Policy brief

89322 | May 2019

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The bigger the better?

Using lotteries to identify the allocative efficiency effects of firm size

In brief

- Governments around the world provide economic incentives to small and medium-sized enterprises (SMEs). SMEs are typically favoured in tax and regulatory policy and are often targeted in public procurement and business development programmes. Such policies are based on the belief that SMEs need help to grow out of inefficiently small sizes.
- Public procurement spending in particular provides a promising instrument for policymakers to direct resources to targeted sectors of developing economies. The positive demand shocks induced by public procurement could potentially facilitate firm growth and efficiency gains.
- After a significant overhaul in Ecuador's public procurement legislation in 2009, public contracts for certain kinds of smaller construction projects are allocated to competing firms through a lottery system.
- The findings in this study suggest that random lottery winnings lead to substantial increases in firm scale in the short run and expansion is achieved by employing more inputs.
- Further, while the estimated effects on firm scale are large, there is no crowd-out of sales to non-lottery activities. However, this growth is not sustained in the long-run. Viewed through the lens of a theoretical model, this finding suggests that firms in the study face distortions that become increasingly cumbersome as they grow.

This project was funded by the IGC

Overview of the research

Ecuador is a small, dollarised country whose economy relies heavily on commodities exports and foreign investment. These features subject the domestic economy to international shocks that may be particularly disruptive for firms, creating obstacles to achieving growth that are beyond their control. Like many developing nations, Ecuador has adopted policies to support the development of local business, including using its public procurement system to direct resources towards growing SMEs.

After a significant overhaul in Ecuador's public procurement legislation in 2009, public contracts for certain kinds of (smaller) construction projects are allocated to competing firms through a lottery system. Contracts, listed with required specifications and at stated prices, are awarded randomly amongst the set of applicants. This system minimises the bureaucratic burden (and corruption concerns) of alternative assignment mechanisms.

Such demand shocks allow firms to operate at a larger scale, at least in the short run. But how does firm size affect allocative efficiency? To assess this question, we exploit the random demand shocks from the procurement lotteries to estimate a key structural relationship that measures how restrictive an environment is to firm growth. Our framework rests on the notion that firms face unequal barriers to markets and resources and that these barriers depend in part on the size of the firm. While one might expect firms to use resources more efficiently as they grow, due to technical economies of scale, growth may also bring about more restrictive barriers that prevent firms from enjoying more efficient and cost-effective use of resources. Examples of these distortions could include taxes and subsidies, tighter regulations, firm connections, or other forces in the economic environment.

To estimate the model, we use administrative data from the Ecuadorian Tax Authority. Besides annual corporate tax returns, we have access to monthly Value Added Tax (VAT) and employment records to track monthly firm activity and firm-to-firm transactions. This data allows us to observe how the procurement lottery participants respond to winning a contract (relative to those firms that participated in the lottery and lost), providing insight on how firms evolve when presented with a substantial growth opportunity. Results suggest that winning a contract allows firms to temporarily increase their scale (sales, material input purchases, and number of employees rapidly increase), but they are incapable of sustaining it in the long-run. Eventually lottery winners returned to their previous size. Because firms scale up at a rate that exceeds their input scale-up, these findings suggest that the firms in our sample face more prohibitive barriers as they grow larger.

Policy motivation for research

Firms in developing countries face the risk of falling into "poverty traps", a self-defeating cycle in which long-term growth is continuously suppressed by factors beyond the control of the firm. Some factors that may contribute to poverty traps could include higher taxes, tighter regulations, or a lack of access to credit or capital markets. Such factors make it difficult for budding firms to sustain long-term growth as small amounts of growth are accompanied by burdensome obstacles at relatively low scales that could be overcome by a large but temporary expansion. The danger of poverty traps highlights the importance of policy supporting at-risk firms. Public procurement has the potential to play an important role in combatting poverty traps by providing governments with a channel to directly engage in the local economy. The impact of such policy can be far reaching, as spending spreads across the networks of contracting firms. Our project informs how public procurement may be used to support domestic growth and development.

Key research questions	Summary of key findings
Did the procurement system provide contract winners with access to new sources of revenue?	Contract winners experienced increases in revenue and the new activity did not crowd-out or crowd-in other business. This indicates that the procurement system provided the firms with new streams of revenue without disrupting other sources.
How did the participating firms adjust to handle to new contracts?	Lottery winners expanded their employment of workers while also purchasing more resources from suppliers in order to fulfill the additional demand.
Did the procurement system lead to sustainable long-term growth?	While the contracts provided a pronounced source of short-term growth for lottery winners, this growth was not sustained in the long-run. Activity returned to baseline levels after an approximate 12 month period.
What difficulties did lottery winners experience as they grew?	While lottery participants expanded their payroll to complete procurement contracts, this expansion was less than proportional to that seen in other inputs of the firm. These findings suggest that firms face obstacles in accessing the labour market as they grow.

Our combined results indicate that the participating firms are subject to more limitations than a lack of demand. The awarded contracts proved a meaningful source of income but did not improve the trajectory of the firm beyond the timeline of the project. This appears to be partially be driven by barriers that prevent the participants from fully accessing the (formal) labour market. scale up at a rate that exceeds their input scale-up, these findings suggest that the firms in our sample face more prohibitive barriers as they grow larger.

Policy recommendations

- **Public procurement may be used to support SMEs.** Directing procurement towards growing firms provides them with new sources of revenue that can promote new economic activity.

- **Obstacles that obstruct growth of small firms should be identified and addressed.** Insufficient revenue streams are not the only obstacle that restrict growth in firms of developing countries. Important to this is ensuring that firms have adequate access to resources as they grow in size.

- **Frictions in the labour market can hinder firm growth.** Rigid labour market regulations, such as the ones prevalent in Ecuador, can be particularly problematic within labour intensive industries.