

Labor Productivity, Firm-size and Gender: The Case of Informal Firms in Argentina and Peru

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A commonly held view is that female-owned businesses suffer from many disadvantages compared to male-owned businesses. These disadvantages lead, in turn, to relatively lower levels of efficiency and smaller firm-size among female-owned businesses—the female-owned firms under-performance hypothesis. Using data on unregistered firms in Argentina and Peru, the female-owned firms under-performance hypothesis is confirmed. The gender based difference in efficiency and firm-size holds within the full sample and no more than 25 percent to 30 percent of the difference can be explained by variations in firm characteristics. The gender based gap in performance also holds within various sub-samples of firms, although the magnitude of the difference does vary across the sub-samples.

Introduction

There is a growing body of evidence which suggests that relative to male-owned businesses, female-owned businesses suffer various disadvantages leading to their lower efficiency—the female-owned business under-performance hypothesis. Firm performance is typically measured by firm-size, labor productivity or various estimates of total factor productivity. However, a key shortcoming of this literature is that it is almost entirely focused on developed countries and the formal or the registered sector. For example, focusing on the formal sector in the United States, Brush et al. (2006), among others, find that the average revenue of female-owned firms equaled US\$151,130, about 26 percent of revenue for male-owned businesses. Moving from firm-size to profitability, Sabarwal and Terrell (2008) find that female-owned businesses in the formal sector in 26 transition countries are significantly less profitable than male-owned businesses. The authors attribute the bulk of this difference to the relatively smaller size of female-owned firms.

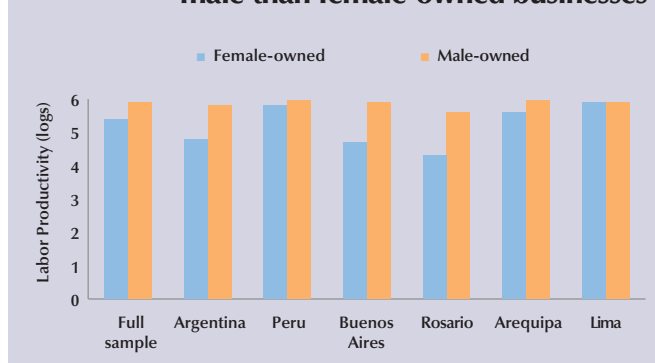
Formal analysis of male- vs. female-owned businesses in the informal or the unregistered sector of developing countries is important for at least two reasons. First, the informal economy is large, especially in developing countries. Recent estimates suggest that globally, between 23 percent and 35 percent of all economic activity occurs in the informal economy; while for countries in the lowest

quartile of GDP per capita, the estimates increase to between 29 and 57 percent (La Porta and Shleifer 2008). Second, anecdotal evidence suggests that the informal economy has a disproportionately larger presence of females than males compared with the formal economy. Hence, the informal economy is particularly important for gender related issues.

This note uses recently collected data on informal or unregistered firms in Argentina and Peru, collected by the World Bank's Enterprise Analysis Unit in 2010.¹ The data cover 384 firms in Argentina and 480 firms in Peru. Firms were randomly selected from two cities in Argentina (Buenos Aires and Rosario) and two cities in Peru (Lima and Arequipa). It is important to note that due to lack of proper sampling frames, these surveys are not necessarily representative of the informal economy at the country or even the city level. Hence, the results presented below pertain to the structure of the informal firms surveyed rather than the informal economy per se. Extension of these results to the broader informal economy requires due caution.

The female-owned business under-performance hypothesis is analyzed using labor productivity measured by sales per worker in a regular month (USD, log values) and firm-size measured by total sales in a regular month (USD, log values).² Female-owned businesses include all businesses that have a female largest owner. The remaining

Figure 1 Labor productivity is higher for male than female-owned businesses



Source: Enterprise Surveys.

firms are classified as male-owned businesses. Results for labor productivity and firm-size are roughly similar.

Labor productivity and firm-size are lower for female-owned businesses

On average, output per worker (without logs) equals US\$411 in the full sample, varying between US\$358 for female-owned businesses and US\$473 for male-owned businesses. This implies that a typical worker in a female-owned business produces only 76 percent of the output of a worker in a male-owned business.³ Figure 1 shows the comparison in log values and confirms a significantly lower⁴ labor productivity for female-owned firms in various sub-samples with the exception of Lima city. Similar results hold for firm-size. For example, in the full sample, a median-sized female-owned firm is about 61 percent the size of the median-sized male-owned firm.

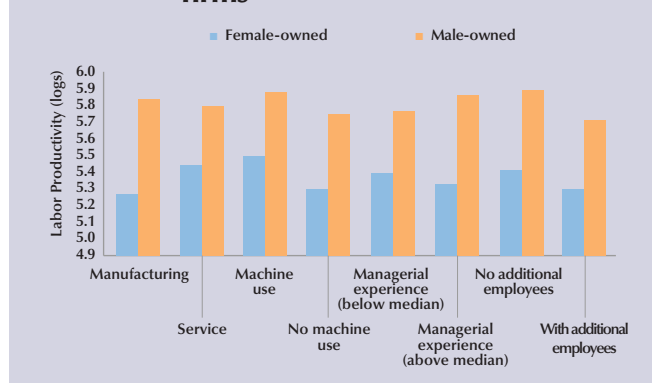
Gender specific difference in labor productivity and firm-size are robust to various firm characteristics

Explanations of lower labor productivity for female- vs. male-owned businesses may lie in, for example, women working fewer hours or working from home vs. outside to accommodate household duties; the greater difficulty women face in accessing finance and other infrastructure services; discrimination against women in the product and input markets; less experience among women in managing businesses (glass ceiling effect); poorer quality of both their own and parental education among women; and concentration of women in less productive (poorer) cities and less productive sectors (vertical discrimination). While some of these factors are important (shown below), collectively they explain no more than 25 to 30 percent of the gender based gap in labor productivity. The same holds for firm-size.

Not all the potential explanations mentioned above are relevant for the individual cases of Argentina and Peru.

For example, consistent with the anecdotal evidence, female-owned businesses are much more common in the service sector than in manufacturing (60 percent vs. 48 percent). However, this preference for the service sector is irrelevant since the gender based gap in labor productivity holds for both sectors (figure 2). The same holds for firm-size. Similarly, male-owned businesses are more likely to use machinery and also have more years of managerial experience than female-owned firms. However, as figure 2 shows, the female-owned under-performance hypothesis holds irrespective of the use of machinery and years of managerial experience. These findings regarding managerial experience and the use of machinery also hold for firm-size.

Figure 2 Dispelling some of the reasons for lower productivity in female-owned firms



Source: Enterprise Surveys.

Can female-owned firms' under-performance in labor productivity be explained by gender based differences, if any, in firm-size? The data show that about 75 percent of female-owned businesses are run by the owner without any additional employees, but only 62 percent of male-owned businesses have no employees. However, figure 2 reveals that the productivity gap in female-owned firms holds, and to a roughly similar degree, whether the owner uses additional employees or not.

Household responsibilities do not explain the female-owned businesses' productivity under-performance hypothesis

In most countries, women are the primary caregivers in the family. The informal sector is more likely to offer flexible working hours and the possibility of working from home which may be attractive to women with household duties. Such household duties may impinge on business activity leading to lower productivity and smaller firm-size among female-owned compared with male-owned businesses.

The survey provides useful information on some of these variables. For example, about 39 percent of female-owned businesses compared with 31 percent of male-owned businesses operate from inside as opposed to outside the household premises (home-based businesses). Excluding the city of Lima, 52 percent of female-owned vs. 38 percent of male-owned businesses are home-based. Similarly, female-owned businesses operate

for less than 50 hours a week compared with a significantly higher figure of 56 hours for male-owned businesses. Can lower working hours or the greater proclivity to work from home explain the lower productivity of female-owned businesses? Another interesting variable is the marital status (single, married or divorced/widowed) of the firm owner that could shed light on the possible impact of household duties on the relative performance of female-owned businesses.

Figure 3 shows that, on average, female-owned businesses have lower labor productivity than male-owned business among both groups, home-based business and those operating from outside household premises. There is some evidence that the gender based gap in labor productivity is significantly larger among home-based businesses than the rest, but this finding should be treated with some caution since it does not hold at the individual city level.⁵ Results for the number of hours a business operates are roughly similar, with the gender based labor productivity gap decreasing significantly as the number of hours worked increases in the full sample (figure 3), but not necessarily at the individual city level. Looking at marital status, female-owned firms' under-performance in labor productivity is smallest for firms with owners that are married, followed

Excluding the city of Lima, 52 percent of female-owned vs. 38 percent of male-owned businesses are home-based.

by single owners and largest for the rest (divorced, widows, widowers).” However, these differences by marital status are small (statistically insignificant). In short, female-owned businesses perform worse than male-owned businesses irrespective of the location of the business, the hours of operation and the marital status of the owner. A similar result applies to firm-size. In short, the extra burden of household duties on women does not

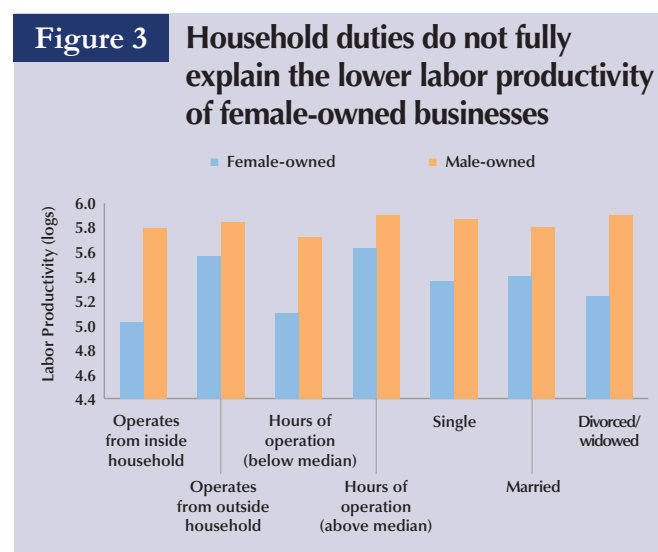
appear to be the primary reason for the under-performance of female-owned businesses.

Use of family or unpaid labor does not matter for female-owned firms' productivity under-performance hypothesis

Due to lack of alternative employment, members of the family of the owner may take part in the family business. Family labor is relatively cheap (low opportunity cost) and hence there may be a tendency to use such labor even when its contribution to output at the margin is minimal. The key point here is that if female-owned businesses are more likely to use family labor or other unpaid labor then this could explain lower performance among female-owned businesses. However, the survey shows that about 18 percent of the labor force among female-owned firms is comprised of family members compared with marginally higher 19 percent for male-owned firms. Similarly, the proportion of unpaid workers in the total labor force is very small for both male- and female-owned businesses (3 and 2 percent, respectively). Exploring further, the results show that female-owned firms' productivity under-performance is roughly the same among firms that use family labor and those that don't. Another factor that could alter the opportunity cost of labor and hence labor productivity is the education level of the owner, whether or not the owner has a job in the formal sector or is searching for one. The gender based gap in labor productivity is large and significant across all these sub-groups, although it does show some variation. For example, labor productivity of female-owned businesses is approximately 81 percent of male-owned businesses for the sample of firms where the owner has a secondary or higher education. For the remaining firms, however, the corresponding figure is much lower at 57 percent. The results discussed in this paragraph regarding labor productivity also hold for firm-size.

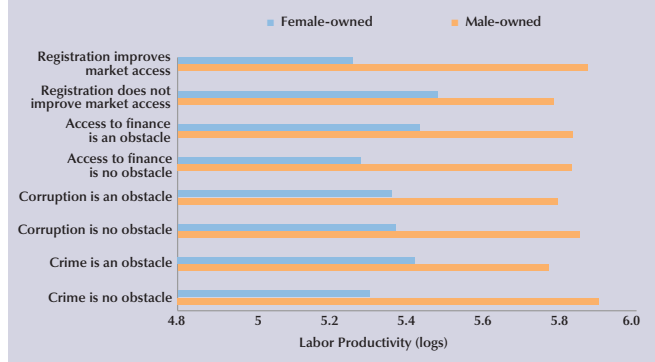
Are obstacles to doing business more binding for females, lowering their efficiency?

The survey reports on a number of obstacles to doing business and potential benefits from registration as perceived by the firms. If women compared with men are



Source: Enterprise Surveys.

Figure 4 Lower labor productivity among female-owned firms is not driven by gender based differences in perceived obstacles to doing business



Source: Enterprise Surveys.

more likely to find these obstacles binding then this could explain the lower productivity among female-owned businesses. Figure 4 shows how the gender based gap in labor productivity varies across firms that report whether registration improves access to markets, infrastructure services and government services or not, as well as firms that report corruption, crime and access to finance as significant obstacles or not. Across all these sub-groups, labor productivity is lower for female-owned businesses; and although the magnitude varies, it is not significant. It is safe to conclude that relatively lower labor productivity among female-owned businesses cannot be explained away by gender based differences in the perceived severity of the obstacles shown. A similar conclusion holds for the gender based gap in firm-size.

The average productivity of labor of a female-owned informal business in Argentina and Peru equals 76 percent of a male-owned business in the sample under study. The corresponding figure for firm-size is 61 percent. That is, the female-owned firms' under-productivity under-performance hypothesis is not rejected in the

sample. It also holds within various sub-samples. Some commonly observed factors such as location, sector, firm-size, hours of operation and education level of the owner can potentially explain about 25 percent to 30 percent of the gender based gap in labor productivity and firm-size. Explaining the remaining difference is a fruitful area for future work.

Notes

1. The Enterprise and Informal Surveys implemented in Latin America and Caribbean countries, are jointly conducted by the World Bank and the Inter-American Development Bank for this geographic region.
2. Data limitations do not allow using total factor productivity (TFP) or other related performance measures.
3. The percentage figure drops to 72 percent if we exclude four observations that show relatively high or low levels of labor productivity.
4. That is, at the 5 percent level of significance. The significance levels were obtained from regression analysis with Huber-White robust standard errors. Regression results were also checked against potential outliers in the data.
5. With the exception of Rosario, all other cities show that the female under-performance is bigger within the set of firms that operate from inside as opposed to outside household premises. However, for no individual city is this difference statistically significant at the 5 percent level.

References

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