0.474 (0.500)	0.509 (0.500)	0.485 (0.500)
Construction	0.0331 (0.179)	0.0876 (0.283)	0.0489 (0.216)
Services	0.492 (0.500)	0.403 (0.491)	0.466 (0.499)
Grand Renaissance Dam Bond bought	0.241 (0.428)	0.318 (0.466)	0.263 (0.441)
Observations	1058	434	1492

Source: Authors' computation based on the World Bank Enterprise Survey, 2011, and 2015.

Note: Mean coefficients and values in parentheses are standard deviations.

36 percent of the firms report competition from informal firms, which is similar between the two groups. Firms are also faced with frequent power outages. By group, power outages reported by firms with government contract and without are 13.3 times per month, and 11.1 times per month, respectively. Nearly 7 percent of the senior management time is spent on dealing with government regulation. The senior management in firms with government contract spends relatively more about 11 percent of the time compared to those in firms without government contract, which is 5 percent of the time. Similarly, on average, 36 percent of annual sales are offered in informal payments, a proxy for corruption. Corruption in terms of informal payments is higher among firms with government contracts (61.7 percent) than those without government contracts (25.6 percent). These perhaps reflect the poor institutional environment.

By sector, 49 percent of the firms are in the manufacturing, 5 percent are in the construction and the remaining 47 percent are in the services. The percentage of firms in the manufacturing, construction, and service with government contracts is 50.9, 8.8, and 40.3 percent, respectively, and those without government contracts are 47.4, 3.3, and 49.2 percent, respectively. On average, about 26.3 percent of the firms reported the purchase of the government bond (GERDbond). 32 percent of the firms with government contract and 24.1 percent of those without government contract reported purchase of the GERDbond. The descriptive results picture the general characteristics of the firms as well as the business environment in which the firms operate.

4. Empirical strategy

4.1. Pooled OLS model

The objective of this study is to investigate the effect of public support (in terms of government contracts to SMEs) on SMEs' performance. We specify a pooled regression model in (1) given below.

$$y_i = \alpha_0 + \beta GC_i + \varphi X_i + \tau + \varepsilon_i \quad (1)$$

Our outcome variable (y_i) is the sales revenue or employment level of firm i that is explained by whether the firm i received a government contract (GC_i), firm's characteristics (X_i) and time effects (τ). ε_i is the random disturbance term. Our main interest variable is GC_i , a binary variable that takes value 1 if the firm received a government contract (*firms with government contract*). A positive and significant β shows a positive role of public support to SMEs' performance. An OLS

estimation of (1) could provide a biased estimate of β due to possible endogeneity issue of the main variable, GC_i . The endogeneity of government contract awards to firms could arise due to the possibility of endogenous placement. The government may award contracts based on economic, political, or social reasons. For instance, the government may favor high performing SMEs or the subsistence SMEs. Alternatively, firms may self-select to enter specific sectors that receive government support. To address the possible issue of endogeneity, we estimate an endogenous treatment effect model discussed below.

4.2. Endogenous treatment effect model

To uncover the causal effect of government contract, β , on firm performance while addressing the possible endogeneity, we follow an evaluation framework and estimate an endogenous treatment effect model.

$$y_{i0} = \mathbf{x}_i\beta_0 + \varepsilon_{i0} \tag{2a}$$

$$y_{i1} = \mathbf{x}_i\beta_1 + \varepsilon_{i1} \tag{2b}$$

$$t_i = E(t_i|\mathbf{z}_i) + u_i \tag{3}$$

$$y_i = t_i y_{i1} + (1 - t_i)y_{i0} \tag{4}$$

$$E(\varepsilon_{ij}|\mathbf{x}_i, \mathbf{z}_i) = E(\varepsilon_{ij}|\mathbf{x}_i) = E(\varepsilon_{ij}|\mathbf{z}_i) = 0 \text{ for } j \in \{0,1\} \tag{5}$$

$$E(\varepsilon_{ij}|t_i) = E(\varepsilon_{ij}|u_i) \neq 0 \text{ for } j \in \{0,1\} \tag{6}$$

where y_{0i} is the outcome for firm i that did not receive a government contract and y_{1i} is the outcome for firm i that did receive the government contract. t_i is the observed treatment status for each firm. The observed outcome for each firm is y_i , since we cannot observe both y_{0i} and y_{1i} for each firm, rather only one or the other. The outcome errors are uncorrelated with the regressors \mathbf{x}_i and \mathbf{z}_i but due to possible endogeneity, they are correlated with the treatment status, hence $E(\varepsilon_{ij}|u_i) \neq 0$.

We estimate the model following the control function approach in Wooldridge (2010). First, we run a probit regression of the treatment indicator, t_i , on a vector of instrument variable and exogenous regressors (\mathbf{z}_i) that affect selection into treatment and estimate the treatment error, $\hat{u}_i = t_i - \Phi(\mathbf{z}_i'\hat{\gamma})$. Second, using the generalized method of moments (GMM) we estimate the expected value of the outcome equations conditional on the set of exogenous variables (\mathbf{x}_i), and the

estimated treatment error, $\hat{u}_i, (E(y_{ij}|\mathbf{x}_i, u_i, t_i = j) = \mathbf{x}_i\beta_{1j} + u_i\beta_{2j}$ for $j \in \{0,1\}$), the average treatment effect (ATE), and the average treatment effect on the treated (ATT). ATE is the average effect of the treatment among all firms in a population, while ATT is the average effect of the treatment among those firms that received the treatment. In estimating the endogenous treatment effect model, proper identification of the model requires instrument variables that satisfy the exclusion restriction assumption. The instrument variable should be highly correlated with securing the government contract but not directly related to the firm performance except through its effect via the main explanatory variable, government contract.

Identification strategy: We use an instrument the variable, whether the firm has bought a widely sold government bond to finance the construction of the Grand Ethiopian Renaissance Dam (GERDbond). GERD is a monumental public project commenced in April 2011 aiming to generate hydroelectric power of about 6,450 Mega Watt. The GERD is the largest hydropower project in Africa located about 30 km upstream of the border with Sudan. The project is owned and operated by the state-owned enterprise, Ethiopian Electric Power Corporation. The project is entirely locally financed through domestic resource mobilization, importantly, through sales of the domestic bond. Since 2011 when the GERD project started, the government has widely sold bonds to individuals and enterprises.

We expect no correlation between purchasing the GERDbond and firm performance, and hence purchasing the GERDbond is exogenous. Nevertheless, there could be a correlation between purchasing the GERDbond and securing a government contract. It is likely that bureaucrats could positively assess firms that engage in support of public initiative (such as GERDbond purchase) in contrast to firms otherwise. Therefore, purchasing the GERDbond is exogenous and can affect firm performance only through receiving public support (securing government contracts). In the sample, about 26 percent of the firms reported the purchase of the government bond (GERDbond). 32 percent of the firms with government contract and 24 percent of those without government contract reported purchase of the GERDbond.

4.3. Propensity scores weighted Difference-in-Difference

Utilizing some panel nature of the data, we assess the robustness of our results. We focus on the subset of firms that did not receive government contracts during the 2011 survey (wave 1) and are

also resurveyed in the 2015 rounds (wave 2). Firms that received government contracts in wave 2 are categorized as treated groups, while those that did not receive in both rounds as the comparison group. By focusing on the subset of firms in the panel that did not receive government contracts during the 2011 survey (wave 1), we drop those firms that received government contracts during the 2011 survey.

In the panel framework, we combine both an inverse probability weighted (IPW) treatment effect and a propensity score matching (PSM) with difference in difference (DID) technique to address the endogeneity and unobserved heterogeneity problems. The propensity score approach is commonly used to minimize biases due to selection on observables in nonexperimental studies by balancing the treatment and comparison groups on a set of baseline characteristics; while the difference-in-difference is used to address unobserved heterogeneity that is time-invariant.

The propensity scores approach aims to make the groups as similar as possible with respect to those observed baseline characteristics. The balancing of the groups usually follows matching or weighting (Stuart 2010) using the propensity scores. The propensity score is the probability of receiving the treatment of interest that depends on a set of observable covariates, estimated using probit or logistic regression. The approach allows reducing extrapolation and subsequent dependence on the outcome model specification (Ho *et al.* 2007) as in the pooled OLS specification that provides more robust inference. It reduces potential bias since the propensity score does not use the outcome variable that separates the “design” of the study from the “analysis” (Rubin 2007). Besides, the approach makes the balancing feasible by condensing the large set of covariates into a single variable, the propensity score.

In the IPW-DID, first, we use an IPW to create a weighted sample of those that received the government contract and those that did not receive. Second, we apply the DID on the IPW sample. In the PSM-DID, first, we use a matching method to create a matched sample of those that received the government contract and those that did not receive. Second, we apply the DID on the matched sample. Then, we estimate the average treatment effects due to the government contract presented in Section 5.3.

5. Estimation results

In this section, we provide the estimation results of the impact of public support on firms' performance. First, we present the results based on pooled OLS. Then, we proceed with the estimation results based on endogenous treatment effects and discuss the robustness of our results.

5.1. Pooled OLS results

We present the pooled estimation results on the impact of government contract on firms' performance corresponding to equation (1), given in Table 2. We find positive and significant effects of securing government contracts on both firms' revenue and employment. Columns (1) and (2) show the positive effect of government contracts on SMEs' revenue and employment respectively conditional on firm characteristics.

The coefficients on the firms with a government contract reveal that firms' that received government contract have about 27 percent higher sales revenue than those that did not secure government contracts (Column 1). Most of the coefficients associated with the control variables have the expected signs. Older, larger firms and those in the construction sector are associated with higher sales revenue. We also find a positive effect of firms' access to finance and export orientation on sales revenue, while firms that are largely domestically owned are associated with lower sales revenue. The higher the time of senior management time spent on dealing with government regulations, the higher the sales revenue of these firms. The later result seems to be counterintuitive but perhaps it reflects more of the bureaucratic environment that should be overcome for better firm performance.

Column (2) shows that firms' that received government contract have about 9.6 percent higher employment than those that did not secure government contracts. Older, larger firms and those with access to finance are associated with higher employment. While firms that experience frequent power outages, high competition from the informal sector, and those in the services sector are associated with lower employment.

Table 2: Impact of public support on SMEs performance: Pooled OLS estimates

	(1)	(2)
	<i>Sales revenue</i>	<i>Employment</i>
Firms with government Contract (1=yes, 0=No)	0.271*** (0.098)	0.096** (0.049)
Firm age	0.408*** (0.081)	0.287*** (0.039)
Firm size (initial)	0.134*** (0.045)	0.259*** (0.023)
Experience (managers)	-0.048 (0.073)	-0.163*** (0.036)
Access to finance	0.337*** (0.125)	0.181*** (0.061)
Domestic ownership	-0.136*** (0.043)	-0.033 (0.020)
Power outages per month	-0.020 (0.063)	-0.061* (0.032)
Exporter	0.178*** (0.041)	0.029 (0.020)
Competition	-0.070 (0.130)	-0.124* (0.064)
Regulation	0.007 (0.035)	-0.012 (0.017)
Corruption	0.140 (0.127)	0.021 (0.061)
Medium	1.278*** (0.156)	1.579*** (0.077)
Large	3.604*** (0.226)	3.608*** (0.111)
Construction	1.174*** (0.316)	0.087 (0.160)
Services	0.146 (0.128)	-0.221*** (0.063)
Time	0.760*** (0.110)	-0.043 (0.052)
Constant	-0.214 (0.342)	1.783*** (0.167)
R^2	0.58	0.83
Observations	769	874

Source: Authors' computation based on the World Bank Enterprise Survey, 2011 and 2015
 Note: All variables are in log form except the treatment variable, government contract received, which is binary.
 Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The result shows that firms' that received government contract have higher sales revenue and employment than those that did not secure government contracts. This suggests that public support, in the form of providing government contracts to SMEs, positively affects SMEs' performance in terms of both revenue and employment expansion.

5.2. Endogenous treatment effect results

As discussed earlier, our main explanatory variable may not be exogenous, which could bias the estimated effect of government contract based on the pooled OLS. To address the potential endogeneity bias and assess the impact, we estimate the model given in equations (2a) and (2b) using endogenous treatment effect. We tested the endogeneity of the treatment and reject the null hypothesis of no dependence between the outcome and treatment equations for both outcomes (sales revenue and employment) models (see the last row of Table 3). The correlation coefficients between the error term of the outcome model and the treatment model are -0.78 and -0.72 for the sales and employment outcome models, which are statistically significant. This suggests the correlation between the unobserved factors that affect firm performance and firms receiving government contracts. Thus, the endogenous treatment effect estimation is appropriate given the lack of evidence of no endogeneity.

Table 3: Impact of public support on SMEs' performance: Endogenous treatment effects results

	(1) <i>Sales</i>	(2) <i>Employment</i>
ATE	2.159*** (0.285)	0.969*** (0.174)
ATT	2.037*** (0.295)	0.954*** (0.175)
$\rho_{u\epsilon}$	-0.783*** (0.070)	-0.722*** (0.088)

Source: Authors' computation based on the World Bank Enterprise Survey, 2011 and 2015

Note: $\rho_{u\epsilon}$ is the correlation between the unobserved terms of the treatment (firms receiving government contract) and outcome (sales revenue and employment). Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

A summary of the endogenous treatment effects results is presented in Table 3. Columns (1) and (2) show the ATE and ATT for the two outcome indicators, sales revenue, and employment, respectively. In column (1), the ATE of receiving government contracts on sales revenue is

significant and positive. Receiving government contracts increases the average sales revenue of the firms more than twice compared to the case when firms did not receive government contracts. Similarly, the ATT of receiving government contracts on sales revenue is significant and positive though slightly lower than the ATE. The ATT result indicates that firms that received government contracts have on average twice higher sales revenue compared to the case had they have not received the contracts.

In column (2), the ATE of receiving government contracts on employment is also significant and positive. Receiving government contracts increases the average employment of the firms by about 97% compared to the case when firms did not receive government contracts. Similarly, the ATT of receiving government contracts on employment is significant and positive though slightly lower than the ATE. The ATT result indicates that firms that received government contracts have on average 95% growth in employment compared to the case had they have not received the contracts. The results show the positive treatment effect of public support (government contracts) on SMEs' performance. This confirms the view that public support to SMEs in terms of providing them government contracts could help in growing their businesses and creating more jobs.

5.3. Robustness checks

Utilizing the panel nature of the survey, we identify the impact of public support on SMEs performance using quasi-experimental approaches (combining DID with propensity scores approach). Table 4, columns (1) and (2) show positive and significant sales and employment growth in both the IPW-DID and PSM-DID results. In column (1), the ATE of receiving government contracts is estimated to result in 39 percentage points higher in sales growth, while the ATT is estimated at 47 percentage points higher in sales growth. Likewise, The ATE of receiving government contracts is estimated at 27 percentage points higher in employment growth, while ATT is estimated at 30 percentage points higher in employment growth.

Looking at the results in Column (2), the PSM-DID results also provide a similar picture. Firms with government contract have more sales growth (39 percentage points) and employment growth (29 percentage points). Focusing on those firms that received government contracts only, public support improves sales growth (52 percentage points) and employment growth (30 percentage points). Overall, the results suggest that firms that secured government contract have higher growth in sales revenue and employment compared to those that did not receive the contracts. This

suggests the effectiveness of public support in promoting SMEs performance in terms of revenue and employment growth. Further, the results are qualitatively similar with the results from the endogenous treatment effect model.

Table 4: Impact of public support on SMEs' performance: Propensity score weighted DID results

	(1) <i>IPW-DID</i>	(2) <i>PSM-DID</i>	<i>n</i>
ATE			
Sales growth	0.391* (0.232)	0.387* (0.224)	462
Employment growth	0.269* (0.152)	0.289* (0.152)	494
ATT			
Sales growth	0.471** (0.236)	0.527* (0.244)	462
Employment growth	0.301* (0.156)	0.295** (0.146)	494

Source: Authors' computation based on the World Bank Enterprise Survey, 2011 and 2015
 Note: Standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6. Conclusion and policy implications

The SMEs sector is vital in the growth and development of any given economy. In Africa where nearly 70 percent of the 1.3 billion people is below the age of 30, the growth of SMEs could provide opportunities for the unemployed to engage in small business and thereby gain their means of living. In view of the significant importance of the SME sector to employment and economic growth, governments provide supports to SMEs. While there is large empirical evidence on how the government promotes SMEs including through SMEs access to public contract or procurement in the developed countries, the evidence in developing countries, especially in Africa is limited.

Importantly, this time is different due to the unprecedented crisis due to the COVID-19 pandemics. There is a wide consensus on the economic response to the COVID-19 pandemic to be largely fiscal, especially, in developing countries including Africa: Will providing support to SMEs from the government improve their performance and allow them to continue to maintain their employee?

In this study, we specifically address the question whether there is evidence that public contracts to SMEs enhance their performance in terms of sales and employment. The study emphasized whether the public could support firms through public contracts or procurements that creates demand for businesses and partly addresses the supply constraint in the economy. The proposed public support is directly helpful to registered SMEs and indirectly to firms and workers in the informal sector given the strong link between SMEs and informal firms. If the public contracts succeed in creating demand, providing liquidity, and continue their operations, these will further create demand for the informal firms that could cushion the pandemic impact on firms/businesses.

Using two rounds of Ethiopian firm-level data from the World Bank Enterprises Surveys, we find evidence that firms that received public contracts have significantly higher revenue and employment growth than those that did not receive. The results are robust to different specifications. Our analysis suggests government contracts have significant impacts on firm performance. This finding is relevant to the debate on the fiscal measures to support businesses in developing economies with limited infrastructure for targeting businesses (Dhingra 2020), limited fiscal space to provide liquidity to firms and/or subsidize wages for employment protection (e.g. Bosio et al. 2020; Cespedes et al. 2020). The implications of the study is to inform fiscal policies and help governments and international donors improve their targeting strategies using innovative public support measures to firms and also address the supply constraint through local productions during both normal and uncertain times such as the COVID-19 crisis.

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