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Zuzana Brixiová
Thierry Kangoye

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Zuzana Brixiová

*University of Cape Town
and IZA*

Thierry Kangoye

African Development Bank

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IZA

P.O. Box 7240
53072 Bonn
Germany

Phone: +49-228-3894-0
Fax: +49-228-3894-180
E-mail: iza@iza.org

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ABSTRACT

Start-Up Capital and Women's Entrepreneurship: Evidence from Swaziland¹

This paper examines gender differences in entrepreneurial performance and their links with start-up capital utilizing a search model and empirical analysis of survey of entrepreneurs from Swaziland. The results show that entrepreneurs of both genders with higher start-up capital record better sales performance than those with smaller amounts of capital. For women entrepreneurs, formal finance sources of start-up capital are also associated with higher sales. However, as in other developing countries, women entrepreneurs in Swaziland have smaller start-up capital and are less likely to fund it from formal sources than men. Among women entrepreneurs, those with college education and confident in their skills tend to start their firms with higher amounts of capital. Professional support also matters, as women with such support are more likely to fund their start-up capital from the formal financial sector.

JEL Classification: L53, O12, C61

Keywords: women's entrepreneurship, start-up capital, search model, multivariate analysis

Corresponding author:

Thierry Kangoye
African Development Bank
Avenue Joseph Anoma
01 BP 1387 Abidjan 01
Côte d'Ivoire
E-mail: t.kangoye@afdb.org

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1. Introduction

With the current ‘too low for too long’ pattern of global growth, policy makers in developing and emerging market countries have increasingly been turning to domestic drivers of structural transformation and poverty reduction, including productive entrepreneurship (Baumol, 1990; Acs and Varga, 2005; Brixiová, 2010; Balamoune, 2011). In Sub-Saharan Africa, interest in entrepreneurship as a source of inclusive growth and job creation outside of subsistence agriculture, especially for women and youth, has grown (Amin, 2010; Hallward-Dremier, 2011; Brixiová et al., 2015). Entrepreneurship and small and medium enterprises (SMEs) are also receiving attention in global policy forums such as the G20.²

Inequality, including gender inequality, and its links to growth and poverty reduction are other areas of increased policy focus globally. For Sub-Saharan Africa, a growth decomposition shows that the region’s average annual GDP per capita growth could be higher by up to 0.9 percentage points if income and gender inequality were reduced to the levels observed in the fast-growing Southeast Asian economies (Hakura et al., 2016). For women in African low and middle income countries, where women face challenges to enter and maintain jobs in the growing formal wage sector, productive entrepreneurship can be an avenue to escaping low-paid jobs in agriculture and reducing income gaps. Besides economic benefits and empowerment, entrepreneurship also presents women with opportunity for shaping their identity and better integration into the society (Blomqvist et al., 2014).

This paper contributes to the literature on gender, start-up capital and entrepreneurial performance in Africa, with a model and study of entrepreneurs from Swaziland. The paper first develops a search model where the amount of start-up capital impacts the rate of new business creation and share of entrepreneurs in the formal sector. It then examines the impact of gender differences in amount and composition of start-up capital on the early stage entrepreneurial performance as well as drivers of the gender disparities in access to start-up capital, both in terms of amounts and sources. Two reasons motivate our interest in the early-stage entrepreneurship: (i) the definition of entrepreneurship which emphasizes the start-up process, as in the Global Entrepreneurship Monitor and (ii) hypothesis from Bardasi et al. (2009) that gender barriers to entrepreneurship are likely to be more pronounced during the entry stage of the entrepreneurial process.

Our theoretical and empirical analysis of data from Swaziland confirms the importance of start-up capital for entrepreneurial performance, measured in sales, for both men and women. We also found that women entrepreneurs have smaller start-up capital and are less likely to fund it from the formal sector than their men counterparts. While women entrepreneurs have smaller start-up capital and are less likely to fund it from formal sources than men, parental and professional support matters. Women who receive such support are more likely to finance their start-up capital from the formal financial sector than those without support. Moreover, women entrepreneurs with some college education and those confident in their skills tend to start their firms with higher amounts of start-up capital, pointing to an area for policy interventions.

² China listed entrepreneurship in the top ten priorities emerging from the G20 Hangzhou Summit: www.g20.org/English/Dynamic/201606/t20160601_2294.html. The Turkish G20 Presidency in 2015 has already prioritized access to finance by small and medium enterprises in the area of financial inclusion: www.gpfi.org/news/key-gpfi-dates-priorities-2015-announced (links were accessed on June 30, 2016).

The paper is organized as follows. Section 2 reviews the literature. Section 3 develops the model while section 4 discusses data sources and presents the empirical results. Section 5 concludes.

2. Review of Literature

Access to finance, including to start-up capital, has been recognized as a barrier to entrepreneurial activities in Africa and other developing and emerging market countries (Baliamoune-Lutz et al., 2011; Brixiová and Kiyotaki, 1997). Asiedu et al. (2013) examined empirically the role of gender of the firm's owner this access across developing regions, with a focus on Sub-Saharan Africa (SSA). The authors found gender of the firm's owner to be an important determinant of financing constraints faced by small and medium enterprises (SMEs), especially in SSA. Utilizing data from the World Bank Enterprise Surveys, Aterido et al. (2013) showed the existence of unconditional gap in financial inclusion between men and women in the region. The authors explained the women's lower use of financial services with gender gaps in income and education as well as with women's household and marital status.

A number of studies also found differences between men and women entrepreneurs in amount and composition of start-up capital, with women facing greater constraints than men (Malapit, 2012; Nieman et al., 2007; Rouse and Jayawarna, 2006). Women entrepreneurs face challenges in accessing formal sources of funding during the start-up phase and end up drawing on their personal sources or borrow in the informal financial sector.³ Insufficient funding is often mentioned as a factors that prevent women to enter more productive sectors.

One stream of literature on entrepreneurship is built on observation that relative to wage-workers, entrepreneurs tend to be people with unusually low risk aversion (Kanbur et al., 1982 and Khilstrom and Laffont, 1979). Levin and Travis (1987) suggested that in small firms the level and structure of start-up capital reflects the owners' attitudes towards risk. Sing and Belwal (2008) further underscored that gender differences in start-up capital are related to variances in the risk appetite. In addition, they emphasized criteria used by financial institutions such as (i) the experience of the entrepreneur, including in running a firm and (ii) the nature and type of the business. Mordi et al. (2010) found that in developing countries, women's access to loans from formal financial institutions is hampered by the lack of credit history, limited collateral and unfavorable institutional arrangements. This line of research builds on

Another stream of the entrepreneurship literature (Kirzner, 1973; Knight, 1921) stresses that the risk attitude is not the key determinant of entrepreneurship.⁴ The important factor is that only a portion of the population has entrepreneurial vision and only people with such vision are able to perceive business opportunities. We build on this approach, elaborated in Baumol (1990). We also draw on Verheul. and Thurik (2001) who found gender gaps in the amount of start-up capital in the Netherlands, but not in debt-to-equity ratios. Our work is also related to Sabrawal and Terrell (2008) who found gender gaps in entrepreneurial performance in Eastern Europe and Central Asia, which they attributed to firms run by women being more capital constrained and operating in sectors with smaller average firm size than firms run by men.⁵

³ For example, Derera et al. (2014) found that women entrepreneurs in South Africa tend to use combination of personal funding and other source (family savings, loan from family or bank loan) to start their businesses.

⁴ Nelson (2015) and Orobia et al. (2011) provided empirical evidence in this regard.

⁵ Gottschalk and Niefert (2011) analyzed gender differences in education, experience, team size and motivation in German start-ups on sales and employment growth. They found that female-founded firms recorded weaker performance on all indicators, and also had gaps in some observable characteristics, including education, than men.

We contribute to the literature with research on financial constraints to female entrepreneurship in Swaziland, a small middle income country in Southern Africa with one of the highest rates of unemployment, including among women, in the region. Entrepreneurship is one of the avenues that can help solve employment problem in the country. In Swaziland, as elsewhere, potential female entrepreneurs are constrained most by the lack of access to finance/start-up capital and skill shortages. The paper examines whether the lack of start-up capital and in particular the limited access to formal financing institutions among emerging female entrepreneurs constrains them in turning business opportunities into productive firms.

3. The model of links between performance and start-up capital

In this section we develop a model that links the start-up capital with entrepreneurial performance, measured by sales, and with the share of highly productive firms in the economy. The initial capital and access to credit appear to be important constraints to start-ups (Figure 1); and the model below reflects these facts. Moreover, while both women and men entrepreneurs face shortages of start-up capital, the shortages are more pronounced among women.

Figure 1. Constraints to start-ups globally

Figure 1a. New firm entry and cost of start-ups

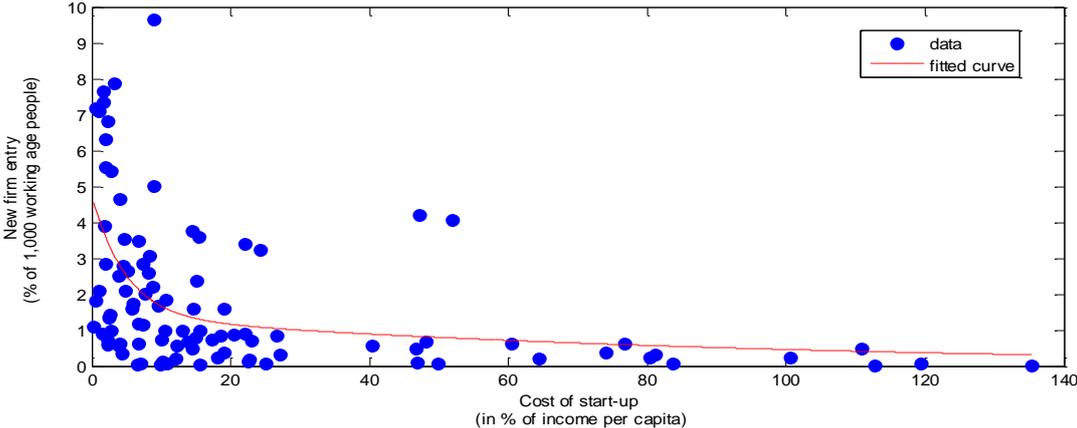
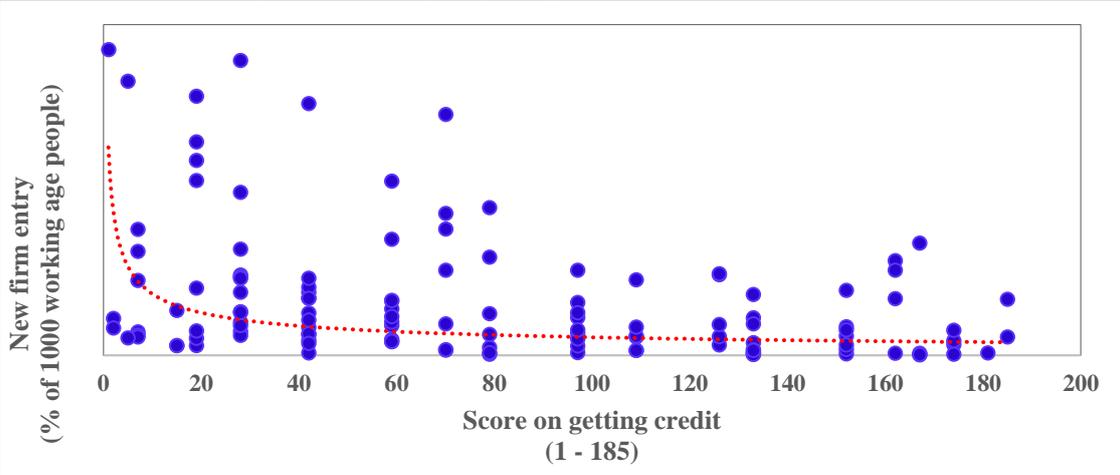


Figure 1b. New firm entry and difficulty of getting credit



Source: Authors’ calculations based on the World Bank Doing Business and Entrepreneurship database. Note: Cost of start-ups includes all official fees and fees for professional services if such services are required by law.

The economy operates in continuous time and consists of infinitely lived entrepreneurs with population normalized to 1, of which share $\phi \in (0,1)$ are women.⁶ Each entrepreneur has one unit of time at every t , and preferences described by $E_0 \int_{t=0}^{\infty} e^{-rt} c_t dt$, where c_t is consumption at t , and E_0 are expectations at $t=0$. The entrepreneurs are working in the informal sector earning subsistence income b while searching for a business opportunity or running a productive firm, which yields income y , with $y > b > 0$. Firms are created through entrepreneurs' search effort x at a flow cost of $d(x) = x^2 / 2\gamma$ units of the consumption good, where $\gamma > 0$ is search efficiency, and are destroyed at rate δ . The entrepreneurs choose their effort x , which determines the arrival rate of a business opportunity and the rate of obtaining start-up capital.

Letting $m_u^W = \phi m_u$ be the share of women entrepreneurs searching for business opportunities, $m_u^M = (1-\phi)m_u$ share of searching men entrepreneurs, $m_p^W = \phi m_p$ the share of women entrepreneurs running firms, and $m_p^M = (1-\phi)m_p$ share of men entrepreneurs running firms, the equilibrium conditions for entrepreneurs satisfy:

$$1 = \phi m_u + \phi m_p + (1-\phi)m_u + (1-\phi)m_p \quad (1)$$

where m_u denotes all searching entrepreneurs and m_p denotes all entrepreneurs running private firms, where $\dot{m}_u = -\dot{m}_p$. The change in the number of women entrepreneurs searching for business opportunities, $\phi \dot{m}_u$, is given by:

$$\dot{m}_u^W = \phi \dot{m}_u = \phi (\dot{m}_u) = \phi (\dot{m}_u) \quad (2)$$

Suppressing the time subscripts, for an entrepreneur i , V_i denotes the discounted value of the income from searching for a business opportunity, and J_i the value of running a private firm producing output y every period. The corresponding Bellman equations are:

$$rV_i = b + \max_x \left(-\frac{x^2}{2\gamma} + x_i(J_i - V_i - (\bar{c} - c_i)) \right) + \dot{V}_i \quad (3)$$

$$rJ_i = y + \delta(V_i - J_i) + \dot{J}_i \quad (4)$$

where r is the discount rate, b is the income from the informal sector, \bar{c} is the needed value of start-up capital and c_i^s is the initial endowment of the start-up capital of an entrepreneur of type i , where $i = M, W$ for men and women, respectively. The start-up capital endowment takes on two values: c_s^W for women entrepreneurs (that is with probability ϕ) and c_s^M for men entrepreneurs (with probability $1-\phi$) where $\bar{c} > c_s^M > c_s^W > 0$ and $b > \bar{c} - c_s^W$. The return on

⁶ Entrepreneurship is defined as in Gries and Naudé (2011) to be ‘the resource and process where individuals utilize opportunities in the market through the creation of new business firms’. As Baumol (1990) we assume that a fixed share of the population consists of entrepreneurs, the attitude towards risk is not a key issue.

entrepreneurial search for business opportunities equals the informal sector income, the net expected return on running a firm, and the capital gain, \dot{V}_i . The return on running a firm equals the profit, the net loss from bankruptcy and the capital gain \dot{J}_i . Defining $\lambda_i = J_i - V_i$ to be net value from opening a private firm for an entrepreneur i and solving (3) and (4) w.r.t. x_i yields:

$$x_i = \gamma(\lambda_i - (\bar{c} - c_s^i)) \quad (5)$$

that is marginal cost of entrepreneurial search equals marginal benefit. In equilibrium:

$$\dot{\lambda} = \frac{\gamma\lambda^2}{2} + (r + \delta)\lambda - (y - (\bar{c} - c_s)) \quad (6)$$

$$\dot{m}_p = \gamma\lambda(1 - m_p) - \delta m_p \quad (7)$$

The steady state equilibrium is described (1), (2), and (5) – (7) where $\dot{m}_p = \dot{m}_u^W = \dot{\lambda} = 0$. The above model has several empirical implication. Equations (5) – (7) in particular show that the entrepreneur's search effort for productive business opportunity – and hence their profitability -- is positively related to (i) search efficiency, which reflects the business environment, skills and networks; (ii) the initial endowment of start-up capital and (iii) net gain from opening a private firm. The representative entrepreneur earns profits at t described by $\pi = \bar{x}y + (1 - \bar{x})b$ which are increasing in effort \bar{x} and thus in search efficiency γ and start-up capital c_s^i .

In summary, in the model shortages of start-up capital slow down the rate of productive start-ups. To the extent that women entrepreneurs possess lower start-up capital, they put less effort into identifying productive business opportunities, find fewer of them and record lower sales or profits on average (for a representative female entrepreneur). A higher share of women than men entrepreneurs also ends up operating in the informal sector, that is $0 < m_o^W < m_p^M$. Below, we test the links between start-up capital and sales on data from a survey of entrepreneurs in Swaziland. We also examining factors behind gender differences in access to start-up capital.

4. Empirical analysis of survey of entrepreneurs from Swaziland

a. Data sources

The empirical analysis draws the survey of entrepreneurs in Swaziland, carried out by the UN Swaziland in November 2012 (UN Swaziland, 2013). The sample included 640 small and medium-sized enterprises (SMEs) in the urban areas of Hhoho and Manzini regions. The sampling frame consisted of firms listed in the 2011 SME directory of the Ministry of Commerce, Industry and Trade.⁷ The interviews covered information about the firm's objectives as well as the most common opportunities and constraints to operations the entrepreneurs encountered. In addition, the survey explored key characteristics of each enterprise such as location, years of operations, sector, employment and sales, among others.

⁷ New firms and those that outgrew the SME size are not in the directory and may be underrepresented. To partly correct for this bias, a large number of firms were interviewed relative to the population in selected areas.

The empirical part of the paper utilizes the definition of entrepreneurship often used by the Global Entrepreneurship Monitor (GEM), where an entrepreneur is ‘...an adult engaged in setting up or operating a venture which is less than forty-two months old. . .’ (Parker, 2009). Among the 640 SMEs surveyed, the GEM concept of entrepreneurship covered 290 firms (i.e. 42 months old or younger), of which 148 were run by men and 142 by women. Following Baumol (1990), we add profit motive as a criterion for the identification of an entrepreneur.

b. Empirical approach

Utilizing descriptive statistics and kernel density estimates we examine if female entrepreneurs have lower start-up capital and post weaker sales than men. We then explore if (i) the amount of start-up capital is influenced by funding sources and (ii) higher amount of start-up capital are associated with better firm sales performance. Two estimations methods have been applied: Ordinary least square (OLS) regressions and (ii) quantile regression (QR). The OLS measures the effects of the explanatory variables at the mean sales, and assumes a well-shaped distribution around the mean. The QR estimates the effect of the explanatory variables at different quantiles of sales to understand factors that drive sales at various sales ranges. We estimate these equations for all entrepreneurs and sub-samples of men and women:

$$\log(\text{Sales}_{lev_i}) = \gamma \text{InitialCap} + \delta \text{FirmChar.} + \nu \text{EntrepreneurialChar} + \varepsilon_i \quad (1a)$$

$$\log(\text{InitialCap}_i) = \alpha + \gamma \text{FundingSource} + \nu \text{EntrepreneurialChar.} + \varepsilon_i \quad (1b)$$

where i stands for entrepreneurs. In the OLS regression (1a) the dependent variable (Sales-lev) is a logarithm of the value of sales, in thousands of lilangeni. In (1b), the dependent variable (Initial_cap) is logarithm of start-up capital. The independent variables are defined as follows: “*Initial Capital*” is a vector of controls including the initial capital, the application for a formal source of finance and the use of a formal source of initial capital; “*Firms characteristics*” includes the size of the business, whether the firm is an exporter, the support the entrepreneur receives from the government, and the age of the business; “*Entrepreneur characteristics*” capture whether the entrepreneur is ‘young’ (i.e. is 35 years old or younger), his/her education level, etc. “*FundingSource*” means credit from the formal or the informal financial sector, own contributions and support from family and friends.

c. Evidence from Swaziland

This section analyses data from the survey of entrepreneurs in Swaziland. It examines factors behind gender differences in (i) entrepreneurial performance (proxied by sales), taking into account entrepreneurs’ start-up capital and other factors, and (ii) access to start-up capital.

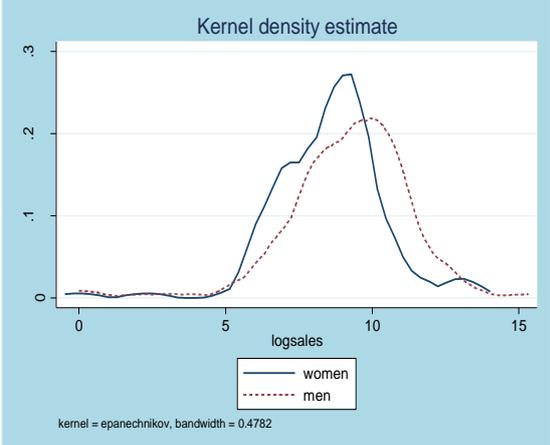
(a) Kernel density estimates of sales and start-up capital

This part examines differences between (1) women and men entrepreneurs and (2) among women entrepreneurs along several dimensions impacting sales performance and start-up capital. First, the kernel density estimates of probability function of (log of) monthly sales (Figure 2a) show that in these nearly uni-modal distributions men outperform women almost throughout the entire sales range. Women entrepreneurs have lower start-up capital than men for the entire range, with some women starting their firms with almost no capital (Figure 2b). Access to credit from either formal or informal sources is not associated with higher sales

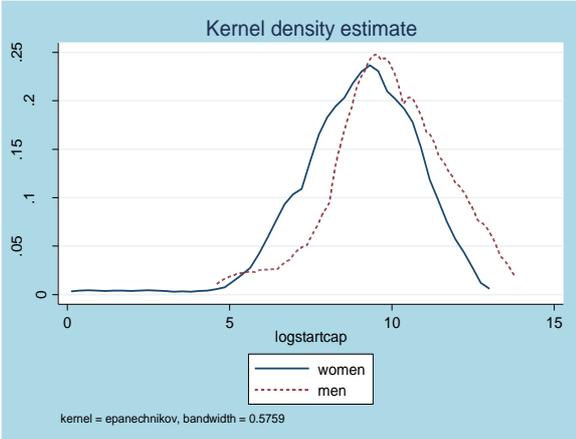
among women in the highest ranges, indicating that other factors drive the best performance (Figures 2c and 2d). Female entrepreneurs who contributed to start-up capital and participated in financial literacy training had the highest amounts of start-up capital (Figures 2e and 2f).

Figure 2. Kernel density estimate of sales and start-up capital

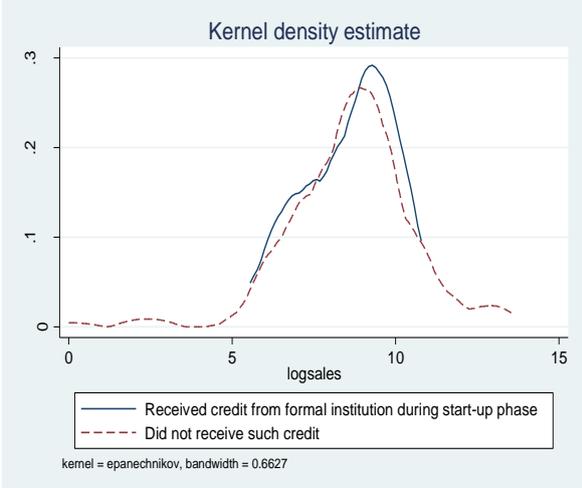
2a. Sales performance (log), by gender



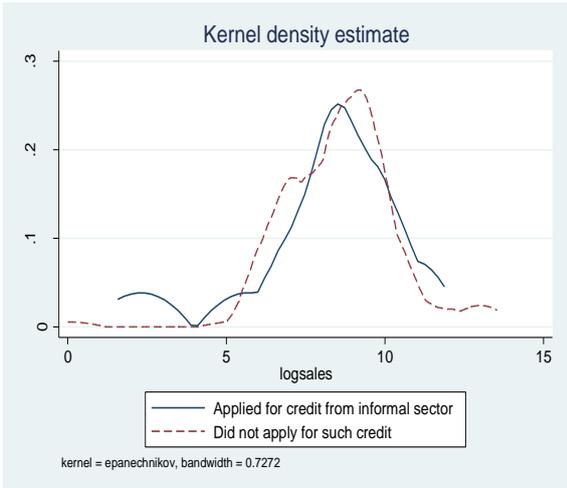
2b. Start-up capital (log), by gender



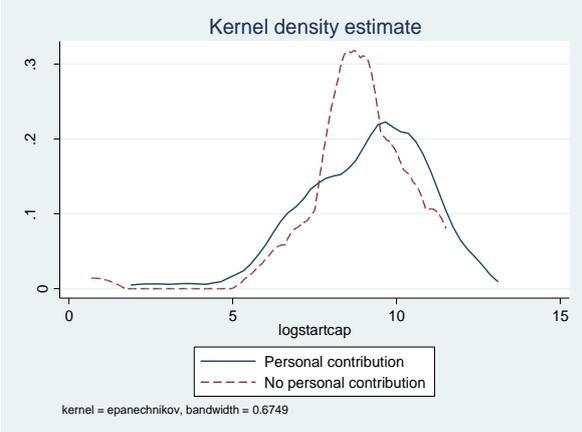
2c. Sales (log) & credit from formal institutions
Women



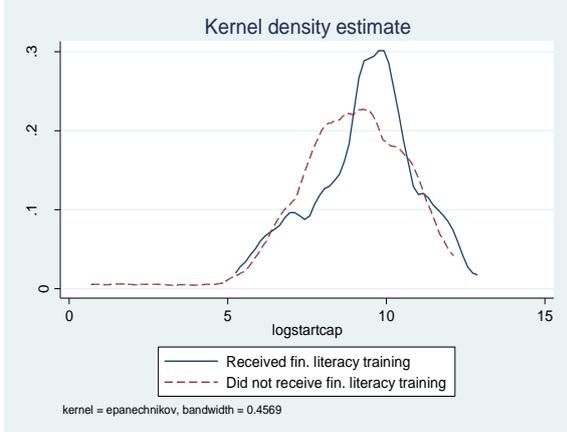
2d. Sales (log) & credit from informal sector
Women



2e. Start-up capital (log) & personal contribution
Women



2ef Start-up capital (log) & fin. literacy training
Women



Source: Authors' calculations based on 2013 UN Swaziland survey. **Note:** Sales are for a typical month.

(b) Gender differences in entrepreneurial performance

OLS and Quantile Regressions

Table 1 illustrates coefficient estimates in quantile and OLS regressions. Each plot shows the variation in the coefficient of key explanatory variables -- amount of start-up capital and formal source of start-up capital – over the sale distribution for both men and women entrepreneurs. The effect of amount of capital remains positive (and statistically significant) over all sale ranges for both women entrepreneurs. In contrast, training has a positive (and significant at lower ranges) but decreasing effect over the sales distribution for men.

Table 1. Firm sales and access to finance: OLS and quantile regressions, full sample

| Dependent var.:Sales(log)* | OLS | | Quantile regressions | | | | | |
|--|--------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|--------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| | Male | Female | Male | | | Female | | |
| | | | 25% | 50% | 75% | 25% | 50% | 75% |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Skills | | | | | | | | |
| Received business training | 0.968 (0.457)** | -0.551 (0.422) | 1.129 (0.538)** | 0.570 (0.345) | 0.590 (0.406) | -0.025 (0.451) | 0.054 (0.316) | -0.547 (0.344) |
| Perceives lack of skills as barrier | -1.323 (0.605)** | 0.276 (0.504) | -1.089 (1.277) | -0.218 (0.762) | -0.636 (0.632) | 0.414 (0.655) | 0.410 (0.315) | 0.049 (0.303) |
| Capital and access to finance | | | | | | | | |
| Initial capital (log) | 0.146 (0.131) | 0.429 (0.123)*** | 0.388 (0.156)** | 0.424 (0.139)*** | 0.504 (0.182)*** | 0.383 (0.133)*** | 0.496 (0.093)*** | 0.337 (0.084)*** |
| Applied for formal source of credit | -0.657 (0.504) | -0.017 (0.427) | -0.684 (0.785) | -0.521 (0.442) | -1.106 (0.459)** | 0.253 (0.463) | -0.033 (0.357) | -0.254 (0.277) |
| Formal source of initial capital | -0.010 (0.439) | 0.790 (0.378)** | 0.677 (0.651) | 0.860 (0.417)** | 0.298 (0.591) | 1.024 (0.359)*** | 1.070 (0.299)*** | 1.108 (0.316)*** |
| Business characteristics | | | | | | | | |
| Size | 0.123 (0.079) | 0.334 (0.142)** | 0.164 (0.077)** | 0.127 (0.052)** | 0.123 (0.163) | 0.215 (0.442) | 0.222 (0.254) | 0.536 (0.179)*** |
| Exporting firm | -0.691 (1.782) | -0.550 (1.666) | -0.060 (1.410) | -1.177 (0.929) | -1.798 (0.563)*** | -0.156 (1.090) | -0.564 (0.735) | -1.149 (0.441)** |
| Received government support | 2.121 (1.927) | -0.443 (1.193) | 3.285 (1.882)* | 1.884 (1.151) | 1.260 (1.081) | 0.022 (0.643) | -0.323 (0.539) | -0.943 (0.394)** |
| Age of business | -0.011 (0.015) | 0.023 (0.014) | 0.009 (0.022) | -0.012 (0.012) | -0.014 (0.017) | 0.002 (0.017) | 0.018 (0.010)* | 0.015 (0.009)* |
| Entrepreneur characteristics | | | | | | | | |
| Youth (less than 35 years) | -1.260 (0.459)*** | -0.523 (0.376) | -0.609 (0.553) | -0.563 (0.490) | -0.506 (0.481) | -0.482 (0.483) | -0.365 (0.310) | -0.422 (0.347) |
| Intercept | 8.111 (1.574)*** | 3.553 (1.158)*** | 3.856 (1.717)** | 4.829 (1.604)*** | 5.197 (2.280)** | 3.616 (1.321)*** | 2.919 (0.742)*** | 5.011 (0.855)*** |
| R ² / Pseudo R ² | 0.38 | 0.36 | 0.33 | 0.28 | 0.29 | 0.31 | 0.34 | 0.34 |
| Obs | 90 | 89 | 90 | 90 | 90 | 89 | 89 | 89 |

Note: *, **, and *** denote 10%, 5% and 1% significance levels. Age of business is in months. Only entrepreneurs motivated by profit were considered.

Further, for women in the highest sales range (to 25%), better sales performance is associated with factors such as larger size, exports, and age of business. Government support was associated with negative (and significant) impact on sales among the best female performers, but had a positive impact on sales performance among men in the lowest (bottom 25%) sales

range. For these men being young – less than 35 years of age – was associated with negative and statistically significant impact on sales. No such effect was observed for women.⁸

Regarding the role of start-up capital, a larger amount is associated with better sale performance in firms run by men or women. For men entrepreneurs, this effect is rising along the sales distribution. Drawing on the formal source of financing for start-up capital has a positive, significant and increasing impact on sale of firms run by women entrepreneurs in all sales ranges, pointing to the importance of access to formal finance for this group.

(c) Gender differences in access to start-up capital

This section examines drivers of the amount of start-up capital, including funding sources. We first ran OLS regressions on determinants of start-up capital for all entrepreneurs as well as for sub-samples of men and women and summarize results in Table 2. An interesting finding from policy perspective is that (some college education or higher) education is associated with higher amount of start-up capital for both genders, but the magnitude of the impact is higher among women, especially young women (ages 35 years or younger).

Table 2. Determinants of the level of start-up capital: OLS regressions

| | All (1) | Woman (2) | Men (3) | Young Women (4) | Adult Wom. (5) |
|--|------------------------------|-----------------------------|-----------------------------|-----------------------------|----------------------------|
| Perceives lack of skills as barrier | -1.098 *** (0.322) | -0.805 * (0.487) | -1.388 * (0.438) | -1.385 * (0.836) | -0.657 (0.691) |
| Has some college education | 1.023 *** (0.239) | 1.422 *** (0.342) | 0.686 * (0.358) | 1.954 *** (0.587) | 1.227 ** (0.491) |
| Had savings as source of initial capital | -0.410 (0.282) | -0.624 (0.431) | -0.402 (0.408) | -0.989 (0.630) | -0.214 (0.708) |
| Parents provided support | 1.004 *** (0.276) | 0.385 (0.404) | 1.326 *** (0.382) | -0.048 (0.653) | 0.615 (0.622) |
| Applied for informal credit at start-up | -1.336 (0.443) | 0.503 (0.517) | -1.055 (0.948) | -0.651 (0.902) | 1.238 * (0.694) |
| Made personal contribution to start-up | 0.197 (0.290) | 0.545 (0.401) | -0.069 (0.424) | 0.320 (0.743) | 0.672 (0.528) |
| Received literacy training | 0.157 (0.284) | -0.048 (0.422) | 0.247 (0.400) | -0.379 (0.610) | 0.323 (0.713) |
| Start-up is in Manzini | 0.521 * (0.267) | 0.536 (0.352) | 0.084 (0.455) | 1.137 (0.562) | -0.076 (0.481) |
| Constant | 8.509 *** (0.366) | 8.060 *** (0.479) | 9.392 *** (0.594) | 8.318 *** (0.931) | 8.022 *** (0.577) |
| Adjusted R ² | 0.260 | 0.277 | 0.303 | 0.350 | 0.325 |
| No. of observations | 160 | 79 | 81 | 38 | 41 |

Note: *, **, and *** denote 10%, 5% and 1% significance levels. Age of business is in months. Only entrepreneurs motivated by profit were considered. Standard errors are in parenthesis.

⁸ The endogeneity of main variables (business training and start-up capital) is ruled out. First, we expect limited measurement errors on the business training variable, which is binary. The fact that comprehensive interviews were implemented with a high rate of response should also minimize such errors on the start-up capital variable. We also rule out the reverse causation between the sales performance and the start-up capital as the latter is measured at the very initial stage of the firm. Finally, specification tests (available upon request) indicate that the model is properly specified and does not suffer for bias due to the omission of variables.

Results in Table 2 also show that while the amount of start-up capital is negatively impacted by perceived lack of skills among young women entrepreneurs, the lack of confidence in skills does not impact start-up capital of adult women entrepreneurs. Adult women who applied for credit in the informal sector started their businesses with higher amounts of capital than women without access to the informal sources, pointing to the role of networks. In contrast, access to informal capital does not impact the amount of start-up capital among young women. Parental support increases the start-up capital of men but not women entrepreneurs.

Table 3. Determinants of the structure of start-up capital: Probit regressions
Test probability of receiving funds from the banking sector 1/

| | Male | | Female | |
|------------------------------------|------------------------------------|-----------------------------------|------------------------------------|------------------------------------|
| | (1) | (2) | (3) | (4) |
| Parents provided support | 0.611 (0.640) | -0.031 (0.808) | 1.745 (0.741)** | 8.946 (1.061)*** |
| Professional influence at start-up | -0.196 (0.562) | 0.748 (0.471) | 6.237 (0.871)*** | 8.618 (1.097)*** |
| Social influence at start-up | -1.750 (0.619)*** | - | 4.685 (0.000) | - |
| Parents were self-employed | - | 0.621 (0.903) | - | -7.330 (1.327)*** |
| First business | 0.388 (0.457) | -0.049 (0.439) | -2.478 (0.935)*** | -9.878 (0.000) |
| Personal contribution at start-up | -1.655 (0.599)*** | -1.118 (0.508)** | -1.423 (0.659)** | -2.371 (0.977)** |
| Financing was an issue at start-up | 0.459 (0.401) | 0.176 (0.484) | 1.027 (0.773) | 1.456 (1.068) |
| Swazi citizenship | 1.253 (0.643)* | 1.002 (0.592)* | - | - |
| From Manzini | 0.637 (0.826) | 0.396 (0.751) | -1.803 (0.874)** | -9.520 (0.995)*** |
| Low productive sector | 0.022 (0.415) | 0.084 (0.380) | - | - |
| Intercept | -1.612 (1.418) | -1.890 (1.254) | -4.892 (1.272)*** | 0.657 (1.320) |
| <i>Pseudo R</i> ² | 0.36 | 0.25 | 0.47 | 0.55 |
| <i>N</i> | 59 | 58 | 59 | 59 |

Note: Dependent variable is formal source of start-up capital (=1 if from Bank and =0 if from savings, parents, friends, relatives or informal lending facilities. Regression coefficients reported. Heteroskedastic-robust standard error under brackets. (*), (**) and (***) denote significance at 10%, 5% and 1%, respectively. 1/ Dependent variable = 1 if the main source of start-up capital is from the bank and 0 if from capital is mostly from savings, parents, friends, relatives or informal lending facilities.

Regarding composition of funds, women who received parental and professional support during start-up phase of their firms were more likely to finance their start-up capital from the formal financial sector than women without such support. Making personal contribution to the start-up capital is associated with lower probability to receive funding from the formal financial sector among women but has no impact on sources of men entrepreneurs. Women who were running their first business were less likely to fund their start-up capital from the formal sector than serial women entrepreneurs. Moreover, women entrepreneurs with self-employed parents, including in the informal sector, were less likely to start their firms utilizing funds from the formal financial sector and rely more on the informal networks. In contrast, employment sector of parents did not impacted the source of start-up capital among men entrepreneurs. Finally,

regional differences in access to formal funds for start-up capital are statistically significant among women but not men entrepreneurs (Table 3).⁹

5. Conclusions

This paper contributes to the literature on constraints to women's entrepreneurship in Africa with a theoretical model and empirical evidence from Swaziland. The model has shown that to the extent that potential women entrepreneurs are more constrained accessing start-up capital than their men counterparts, they are likely to face greater challenges opening new businesses and be less involved in productive entrepreneurship. We tested these hypotheses on data from a survey of entrepreneurs in Swaziland. The empirical analysis confirmed the positive role of start-up capital in sales performance of both men and women entrepreneurs, under various model specification and throughout the sale distribution.

As in a number of other developing countries, women entrepreneurs in Swaziland have lower start-up capital than men. They also have more limited access to finance it from the formal sector than men, even when differences in sectors where they operate are accounted for. We found that women, especially young women, with college education tend to start their businesses with higher amounts of start-up capital than their less educated counterparts. While confidence in their skills is associated with higher volumes of start-up capital among young women, access to the informal sources of finance increases start-up capital among adult women. Finally, women who receive parental and professional support are more likely to finance their start-up capital from the formal financial sector than those without such support.

Our results suggest that policy interventions to promote entrepreneurship in general and women's entrepreneurship in particular should go beyond strengthening the overall business environment. They should include measures that would help raise access of potential women entrepreneurs to education and easing their access to start-up capital, alongside confidence building and networking. However, given that part of differences in access to start-up capital is due to 'un-explained' factors, cultural influences may be also at play. In that context, it would be important that interventions are evidence-based and receive consensus from broader society.

Several African countries, including Swaziland, consider including entrepreneurship education in the curricula from early on and strengthening this components at the university level.¹⁰ Design and effectiveness of such programs could be a subject of further research.

⁹ To unpack the factors behind gender differences at mean levels in the amount of start-up capital, we used the counterfactual decomposition technique developed by Blinder and Oaxaca. The method divides the start-up capital differentials between men and women into a part 'explained' by group differences in characteristics, such as education, entrepreneurship experience, region of residence, and a residual part that cannot be accounted for by such differences in determinants of start-up capital. The unexplained (residual) part accounts for more than half of the gender differences at the mean level, and hence factors such as education or parental support provide only partial explanation in this specific gender gap.

¹⁰ The Junior Achievement Swaziland (JASD) conducts courses for high school students on entrepreneurship and financial literacy, drawing on partners from the private sector, education institutions and the Government. University of Swaziland houses the Entrepreneurship Center and offers courses in this area.

References

- Amin, M. (2010), 'Gender and firm size: Evidence from Africa', *Economics Bulletin*, 30 (1), 663-668.
- Asiedu, E., Kalonda-Kanyama, I., Ndikumana, L., Nti-Addae, A. (2013), 'Access to credit by firms in Sub-Saharan Africa: How relevant is the gender gap?', *American Economic Review Papers and Proceedings*, Vol. 103(3), 293 – 297.
- Aterido, R.; Beck, T. and Iacovone, L. (2013), 'Access to Finance in Sub-Saharan Africa: Is There a Gender Gap?', *World Development*, Vol. 47, 102 – 120.
- Baliamoune-Lutz, M.; Brixiová, Z. and Ndikumana, L. (2011), 'Credit Constraints and Productive Entrepreneurship in Africa', IZA Discussion Papers 6193, Institute for the Study of Labor (IZA).
- Bardasi, E. Balckden, S. M.; Guzman, J. C. (2009), 'Gender, Entrepreneurship, and Competitiveness in Africa, Africa Competitiveness Report. World Economic Forum: Geneva, World Bank: Washington DC, African Development Bank: Tunis.
- Baumol, W. J. (1990), 'Entrepreneurship: Productive, Unproductive and Destructive,' *Journal of Political Economy*, 985(5), 893–921.
- Beck, T. and Cull, R. (2014), 'SME finance in Africa', *Journal of African Economies*, Vol. 23 (5), 583-613.
- Brixiová, Z. (2010), 'Unlocking Productive Entrepreneurship in Africa's Least Developed Countries', *African Development Review*, Vol. 22(3), 440 – 451.
- Brixiová, Z. and Kangoye, T. (2016), 'Gender and constraints to entrepreneurship in Africa: New evidence from Swaziland', *Journal of Business Venturing Insights*, Vol.5 |(June).
- Brixiová, Z. and Kiyotaki, N. (1997), Private Sector Development in Transition Economies, *Carnegie-Rochester Conference Series on Public Policy*, Vol. 46, 241 – 279.
- Derera, E.; Chitakunye, P. and O'Neill, C. (2014), 'The impact of gender on start-up capital: A case of women entrepreneurs in South Africa', *The Journal of Entrepreneurship*, Vol. 23(1), 95 – 114.
- Gottschalk, S. and Niefert, M. (2011), 'Gender Differences in Business Success of German Start-Up Firms', ZEW Discussion Paper 11-019.
- Gries, T. and Naudé, W.A.(2010). 'Entrepreneurship and Structural Economic Transformation', *Small Business Economics Journal*, Vol. 34 (1), 13-29.
- Hakura, D.; Hussain, M.; Newiak, M.; Thakkor, M. and Yang, F. (2016), 'Inequality, Gender Gaps and Economic Growth: Comparative Evidence for Sub-Saharan Africa', IMF Working Paper WP/16/111.

- Kirzner, I. M. (1973), *Competition and entrepreneurship*, University of Chicago Press, Chicago.
- Knight, F. H. (1921), *Risk, uncertainty and profit*, New York, Houghton Mifflin.
- Levin, R. I. and Travis, V. R. (1987), 'Small business finance: What the books do not say', *Harvard Business Review*, Vol. 65(6), 30 – 32.
- Kanbur, S.M.R. (1982), 'Entrepreneurial risk taking, inequality, and public policy: an application of inequality decomposition analysis to the general equilibrium effects of progressive taxation', *Journal of Political Economy*, Vol. 90, 1-21.
- Kihlstrom, R. E. and Laffont, J. J. (1979), 'A general equilibrium entrepreneurial theory of firm formation based on risk aversion', *Journal of Political Economy*, Vol. 87, 719- 848.
- Malapit, H. J. L. (2012), 'Are Women More Likely to be Credit Constrained? Evidence from Low Income Urban Households in the Philippines', *Feminist Economics*, Vol. 18(3), 81-108.
- Mordi, C., Simpson, R., Singh, S., & Okafor, C. (2010), 'The role of cultural values in understanding the challenges faced by female entrepreneurs in Nigeria', *Gender in Management: An International Journal*, Vol. 25(1), 5–21.
- Nelson, J. (2015), 'Are Women Really More Risk-Averse than Men? A Re-Analysis of the Literature Using Expanded Methods', *Journal of Economic Surveys*, Vol. 29 (3), 566 – 585.
- Orobia, L.; Sserwanga, A., and Rooks, A. (2011), 'Risk taking and start-up capital: Exploring gender differences in Uganda, through international comparisons', *Journal of Economics and Behavioral Studies*, Vol. 3(2), 83 – 93.
- Rouse, J. and Jayawarna, D. (2006), 'The financing of disadvantaged entrepreneurs. Are enterprise programs overcoming the finance gap?' *International Journal of Entrepreneurial Behaviour and Research*, Vol. 12(6), 388–400.
- Sabarwal, S. and Terrell, K. (2008), Does gender matter for firm performance? Evidence from Eastern Europe and Central Asia, IZA Discussion Paper. No.3758.
- Singh, G. and Belwal, R. (2008), 'Entrepreneurship and SMEs in Ethiopia: Evaluating the role, prospects and problems faced by women in this emergent sector', *Gender in Management: An International Journal*, Vol. 23(2), 120 – 136.
- UN Swaziland (2013), Constraints and opportunities for youth entrepreneurship in Africa: Perspectives of young entrepreneurs from Swaziland, Mbabane: UN Swaziland.
- Verheul, I. and Thurik, R. (2001), 'Start-up Capital: Does Gender Matter?', *Small Business Economics*, Vol. 16, 320–345.