

## EGYPTIAN RUG FIRMS WEAVE THEIR WAY INTO FOREIGN MARKETS

Offering small rug producers in Egypt opportunities to export rugs to high-income markets increased firm profits through improvements in firms' technical knowledge, efficiency, and product quality.

Featuring an evaluation by David Atkin, Amit K. Khandelwal, and Adam Osman



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### KEY RESULTS:

**Offering small firms the opportunity to export rugs increased profits.** Exporting firms' monthly profits increased by 26 percent relative to the comparison group. The effect of market access was large relative to the effect of other interventions targeted at firms, such as credit access and business training programs, which have had limited impacts on profits for similar firms.<sup>1</sup>

**Providing opportunities to export improved firms' technical ability to produce high-quality rugs.** When a master artisan assessed rug quality on a scale from 1 (lowest quality) to 5 (highest quality), exporting firms scored 0.79 points higher than comparison firms, who scored 2.96 points on average.

**Export opportunities also improved firms' efficiency in producing high-quality rugs.** When all firms were asked to prepare similar rugs using the same equipment, those offered export orders produced the rugs faster and with higher quality than comparison firms, suggesting improvements in efficiency.

**Improvements in quality were a result of "learning-by-exporting."** While there were no immediate improvements in quality or productivity after the exporting intervention, significant improvements appeared after five months. This suggests that firms learned and adjusted their production practices as a result of engaging with buyers in foreign markets. In particular, knowledge transfers between foreign buyers, local producers, and the firm that connected foreign buyers and local producers partly explained the eventual improvements in quality and efficiency.

In recent decades, governments, nonprofits, and donors have increasingly invested resources in market access initiatives targeted at small- and medium-sized enterprises (SMEs). These initiatives aim to improve livelihoods for firm owners and workers in SMEs and promote exporting by matching domestic firms with foreign buyers. In theory, access to high-income markets may help firms in low- and middle-income countries not only improve their profits but also promote “learning-by-exporting.” By repeatedly engaging with buyers in foreign markets, who often demand higher quality standards, firms can improve their technical skills and efficiency. However, evidence remains limited on whether “learning-by-exporting” occurs and how access to export markets impacts SMEs.

To examine how exporting affects firms’ profits and productivity, J-PAL affiliated professor David Atkin (Massachusetts Institute of Technology), Amit K. Khandelwal (Columbia Business School), and J-PAL affiliated professor Adam Osman (University of Illinois at Urbana-Champaign) conducted a randomized evaluation with small rug producers in Egypt. Researchers partnered with a United States-based nonprofit, Aid to Artisans (ATA), and an Egypt-based distributor, Hamis Carpets, to provide a random subset of firms with the opportunity to export handmade carpets to high-income markets.



# EVALUATION

Researchers partnered with Aid to Artisans (ATA)—a United States-based nonprofit that aims to create economic opportunities for handicraft producers in low- and middle-income countries—to conduct a randomized evaluation with small rug-producing firms in Fowa, Egypt.

In 2009, ATA began a market access program in Egypt to match local rug producers with foreign buyers. ATA worked closely with Hamis Carpets—the largest rug intermediary in Fowa—to design and market carpets for sale in foreign markets. With the support of ATA, Hamis Carpets generated export orders from clients in high-income countries and provided a random subset of local firms the opportunity to fill these orders. Firms were eligible to participate if they had fewer than five employees, purchased their own materials, and had never previously worked with Hamis Carpets. Among 219 eligible rug producers, researchers randomly assigned 74 firms to the treatment group of exporting firms and the remaining 145 served as the comparison group.<sup>2</sup>

Hamis Carpets visited exporting firms and provided them with the opportunity to fill an initial 110 m<sup>2</sup> rug order, or approximately eleven weeks worth of work. Firms were shown the rug design and told the rug would be exported to a high-income country. In addition, Hamis Carpets provided design-specific input threads<sup>3</sup> and loom components and shared information regarding the technical specifications of the rug order. As in a normal buyer-seller relationship, Hamis Carpets was able to offer firms additional orders if the initial orders were filled to satisfaction. Comparison firms did not receive access to these export opportunities.

Researchers periodically surveyed all firms over a three-year period between 2011 and 2014 to assess productivity and knowledge flows between buyers, intermediaries, and producers. A master artisan intermittently measured the quality of firms' rugs along eleven dimensions: corners, waviness, weight, touch, packedness, warp thread tightness, firmness, design accuracy, warp thread packedness, inputs, and loom.<sup>4</sup> Researchers also measured rug quality in a structured setting using the same equipment. In 2014, researchers invited all firms to a rented workshop location (or a “quality lab”) and asked them to produce an identical rug using the same loom and inputs. Comparing these identical-specification rugs allowed researchers to compare quality and productivity between exporting firms and comparison firms.

**FIGURE 1. RUG FIRMS LINKED TO FOREIGN MARKETS VIA MARKETING AND INTERMEDIARY SUPPORT**



### Step 1

Aid to Artisans (ATA) identified the Egyptian rug industry as having high potential to be marketed to consumers in high-income countries at a competitive price.



### Step 2

Hamis Carpets, with marketing support from ATA, secured sustained export orders from rug buyers in the United States and Europe. Hamis Carpets and the foreign buyers established pricing, delivery timing, and product specifications.



### Step 3

Hamis Carpets identified small, Fowa-based rug firms with potential to fill foreign orders and then individually met with a randomly selected subset of firms to discuss export orders, outline rug design, and provide input threads and loom components for consistency purposes.



### Step 4

Small rug firms produced requested rugs, while Hamis Carpets coordinated with foreign markets to complete exporting orders. Although each firm had been randomly assigned to receive the initial order request, Hamis Carpets could place subsequent orders with exporting firms based on firm performance and buyers' continued interest.

<sup>1</sup> Banerjee, Abhijit V. 2013. “Microcredit under the Microscope: What Have We Learned in the Past Two Decades, and What Do We Need to Know?” *Annual Review of Economics* 5: 487–519.

McKenzie, David and Christopher Woodruff. 2013. “What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World?” *World Bank Research Observer* 29: 48–82.

<sup>2</sup> The initial recruitment drive generated a list of 303 firms that specialized in one of four rug types (duble, tups, kasaees, or goublan). Given challenges generating large and sustained rug orders for all carpet types, Hamis Carpets was only able to offer firms the opportunity to produce duble rugs and, initially, could only offer small export orders of 10-20 m<sup>2</sup>. After receiving large and sustained rug orders in 2012, surveyors located 140 additional duble-producing small firms in Fowa and were able to start offering rug orders of 110 m<sup>2</sup>. All non-duble manufacturing firms are therefore excluded from the analysis.

<sup>3</sup> Input threads include the warp thread, meaning the wool or cotton thread that internally holds the rug together, and the weft thread, meaning the colorful, more visible thread that is woven between the warp threads.

<sup>4</sup> Rug quality is determined by buyer preferences, such as the rug's number of colors, thread count, and thread type, and by weaving techniques, such as how accurately the rug design was followed and whether the rug's threads are held together correctly while weaving. In this evaluation, in order to measure both determinants of rug quality on an ongoing basis, master artisans evaluated each rug's corners (the straightness of where the rug edges meet), waviness (the flatness of the rug when placed on a hard surface), weight (the difference between the rug's actual and intended weights), touch, packedness (how well the rug holds together), warp thread tightness, firmness, design accuracy (how closely the rug design aligns with the intended pattern), warp thread packedness (the visibility, if applicable, of the warp thread), inputs (the quality of the input threads), and loom (the quality of the loom).

# RESULTS

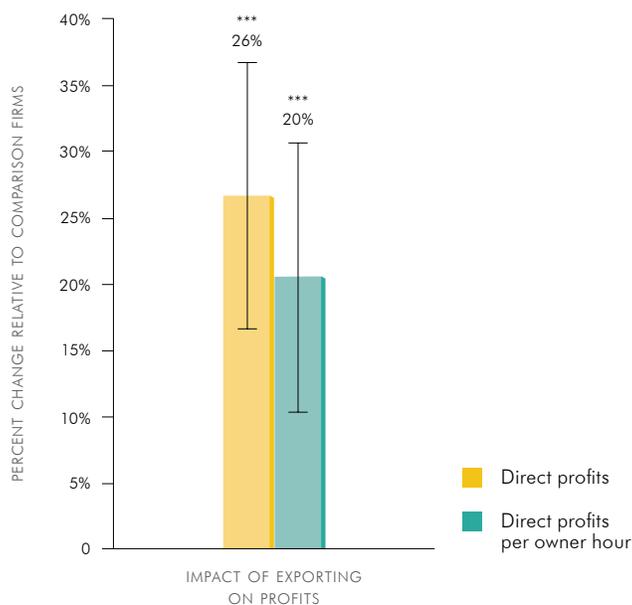
## Offering small firms the opportunity to export rugs

**increased profits.** Exporting firms' monthly profits increased by 26 percent relative to comparison firms. While exporting firm owners increased their hours worked by about 5 percent, they experienced a 43 percent increase in prices received for each rug produced (Figure 2). Thus, while the higher-quality rugs demanded by foreign retailers were more expensive and time-intensive to produce, the corresponding higher prices offset costlier production and incentivized higher quality production. The intervention's effect on firm profits was large relative to the effect of other interventions targeted at entrepreneurs, such as credit access initiatives and business training programs, which have had limited impacts on profits for similar firms.<sup>5</sup>

## Providing opportunities to export improved firms' technical ability to produce high-quality rugs.

On a scale from 1 (being lowest quality) to 5 (being highest quality), exporting firms scored 0.79 points higher than comparison firms, who scored 2.96 points on average.

FIGURE 2. EXPORTING FIRMS EARNED HIGHER PROFITS



Note: Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (\*\*\*), 5% (\*\*), or 10% (\*) level.

<sup>5</sup> Banerjee, Abhijit V. 2013 "Microcredit under the Microscope: What Have We Learned in the Past Two Decades, and What Do We Need to Know?" *Annual Review of Economics* 5: 487–519.

McKenzie, David and Christopher Woodruff. 2013. "What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World?" *World Bank Research Observer* 29: 48–82.

## Export opportunities also improved firms' efficiency in producing high-quality rugs.

When asked to prepare similar rugs using the same equipment, firms that were offered export opportunities produced the rugs faster and with higher quality than comparison firms. Outside this "quality lab" setting, however, output per labor hour fell for exporting firms. This was primarily because they produced rugs with more difficult specifications in response to export demands (including higher thread counts, more colors, and more complicated designs). Indeed, when the loom, the inputs, and the specifications of the rug were held identical in the rented workshop location, exporting firms produced rugs faster and at a higher quality, suggesting improvements in efficiency.

## Improvements in quality were a result of "learning-by-exporting."

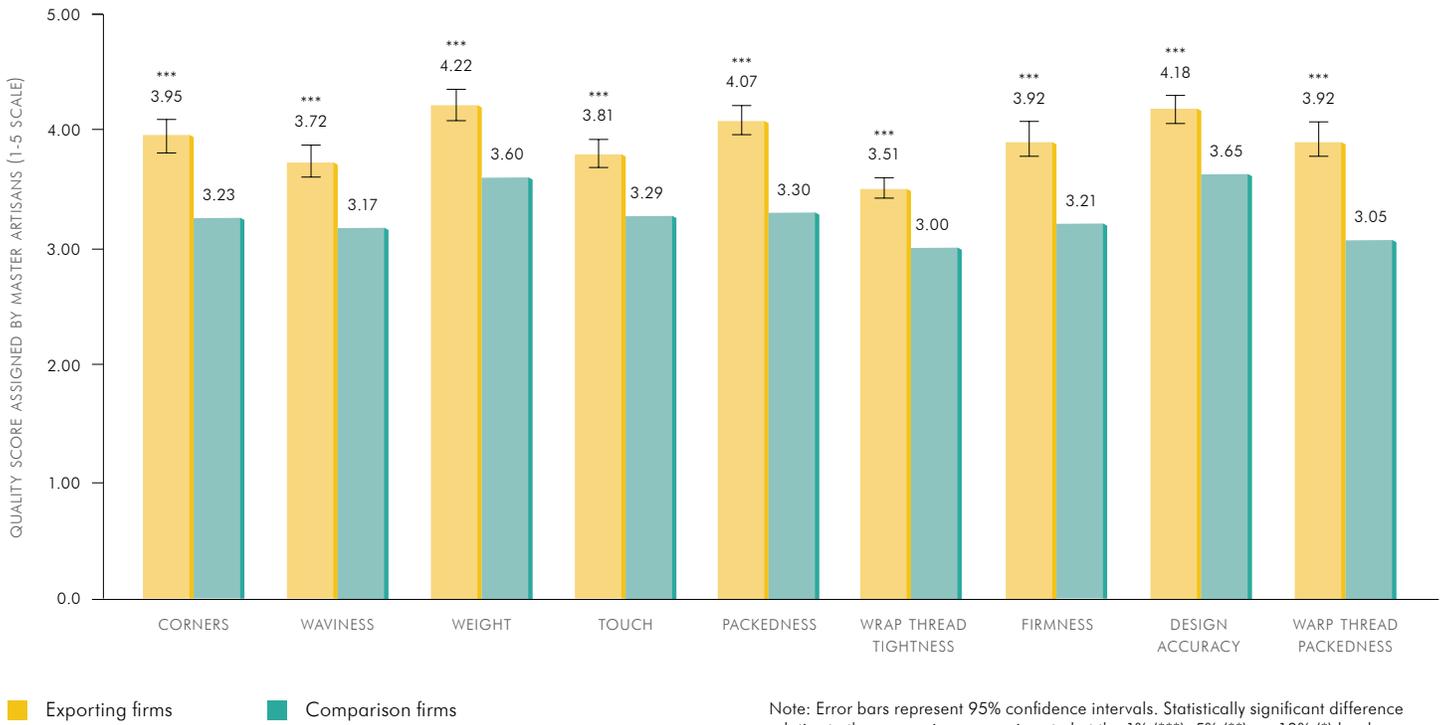
During the first five months of the exporting intervention, quality levels improved steadily before levelling off when firms were able to produce the quality demanded in high-income markets. As such, quality and productivity did not immediately improve, suggesting that it took firms time to learn and adjust their production practices. Correspondence between foreign buyers, Hamis Carpets, and exporting firms indicates that foreign buyers and Hamis Carpets passed information along to exporting firms on how to manufacture high-quality rugs. Quality improved most along the particular dimensions discussed in meetings between Hamis Carpets and the producer, suggesting that improvements in efficiency occurred partly through knowledge transfers from intermediaries and foreign buyers and partly through firms' practice in producing rugs to these technical specifications.



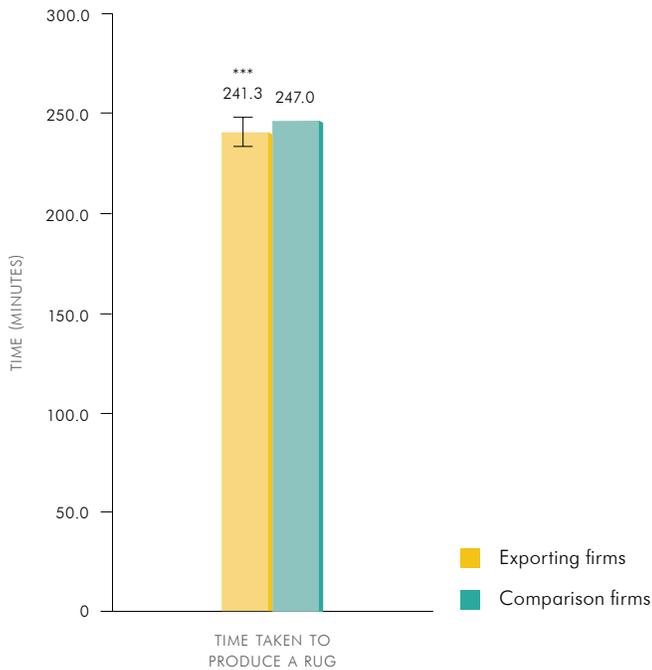
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# RESULTS

**FIGURE 3. EXPORTING FIRMS PRODUCED HIGHER QUALITY RUGS IN A SIMILAR AMOUNT OF TIME**



**FIGURE 3. CONTINUED**



## EGYPTIAN RUG INDUSTRY

Egypt has a strong historical reputation for producing flat-weave rugs. In 2013, Egypt was the eleventh largest global producer of carpets and rugs, with a total annual production of US\$734 million. At that time, more than 17,000 Egyptians worked in the carpet and rug industry, representing 7 percent of total world employment in this industry and 1.7 percent of total manufacturing employment in Egypt.

Fowa, a peri-urban town in Egypt, is known for its “carpet cluster,” where hundreds of small firms use wooden foot-treadle looms to manufacture flat-weave rugs. The majority of firms in Fowa consist of a single owner who operates out of a rented space or home. In most cases, the firm has no other full-time employees. For sales to the domestic market, firms receive an average of LE42.5 (about US\$7 at the time of the evaluation) for each rug they produce. Prior to the evaluation, participating firms’ monthly profits from the rug business averaged LE646 (US\$102). Only about 12 percent of firms had ever knowingly produced rugs for the export market.

Note: Error bars represent 95% confidence intervals. Statistically significant difference relative to the comparison group is noted at the 1% (\*\*\*), 5% (\*\*), or 10% (\*) level.

# POLICY LESSONS

**Greater access to foreign markets may be more valuable than greater access to domestic markets for SME development.** Access to foreign, high-income markets exposes firms to sophisticated buyers who have higher quality standards than many domestic buyers; are often willing to pay more for higher quality products; and can be willing to help local producers improve overall quality by transferring knowledge gleaned from their experiences producing and selling high quality products. In such cases, in order to meet the demands of high-income foreign markets, SMEs can learn from their buyers and their local intermediaries. This, in turn, can lead to greater quality, productivity, and profitability.

**Increasing access to export markets for SMEs in low- and middle-income countries comes in many forms.** The intervention induced SME exporting by facilitating connections between local firms and sophisticated foreign buyers. Other interventions or policies that reduce barriers to exporting—including by reducing tariffs or other trade costs—may generate similar benefits for SMEs in low- and middle-income countries.

**Market access programs may complement more standard interventions, such as microcredit access or business training programs.** Recent research on other methods for supporting firms—such as credit access and business training—finds that these programs have limited impacts on firm profits.<sup>6</sup> Rather, coupling credit or business training with market access interventions may be an effective strategy for improving SME profits and growth.

## OPEN QUESTION

Exporting firms were more profitable than comparison firms, thereby suggesting that lack of access to markets may be a major obstacle to firm growth in low- and middle-income countries. As a next step, researchers are interested in exploring the effectiveness of different market access programs to expand access to export markets for SMEs.

**Featured Evaluation:** Atkin, David, Amit K. Khandelwal, and Adam Osman. 2017. “Exporting and Firm Performance: Evidence from a Randomized Experiment.” *The Quarterly Journal of Economics* 132(2): 551-615.

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**Suggested Citation:** J-PAL Policy Briefcase. 2019. “Egyptian Rug Firms Weave Their Way into Foreign Markets.” Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.

This research was made possible by:

**Partners:** Aid to Artisans, Hamis Carpets

**Funders:** Economic Growth Center at Yale University, Innovations for Poverty Action, International Growth Centre, Jerome A. Chazen Institute for Global Business at Columbia Business School, MacMillan Center at Yale University, and Private Enterprise Development in Low-Income Countries

<sup>6</sup> Banerjee, Abhijit V. 2013. “Microcredit under the Microscope: What Have We Learned in the Past Two Decades and What Do We Need to Know?” *Annual Review of Economics* 5: 487-519.

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The Abdul Latif Jameel Poverty Action Lab (J-PAL) is a network of affiliated professors around the world who are united by their use of randomized evaluations to answer questions critical to poverty alleviation. J-PAL’s mission is to reduce poverty by ensuring that policy is informed by scientific evidence.

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