Access to finance and rural youth entrepreneurship in Benin: Is there a gender gap?

by Melain Modeste Senou and Julius Manda

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Abstract

Rural entrepreneurship is an important employment generation intervention for the fast-growing young labour force in developing countries. Many bottlenecks including access to finance impede rural youths to perform in their new ventures. This paper examines the impact of access to finance on rural youths' entrepreneurship in Benin using data from the second wave of the School-To-Work Transition (*SWTS)* survey involving over 900 youths. The paper employs the endogenous switching regression technique (ESR), combined with propensity score matching, to investigate the drivers of rural youths' access to finance and its impact on entrepreneurship intention and performance. The results indicate that age, education, poverty status, experience, working in the agricultural sector and the existence of a bank branch are important determinants of rural youths' access to finance. The results also show that access to finance increases the probability of youth's entrepreneurship by 15.2% on average. Similarly, the turnover increased by 15.86% for the youths who accessed finance. Moreover, the study shows a significant gender gap in rural entrepreneurship of 5.24% among youths that had access to finance in Benin. These results suggest that policymakers should encourage formal financial institutions to reduce their credit eligibility conditions for youths who do not have collateral.

Keywords: Access to finance, Rural entrepreneurship, ESP, ESR, PSM, Benin

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1 | Introduction

The issue of rural youth entrepreneurship is particularly sensitive in developing countries because it represents a potential instrument for solving the labour market imperfection, alleviating poverty as well as ensuring food security due to the vital role agriculture plays in rural areas (Ataeia et al., 2020; Trivelli and Morel, 2020; Cao and Zhang, 2020; Metelerkamp et al., 2019). Development agencies view rural entrepreneurship including agribusiness as an important employment generation intervention for the fast-growing young labour force in the years ahead (Alemu and Adesina, 2017; Anyanwu, 2013). Rural entrepreneurship refers to new ventures created in rural areas and plays an important role in household wellbeing (Ngorora and Mago, 2016). Diversification into rural activities enables rural entrepreneurs to become creative and innovative thus shift them from necessity to opportunity entrepreneurship (Dubais, 2016). Necessity-driven entrepreneurship serves as an important source of income and employment for vulnerable populations and is undertaken by people who are driven to work for survival.

However, due to its necessity-driven nature in the rural labour market, the current rural entrepreneurship fails to guarantee sustainable livelihood opportunities to the majority of youths living in rural areas. The rural labour market is characterized by poor quality informal jobs in a restricted number of industries. Vulnerable employment is the main feature of rural youth especially those of the female gender. They operate mainly in small, unincorporated family businesses as self-employees or as contributing family workers without pay. For instance, rural young women share in contributing to family work was as high as 66.6 % compared to 43.4 % for young men. Therefore, there is a need to shift from necessity to opportunity-driven entrepreneurship through mechanisms such as access to finance to rural young entrepreneurs including mostly young women for the sake of sustainable inclusive rural transformation.

In Benin, 53 % of the population are young. Women represent 51.2 % of the population of whom 55.3 % are in rural zone. They constitute an asset for the Beninese economy because of their strong presence in economic activities. According to the results of the last general census of enterprises in Benin, the proportion of women entrepreneurs is estimated at 50%

(INSAE, 2015). These women operate in several sectors, especially agriculture, trade and crafts. Despite several measures taken by the state to alleviate procedures conducive to setting up businesses, there are still important constraints for young people in general and young women in particular in developing their business. The latter face both sociological and cultural burdens as well as financial obstacles. This double penalty influences the rate of rural business creation by women compared to men. Notwithstanding the political will of the State of Benin, entrepreneurial initiatives among young women are struggling to be operationalized, notably due to a low financial inclusion. This trend can be reversed only with full knowledge of the gender-based determinants of financial inclusion and their contribution to the young women's rural businesses.

There is still a controversy about the effect of gender on access to finance and new ventures creation. Some pieces of evidence suggest that the gender gap in access to finance and entrepreneurship performance is due to sampling bias (Pham and Talavera, 2018; Aterido, et al., 2013). Other studies find a positive effect of gender on access to finance and entrepreneurship (Dutta and Banedji, 2018, Rijkers and Costa, 2012). Gender gaps in credit access may also stem from demand-side factors related to differences in characteristics and preferences for credit use between male and female-led firms, which could affect their actual loan application behaviour (Aristei and Gallo, 2016). This study aims at assessing the gender-based impact of access to finance on youth entrepreneurship in rural Benin. More specifically, it aims at identifying the factors influencing access to finance for rural young entrepreneurs and examining the gender-based impact of access to finance on rural youth entrepreneurship and entrepreneurship performance.

By doing this, the study contributes to the relevant literature on access to finance and entrepreneurship as follows. First, to our knowledge, this is the first study in Benin that focuses on rural youth by investigating jointly the driving factors of gender-gap access to finance and their effects on rural entrepreneurship outcome. Most of the previous studies focused separately on either access to finance and entrepreneurship (Mehari et al., 2021; Bairagyaa et al.,2020) or the gender-based determinant of access to finance (Chen et al., 2020; Ghosh and Vinod, 2017; Aristei and Gallo, 2016) or the gender-based determinants of entrepreneurship (Özsungur, 2019; Rijkers and Costa, 2012). Very few of them have

investigated the gender-based effect of access to finance on entrepreneurship (Tran et al., 2019; Kairiza et al., 2017). Second, to our knowledge very few studies have assessed the entrepreneurship effect of access to finance using rigorous econometric methods (e.g. Mehari et al., 2021; Bairagyaa et al.,2020). In the case of women specifically, these studies focus on access to credit depending on whether or not they decide to become entrepreneurs and use different methodological approaches that suffer from many econometric issues (Kairiza et al., 2017). In this study, we aim to fill these gaps in the literature by taking advantage of a rich national dataset containing information on thousands of young men and women in transition to the labour market in rural areas to investigate jointly the gender-based driving factors of rural youth access to finance and their effect on entrepreneurship. We specifically employ the endogenous switching Probit (ESP) regression model for the binary outcome variable (entrepreneurship status) and endogenous Switching Regression (ESR) model for the continuous outcome variable (turnover). These methods address the issues of endogeneity and selection bias emanating from observed and unobserved heterogeneity. We check the robustness of the switching regression results using Propensity Score Matching (PSM).

The rest of the paper is organized as follows: Section 2 reviews the relevant literature. Section 3 presents the conceptual and empirical framework. Section 4 presents data collection and sample procedure as well as the descriptive statistics of the variables used in this study. Section 5 discusses the estimation results while section 6 concludes.

2 | Literature review

There is an important positive relationship between financial inclusion and entrepreneurship (Mehari et al., 2021; Pham and Talavera, 2018). However, the literature that incorporates gender and financial inclusion aspects into the analysis of entrepreneurship and more particularly to rural youth entrepreneurship in sub-Saharan African countries are scanty. The existing evidence shows that attitudes towards self-employment including careers in agriculture vary greatly (Yeboah et al., 2020; Metelerkamp et al., 2019). Youths are more necessity than opportunity-driven entrepreneurs. The value youths place on rural entrepreneurship is that, despite their apparent financial poverty, careers are much more than about making money. Many youths aspire to start their rural activities including agricultural businesses despite the lack of skills, role models and access to finance (Ataeia et al., 2020; Metelerkamp et al., 2019).

Access to finance is a necessary condition, not only for developing businesses but for creating jobs, reducing poverty and social inequality (Bairagyaa et al., 2020; Liu et al., 2019). Indeed, access to finance is considered to be one of the main factors hampering the growth of women-owned businesses in developing countries (Weng et al, 2020; Santos et al., 2016; Aterido et al., 2013). Women are relatively more exposed to credit constraints than men and more discriminated against in the business creation process (Wellalage and Locke, 2017; Aristei and Gallo, 2016). For instance, Wellalage and Locke (2017) using the World Bank Enterprise Surveys on 9,879 firms finds that enterprises owned by female entrepreneurs are on average 3% more likely to be credit constrained compared to their male counterparts.

However, some studies find no evidence for discrimination against female-owned enterprises in the formal access to finance. Female entrepreneurs have a higher probability of getting a loan and they pay lower interest rates in comparison with male entrepreneurs (Pham and Talavera, 2018; Wellalage and Locke, 2017; Aterido et al., 2013). Aterido et al. (2013) have suggested that the gender gap in lending markets can be explained by firms' characteristics and selection bias rather than by pure gender discrimination. More specifically, women-owned firms tend to be smaller, resulting in a lower probability of getting loans.

3 | Conceptual and empirical frameworks

Entrepreneurship plays an important role in household welfare by raising household income and wealth (Zhao et al., 2019). Rural entrepreneurs create new economic opportunities and generate new employment (Ngorora and Mago, 2016). Past studies have shown that access to finance can have a direct impact on rural youth entrepreneurship (Ullah, 2020; Liu et al., 2019) and plays an important role in inclusive rural transformation by facilitating farm households' entrepreneurial activities. From the entrepreneurship theory, many factors including individual traits and characteristics, firm's characteristics as well as business environment determine the creation and the performance of a firm (Gajigo, 2013; Baye, 2013, Gartner, 1985).

The challenge in this study is to estimate the causal effect of access to finance on entrepreneurship outcome. Several techniques have been used in recent studies. These include the Linear Probability Model; Probit and bivariate Probit regressions (Liu et al., 2019;

Ma et al, 2018); Heckman selection model (Pham and Talavera, 2018; Aristei and Gallo, 2016), the Propensity Score matching methods (Liu et al., 2019; Duta and Banedji 2018; Alemu and Adesina, 2017), the endogenous switching regression (ESR) for continuous outcome response (Liu et al., 2019) and the endogenous switching probit (ESP) for a binary outcome. In this study, we employ the ESR and ESP depending on the outcome. For the sake of brevity, we will present only the ESP model since the ESR is derived similarly.

3.1 | The endogenous switching probit model

The ESP method involves fitting models in which the response variable depends on a dummy variable and is observed only if a particular selection condition is met. Standard regression techniques do not provide consistent estimators since the unobserved factors that affect the response may be correlated with the unobserved factors that affect the switching or selection variable (Miranda and Rabe-Hesketh, 2006). For instance, the probability that a rural youth has access to finance is determined by his/her individual's characteristics and entrepreneurship status as well. However, the access to finance variable is endogenous by definition because there are factors that are not observed that can affect the entrepreneurship outcome through the error term. For example, it is possible that youths who have access to finance are more motivated than those that do not have access. Motivation, however, is unobserved, hence is relegated to the error term. But motivation is also related to entrepreneurship, therefore the relationship between access to finance and entrepreneurship is spurious and can lead to biased estimates.

The observed outcome of the access to finance decision can be modelled in a random utility framework. Following Aakvik et al. (2005), let the decision to access finance be a binary choice, where a youth's access finance leads to a positive difference between the utility of having access and not having access to financial services. Let this difference be denoted as $d^* = U_1 - U_0$ where U_1 is the utility obtained from having access to finance and U_0 the utility from not having access to finance. The rural youth will request finance if $d^* > 0$.

However, d^* is not observed, what is observed is d, a binary indicator that equals one if a rural youth has access to finance and zero otherwise. More formally, the relationship can be expressed as follows:

$d_i^*=Z'\delta+ u_i$ ***(3)***

$d_i = 1$ if $Z'\delta+ u_i > 0$
$d_i = 0$ if $Z'\delta+ u_i \leq 0$

Where Z is a vector of observed individual's characteristics affecting access to finance; δ is the vector of unknown parameters to be estimated; and u_i the vector of random disturbances related with access to finance with mean zero and variance σ^2.

Following Lokshin and Sajaia (2011), the two outcome regressions equations, conditional on access to finance can be expressed as follows:

$Y_{1i} = \beta_1 X_{1i} + \varepsilon_{1i}$ *if* $d_i = 1$ ***(4a)***
$Y_{0i} = \beta_0 X_{0i} + \varepsilon_{0i}$ *if* $d_i = 0$ ***(4b)***

Where Y_{1i} and Y_{0i} are our binary outcome variables, that is entrepreneurship status; X_{1i} and X_{0i} are vectors of weakly exogenous covariates including the gender of the youth; β_1 and β_0 are vectors of parameters; and ε_{1i} and ε_{0i} are random disturbance terms. The error terms (ε_1 , ε_0 , u) are assumed to have a joint normal distribution with mean vector zero and correlation matrix.

$$cov\,(\varepsilon_1\,,\,\varepsilon_2\,,\,u) = \begin{pmatrix} 1 & \rho_0 & \rho_1 \\ & 1 & \rho_{10} \\ & & 1 \end{pmatrix} \quad (5)$$

Because Y_{1i} and Y_{0i} are never observed simultaneously, the joint distribution of (ε_1 , ε_0) is not identified, and consequently, ρ_{10} cannot be estimated. We assume that $\rho_{10} = 1$ since δ is estimable only up to a scalar factor (Lokshin and Sajaia, 2011).

The log-likelihood function for the simultaneous system of equations (3), (4a) and (4b) is presented as:

$$lnL = \sum_{d_i\neq 0, Y_i\neq 0} w_i \left\{ ln\left(\Phi_2\left(X_{1i}\beta_1, Z_i\delta, \rho_1\right)\right)\right\} + \sum_{d_i\neq 0, Y_i= 0} w_i \left\{ ln\left(\Phi_2\left(-X_{1i}\beta_1, Z_i\delta, -\rho_1\right)\right)\right\}$$
$$+ \sum_{d_i= 0, Y_i\neq 0} w_i \left\{ ln\left(\Phi_2\left(X_{2i}\beta_0, -Z_i\delta, -\rho_0\right)\right)\right\} + \sum_{d_i= 0, Y_i= 0} w_i \left\{ ln\left(\Phi_2\left(-X_{0i}\beta_0, -Z_i\delta, \rho_0\right)\right)\right\} \quad (6)$$

Where Φ_2 is the cumulative distributive function of a bivariate normal distribution and w_i is an optional weight for observation *i*.

The ESP model can be identified by the nonlinearities of its functional form (Lokshin & Sajaia, 2011), however, to have a more robust identification, we included at least one exclusion restriction. Hence, Z in Equation 3 contains at least one variable not in X, in Equations 4a and 4b. Following the literature, we use a set of binary variables that captures the availability of either bank or microfinance institutions (MFI) at the level of municipality, age under 18 and working in the agricultural sector as instruments in access to finance model that are excluded from *X* in the outcome model. The rationale behind using the availability of either bank or MFI at the level of municipality, as an instrument is that youths in the municipality where there is bank or MFI branches are more likely to have access to finance than youths in the province where there are no bank or MFI branches (Minetti and Zhu, 2011). Also, this variable cannot drive the entrepreneurship intention nor the performance of the youth's enterprise. Besides, in Benin, access to credit is allowed to youths that are above 18 years old. We think that this variable is a good instrument in the access to finance equation in the context of Benin. Lastly, many studies showed that micro and small enterprises in agricultural sectors are less likely to access finance than those in other sectors of activity (Metelerkamp et al., 2019). To test the validity of the instruments, we conduct Sargan's test to test the correlation between the instruments excluded and error terms (Sargan, 1958) and the Wald test to test the joint significance of the instruments excluded which helps in testing the hypothesis of weak instruments. The results of the tests are presented in appendices (Table A1).

Following Aakvik et al. (2005) and Lokshin and Sajaia (2011), after estimating the parameters of the ESP model using the full information maximum likelihood method, we can compute the average treatment effects on the treated (ATT) and the average treatment effect of the untreated (ATU) as follows:

$$ATT = E[Pr\ (Y_1 = 1|d = 1, X = x] - E[Pr\ (Y_0 = 1|d = 1, X = x]$$

$$= E\left[\frac{\Phi_2(X_1\beta_1, Z\delta, \rho_1) - \Phi_2(X_0\beta_0, Z\delta, \rho_0)}{F(Z\delta)}\right] \quad (7a)$$

$$ATU = E[Pr\ (Y_1 = 1|d = 0, X = x] - E[Pr\ (Y_0 = 1|d = 0, X = x]$$

$$= E\left[\frac{\Phi_2(X_1\beta_1, Z\delta, \rho_1) - \Phi_2(X_0\beta_0, -Z\delta, -\rho_0)}{F(-Z\delta)}\right] \quad (7b)$$

Where *F* is a cumulative function of the univariate normal distribution and Φ_2 is the cumulative function of the bivariate normal distribution. Equation (7a) and (7b) compute the average effect of treatment on the treated (ATT) and the average effect of the treatment on the untreated (ATU).

3.2 | The propensity score model

The ESP, as well as the ESR model, can sometimes be sensitive to exclusion restriction assumptions, hence, to check the robustness of the endogenous switching results, we also estimated the ATTs using the propensity score matching approach. Following Caliendo and Kopeinig (2008) and Heinrich et al. (2010), let Y_{1i} and Y_{0i} denote the entrepreneurship outcome for the rural youth *i* that has access to finance and the rural youth that does not have access to finance, respectively. In reality, Y_{1i} or Y_{0i} cannot be observed at the same time. Let *d* represent a binary treatment variable that equals one if a rural youth has access to finance and zero otherwise.

The observed entrepreneurship outcome can be expressed as:

$$Y_i = dY_{1i} + (1 - d_i)Y_{0i} \quad (\mathbf{8})$$

The Average Treatment Effect (ATE) can be expressed as follows:

$$ATE = Prob[E(Y_1|d = 1) - E(Y_0|d = 1)] + (1 - P)[E(Y_1|d = 0) - E(Y_0|d = 0)] \quad (\mathbf{9})$$

However, since the counterfactual mean $E(Y_0|d = 1)$ is not observed, one has to choose a proper substitute for it to consistently estimate ATT (Caliendo and Kopeinig, 2008). Using the mean outcome of untreated individuals $E(Y_0|d = 0)$ in non-experimental studies is usually not a good idea because it is most likely that components that determine the treatment decision also determine the outcome variable of interest. To address this problem, the Propensity Score Matching (PSM) approach is employed.

The propensity score is defined as the conditional probability that an individual has access to finance (Rosenbaum and Rubin, 1983). The PSM employs the unconfoundedness assumption also known as conditional independence assumption (CIA) or selection on observables assumption. This assumption implies that systematic differences in outcomes between adopters and comparison individuals with the same values for covariates are attributable to

adoption thereby making adoption random and uncorrelated with the outcome variables (Caliendo and Kopeinig, 2008). The propensity score can be expressed as:

$$p(X) = prob(d = 1|X) = E((d|X) \quad \textbf{(10)}$$

With X, a vector of pre-treatment characteristics. If the $p(X)$ is known, then the ATT can be estimated as follows:

$$ATT = E\{Y_{1i} - Y_{0i}|d = 1\} \quad \textbf{(11)}$$
$$= E[E\{Y_{1i} - Y_{0i}|d = 1, p(X)\}]$$
$$= E[E\{Y_{1i}|d = 1, p(X)\} - E\{Y_{0i}|D = 0, p(X)\}|d = 1]$$

Y_{1i} and Y_{0i} are the potential outcomes in the two counterfactual situations of access to finance and no access to finance respectively.

4. | Sampling procedure and, data collection

The data used in this study is from the second wave of the *ILO-SWTS* "School-To-Work Transition" survey collected in 2015. The survey was conducted by the International Labor Organization (ILO) through the National Institute of Statistics and economics Analysis (Institut National de la Statistique et de l'Analyse Economique [INSAE]) of Benin). The *ILO-SWTS* provides a high-quality dataset, which includes detailed information on young adults' educational outcomes, job training, work history, job types, socio-demographic characteristics, access to finance, employment status including the entrepreneurship outcome as well as many other variables about the environment and the firm's characteristics at the national level. Since its launch in 2012 for the special case of Benin, the *ILO-SWTS* surveys a representative sample of youth Beninese in the transition to the labour market. The first wave of the survey in 2012 included 6917 youths. The second wave realized a total sample of 4305 youths, comprising 57 % of rural youth (2,449) of whom 52 % are women (1,270). After dealing with missing data and focusing on the question about entrepreneurship activities among working youths, we came out with a final sample of 925 observations.

A multistage random sampling procedure was used to select sample households. In the first stage, the whole country was divided into provinces. Then a sample of these provinces was selected, using a purposive sampling technique to guarantee representativeness. Each province selected in the first stage was divided into localities and a sample of these areas was selected using a self-weighted stratified systematic sampling technique. In the last stage,

individual households in each selected sample area were listed and a sample of youths was selected using a systematic sampling technique. Also, sampling was restricted to the civilian, non-institutionalized population of young adults. The respondents of the SWTS were mainly educated, unemployed, employed including self-employed youths aged 15 and 29 years old. To ensure the representativeness of the sample, population weights were constructed to adjust for non-response, disproportionate stratified sampling, and the probability of selection.

5. | Results and discussion

5.1. | Descriptive results

Two outcome variables are used in this study. The entrepreneurship status and turnover. Entrepreneurship status is a binary variable that takes the value 1 for the self-employed youth /working in a family business without remuneration and 0 otherwise. Working youths were asked the following question, "In your job/activity, are you…?" Responses could include: (1) an employee; (2) an employer (employing at least on the employee); (3) an own-account worker (not employing any employee); (4) a member of a producers' cooperative; (5) helping without pay in the business or farm of another household/family member; and (6) other. We generated the self-employment youth variable by combining the third, fourth and fifth question since the *ILO- SWTS* identifies young entrepreneur as a working youth who reported being either an employer, own-account worker, or member of a producers' cooperative. The turnover of the youth's enterprise is a continuous outcome variable. It is obtained by asking the following question," Last month, what was the total revenue of your business?

The access to finance is a binary variable that takes the value 1 if the youth has access to a formal financial service and 0 otherwise. Survey respondents were asked the following question, "What financial services do you personally use?" A rural working youth could report using business loans, emergency loans, consumption loans, savings, insurance, and/or remittances/money transfer services. If any type of these financial services was reported, we consider the youth as having "access to finance".

Consistently with previous studies (e.g. Liu et al., 2019; Alemu and Adesina, 2017; Aterido et al., 2013), we use a set of control variables that may affect the entrepreneurship outcome and the access to finance as well. Table 1 displays the mean difference in outcome and selection

variables by gender of the youths. Apart from the entrepreneurship status, all other variables are not statistically significant among the group of female and male rural youth. The results in Table 1 shows that 38.96 % of rural youth are engaged in entrepreneurship mainly related to agriculture. Among the female youths, only 34.70 % are engaged in entrepreneurship whereas 42.42 % of young entrepreneurs are men. However, although not significant, Table 2 indicate that young women perform more in entrepreneurship than their counterpart men in terms of turnover. Moreover, 14.41 % of rural youth had access to finance including 15.27 % of young women and 13.62 % of young men.

[INSERT TABLE 1 HERE]

Table 2 displays the mean difference in outcome and some socio-economic characteristics of rural youth respondents who have access to finance and those who do not. Male youths are more likely to access finance than female youths. About 49% of rural youth women are financially excluded although there is no significant difference between the two groups. This is explained by the fact that female entrepreneurs in developing countries in general and especially in Benin have limited access to resources particularly land that may facilitate access to credit. However, the young women that had access to finance have a greater turnover than those who did not have access. This figure is the same among young men too (Figure A1 in appendices)

[INSERT TABLE 2 HERE]

Among young people who have access to financing, about 66 % are in rural entrepreneurship against 58.84 % in the group of youths who do not have access to finance. The significance of this difference confirms the key role of financial inclusion on entrepreneurship status in developing countries and particularly in rural Benin. This effect is confirmed by the cumulative distribution functions of the two groups in Figure 1.

[INSERT FIGURE 1 HERE]

On average, 86.61 % of rural youth who do have access to finance are educated against 78.05 % in the group of those who do not access to finance. Education is very important for access to finance as it increases the youths ability to develop good projects that can benefit from the

trust and financing of financial institutions. The rural youths who have access to finance have a higher (8800.57 CFA) operating expense than those who did not access finance (3744.537 CFA) pointing to the importance of credit.

4.2 | Empirical results

4.2.1. | ESP and ESR estimates of entrepreneurship status and turnover

The full information maximum likelihood estimates of the driving factors of access to finance (selection equations) and impacts of the access on the entrepreneurial status and enterprise performance in terms of turnover (outcome equations) in the ESP and ESR models are presented in Table 2. Column (1) and column (4) in Table 3, present estimates of the selection equations for entrepreneurship status and the turnover, respectively. Most of the variables in the model have hypothesised signs.

The estimates of the selection equations show that there is no significant gender difference in rural youths' access to finance. This is consistent with Aterido et al. (2013); Mndolwa and Alhassan (2020) and Muravyev et al. (2009) that find that being female does not affect access to formal financial services. The age of rural youth positively and significantly determines access to finance. Younger people are less likely to have access to finance. The results also indicate that education is important for youths to access finance. This is consistent with the findings of Ghosh and Vinod (2017) in India. Having some years of working experiences is also significant in supporting access to finance. Besides, the financial situation of the youth is key in explaining rural youths' access to finance. The results also show that the existence of banks and microfinance institutions in the vicinity of the residence area of the youth has a positive and statistically significant effect on access to finance. However, working in the agricultural sector has a negative and significant influence on the probability of rural youth to access finance. This finding is consistent with the reality in developing countries where farmers have too many barriers to access credit.

The results further show that the parameter ρ_0 , which measures the correlation between the error term of the selection equation and the outcome equation for those that did not have access to finance, is significantly different from zero. There is therefore self-selection in access to finance by rural young people. This implies that if rural youths that did not have access to

finance had access to finance, the effect may not be similar to the effect on those who accessed finance because there are systematic differences between youths that had access to finance and those who did not. Moreover, the results of the likelihood ratio test for joint independence of the three equations reject the null hypothesis of independence, implying that the errors are correlated and therefore estimating ESR/ESP is appropriate (Table 3).

[INSERT TABLE 3 HERE]

The difference in the coefficient estimates between rural youths' access and non-access to finance indicates the superiority of the switching regression to a simple treatment effect model. Specific to this study, the differences in the estimates of entrepreneurship intention are noticeable for gender, marital status, training, experience, a role model in terms of father entrepreneur. Among the beneficiaries of financial services, young men are more likely to engage in entrepreneurship than young women. On the contrary, they are less likely to engage in entrepreneurship than young women in the case of no access to finance. These gender differences in entrepreneurship are explained by the fact that a large percentage of women's businesses are very small and not part of the formal economy. Moreover, it is also due to the lack of access to finance that is related to more limited social capital (Marlow and Patton, 2005). This finding is consistent with the works of Guzman and Kacperczyk (2019), Wellalage and Locke (2017) that concluded that women are relatively more constrained than men and more discriminated against in new ventures. Our findings also confirm the work of Santos et al. (2016) that report that the entrepreneurial intention of women is lower than for men. For instance, women are seen as experiencing more complexity in career choices, such as rural entrepreneurship because of the need to balance work and family roles and tend to set up their new ventures with lower start-up capital than men.

As far as education is concerned, the results show that youths engaging in rural entrepreneurship in Benin are mostly uneducated or less educated confirming the necessity nature of their entrepreneurship. In other words, most of the educated young people are not interested to participate in agriculture because they believe the sector is not prestigious for their social position. Our findings are consistent with the study of Brixiová et al. (2020) that

found that lower education is associated with higher rates of necessity rather than opportunity entrepreneurship.

Given the heterogeneity between access and non-access in both observable and unobservable characteristics as discussed above, the simple mean differences in entrepreneurship status and turnover given in Table 2 do not provide the true probability of engagement in entrepreneurship and rural enterprise performance of access to finance. A more robust impact of access to finance is given by the estimates of the average treatment effect on the treated (ATT) for youth's entrepreneurship and the turnover (Table 4). Unlike the mean differences in Table 2, the ATTs show the change in entrepreneurship status and turnover after accounting for selection bias arising from systematic differences in observable and unobservable characteristics between youths that had access to finance and those who did not.

The results indicate that access to finance significantly increases youth's engagement in rural entrepreneurship as well as the performance of their rural business. The results show that access to finance increases the probability of becoming an entrepreneur by 15.2 % for the youths who had access to finance with a gender gap of 5.24 % (Tables A2, A3, A4). Similarly, youths who did not have access to finance would have increased the probability of becoming an entrepreneur by 4.33 % if they had access to finance (Table 4). The results of this study are in line with previous studies including Mehari et al. (2021) that support the positive effect of access to finance on entrepreneurship. Similarly, the ATT for the performance of rural youth enterprise is estimated at 15.86%, indicating that rural youth that had access to finance increases their performance by about 15.86%.

[INSERT TABLE 4 HERE]

4.2.2 | *Robustness check: Propensity score model*

The results from the ESP and the ESR models above may be sensitive to the exclusion restriction assumption; hence we also used the PSM approach to check the robustness of the

estimated effects. We compare our ESP and ESR results with results from standard propensity score matching (PSM) that are presented in Table 5. The same variables were used in the estimation of propensity scores. In looking at the density distributions of the estimated propensity scores for the two groups (Fig. 2) we conclude that the common support condition is satisfied: there was a substantial overlap in the distribution of the propensity scores of both rural youths that had access to finance and those who did not. The bottom half of the graph shows the distribution of propensity scores for the group of youths who did not have access to finance and the upper half refers to those who had access to finance.

[INSERT FIGURE 2 HERE]

Table 5 provides the ATT estimates from the PSM approach. Similar to the ESP and ESR results, the PSM estimates show that both entrepreneurship status and turnover are significantly higher for youths that had access to finance relative to their counterparts that did not. However, compared to the ESP and ESR results, the estimated effects from the PSM approach are relatively large, probably because the latter does not take into account the selection on unobservables.

[INSERT FIGURE 2 HERE]

5 | Concluding remarks

This study assesses the impacts of access to finance on entrepreneurship status and rural enterprise performance in terms of turnover using data collected from the second wave of *ILO-SWTS* "School-To-Work Transition" survey. The paper employs the endogenous switching regression technique (ESR), combined with propensity score matching, to investigate the drivers of rural youths' access to finance and its impact on entrepreneurship status and performance.

Our results show that while there is no evidence of the gender gap in access to finance, there is a significant gender gap in entrepreneurial intention among rural youths in Benin. Indeed, providing affordable financial services to young people increases the probability of

entrepreneurial status and the performance of rural youths by 15.2% and 15.86% the respectively. Furthermore, the study shows a significant gender gap in rural entrepreneurship of 5.24% among youths that had access to finance in Benin.

The results indicate that age, education, poverty status, working in the agricultural sector and the existence of a bank branch are important determinants of rural youths' access to finance. Effective access to finance is therefore key in increasing rural youth engagement in rural entrepreneurship activities as well as the performance of their enterprises. Young people with access to financial services from formal institutions are likely to engage in entrepreneurship. This confirms the empirical results that show that entrepreneurship in developing countries depends largely on external financing. It is therefore important for policymakers to encourage financial institutions to facilitate the access of youths to finance by reducing their credit eligibility conditions for youths who do not have collateral.

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TABLES

Table1: Mean difference in outcome and selection variables by gender

Variable	Definition	Total Sample	Gender		*t*-test
			Female	Male	
Entrepreneurship status (%)	self-employed youth /working in a family business (1 = yes)	38.96 (61.04)	34.70 (65.30)	42.42 (57.58)	1.930*
Turnover	Last month total revenue of the business (CFA)	9736.10 (24862.03)	9780.301 (25639.35)	9706.743 (24425.05)	-0.022
Access to finance (%)	1= if accessed any type of financial services and 0 otherwise	14.41 (85.59)	15.27 (84.73)	13.62 (86.38)	-1.160

Note: Standard errors in parentheses. *P < 0.10

Table 2: Definition of variable and descriptive statistics

Variable	Description	Full sample	Access to Finance		t-test/ Khi-2
			Yes	No	
Dependent variables					
Turnover	Last month total revenue of the business in CFA francs	9736.103 (24862.03)	15115.35 (31560.72)	7742.618 (21641.03)	-2.023**
Entrepreneurship status	self-employed youth /working in a family business (1 = yes)	61.04	65.95	58.84	1.65**
Explanatory variables					
Operating expenses	Amount of money spend on rent, electricity, water, material, salaries during last month.	5098.83 (14243.53)	8800.57 (20057.57)	3744.537 (11182.47)	-2.38***
Age	Age of the youth in years	20.904 (4.32)	22.43 (4.43)	20.648 (4.26)	7.25***
Gender (%)	=1 if the youth is male, 0 otherwise	51.86	49.01	52.34	1.15
Education (%)	=1 if attended school in the past, 0 otherwise	79.26	86.4	78.05	-3.58***
Training (%)	=1 if received a special training for the business, 0 otherwise	19.1	25.54	16.22	-2.68***
Poor (%)	=1 if the youth's financial situation is under the national level, 0 otherwise	44.98	45.17	44.94	-0.1
Married (%)	=1 if married, 0 otherwise	26.34	28.05	26.05	-1.20*
Have a child (%)	=1 if the youth has at least a child, 0 otherwise	27.9	32.1	27.19	-1.9
Age under 18	=1 if the youth is under 18, 0 otherwise	27.77	17.56	29.48	4.64***
Existence of Bank and MFI	=1 if there is a Bank or MFI in the district, 0 otherwise	48.83	2.54	51.38	18.19***
Experience	=1 if the youth has some working experience in the past, 0 otherwise	38.84	53.25	36.42	-6.04***
Agricultural Sector	=1 if the youth business is in agriculture, 0 otherwise	4.2	2.26	4.53	1.96**
Goal					
Make money	=1 if the main goal in life is to make money, 0 otherwise	26.81	24.14	27.25	1.21
Professional success	=1 if the main goal is to success professionally, 0 otherwise	35.06	35.17	34.37	0.29
Parents					
Father's education	=1 if the youth's father is educated, 0 otherwise	50.51	36.75	51.62	5.18***
Mother's education	=1 if the youth's mother is educated, 0 otherwise	26.18	64.02	75.46	4.54***
Father's entrepreneur	=1 if the youth's father is an entrepreneur, 0 otherwise	46.79	39.37	48.04	3.02***
Mother's entrepreneur	=1 if the youth's mother is an entrepreneur, 0 otherwise	13.72	7.64	14.74	3.59***

Note: Standard errors in parentheses. *P < 0.10, **P < 0.05, ***P < 0.001

Table 3: Determinants of rural youth access to finance, entrepreneurship status and turnover

Variables	Entrepreneurship status			Turnover		
	Selection model	Access	No access	Selection model	Access	No access
	(1)	(2)	(3)	(4)	(5)	(6)

Number of employees (ln)				-1.996	3.006*	0.200
				(1.375)	(1.788)	(0.436)
Operating expense (Ln)				0.0213	0.905***	0.829***
				(0.0698)	(0.0522)	(0.0409)
Gender (1= male)	0.147	0.424*	-0.361***	0.468	-0.428	0.124
	(0.170)	(0.233)	(0.117)	(0.569)	(0.511)	(0.279)
Age (ln)	2.214***	0.511	-1.162***	3.474	-3.719**	0.877
	(0.707)	(0.845)	(0.318)	(2.386)	(1.585)	(0.822)
Especial training(1=yes)	-0.0765	0.880***	0.524***	-0.297	-1.197**	-0.468
	(0.191)	(0.280)	(0.167)	(0.671)	(0.513)	(0.425)
Experience (1=yes)	0.0268	-0.760**	-0.532***	1.043*	1.094*	1.109***
	(0.183)	(0.310)	(0.127)	(0.558)	(0.562)	(0.371)
Married (1=yes)	0.468	-0.635*	-0.309*	0.495	0.112	0.0795
	(0.291)	(0.344)	(0.162)	(0.655)	(0.649)	(0.333)
Poor(1=Yes)	0.422***	-0.201	-0.170	0.675	-0.343	0.148
	(0.162)	(0.227)	(0.106)	(0.691)	(0.373)	(0.251)
Have a child (1=yes)	-0.374	-0.478	-0.354**	-0.211	0.249	-0.348
	(0.274)	(0.385)	(0.159)	(0.673)	(0.708)	(0.348)
Make Money goal(1=yes)	-0.151	-0.114	-0.0270	0.0810	-0.165	-0.275
	(0.173)	(0.232)	(0.107)	(0.543)	(0.388)	(0.267)
Professional succes(1=yes)				-0.476	-0.320	0.644*
				(0.574)	(0.450)	(0.346)
Educated (1=yes)	-0.679**	-0.146	-0.0262	-0.928	0.283	0.383
	(0.269)	(0.315)	(0.126)	(0.794)	(0.383)	(0.264)
Father_educated(1=yes)	0.121	-0.512*	-0.0957			
	(0.180)	(0.275)	(0.134)			
Mother_educated(1=yes)	-0.414**	-0.273	-0.121			
	(0.197)	(0.273)	(0.176)			
Father entrepreneur(1=yes)	-0.138	0.511**	0.386***			
	(0.160)	(0.237)	(0.113)			
Mother entrepreneur(1=yes)	-0.597**	-0.159	0.0575	-0.616	-0.142	0.250
	(0.240)	(0.340)	(0.134)	(0.490)	(0.496)	(0.310)
Ageunder18	0.259			2.679*		
	(0.283)			(1.441)		
Bank Branch	3.516***			4.247***		
	(0.260)			(0.720)		
Agriculture_sector	-0.788***			-1.569***		
	(0.249)			(0.557)		
Constant		0.0439	4.541***		12.42**	-2.732
		(2.521)	(0.990)		(4.934)	(2.554)
Model diagnosis						
ρ_0						0.163*
						(0.0939)
ρ_1					-0.727	
					(0.502)	
Likelihood ratio test of independent equations $\chi 2$ (1)		6.67**			5.76**	
		(0.035)			(0.056)	
Observations		925	925		253	253

Note: Standard errors in parentheses. *P < 0.10, **P < 0.05, ***P < 0.001

Table 4: ATT and ATU from ESP and ESR results

Mean of the outcome variables	Treatment effect	Average Treatment Effects (ATE)
Entrepreneurial status	Youth that has access to Finance (ATT)	0.152***
		(0.019)
	Youth that did not have access to Finance (ATU)	0.043***
		(0.008)

Turnover	Youth that has access to Finance (ATT)	0.158 *
		(0.504)
	Youth that did not have access to Finance (ATU)	0.299 ***
		(0.289)

Note : Standard errors in parentheses ; *** p<0.01, * p<0.1

Table 5 : Results from propensity score matching (PSM)

Outcome Variables	Matching algorithm	Mean value of outcome variables		ATT
		Access to Finance	Non Access to finance	
Entrepreneurial status	NNM	0.321	0.117	0.204**
				(0.087)
	KBM	0.321	0.118	0.202 **
				(0.100)
Turnover	NNM	5.020	4.044	0.241*
				(0.876)
	KBM	5.020	3.583	0.401*
				(1.860)

Note : Standard errors in parentheses ; ** p<0.05, * p<0.1

FIGURES

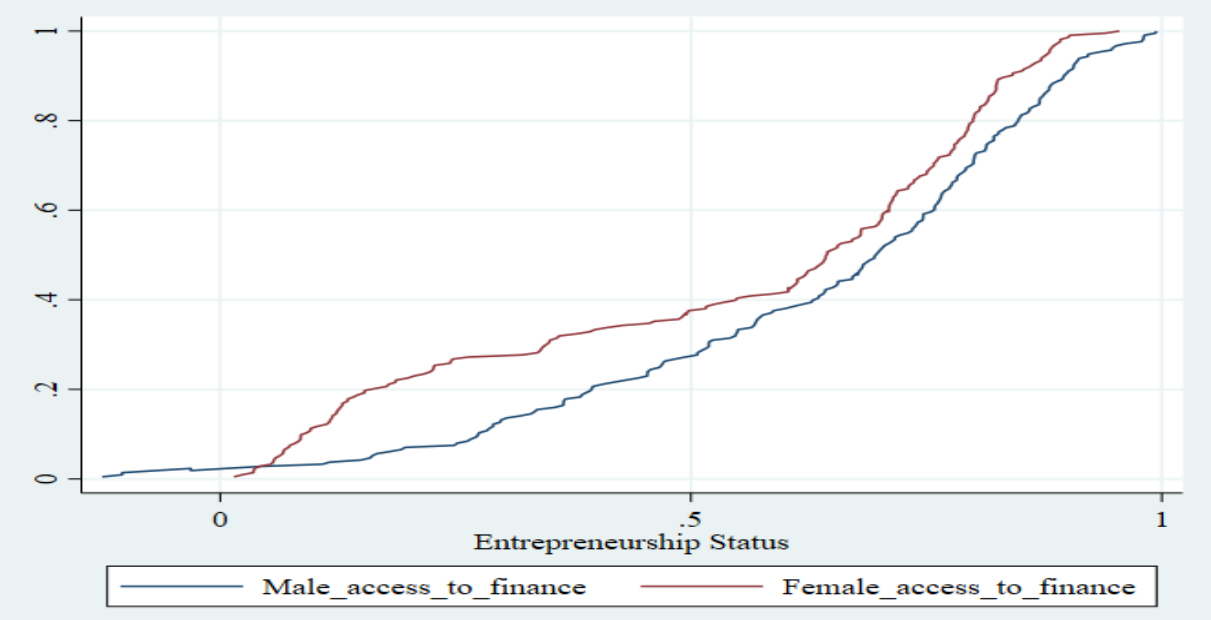
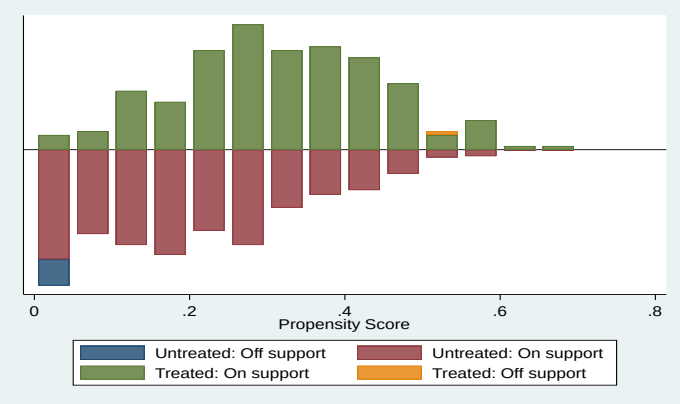
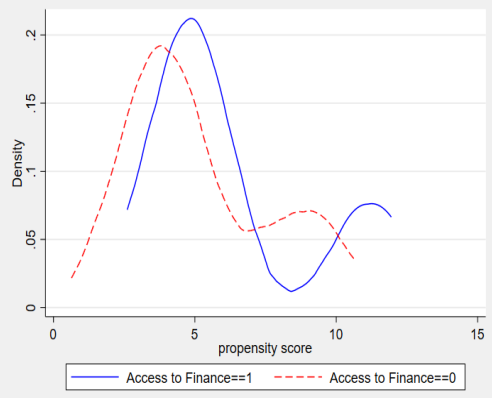


Figure1: Cumulative distribution functions of rural youth entrepreneurship status by access to finance



i)



ii)

Fig.2. Propensity score density distribution and common support for propensity score estimation.

Note: The densities of the propensity scores are on the y-axis. ''Treated: on support" indicates that the individuals in the access to finance group who found a suitable match. ''Treated: off support" indicates the individuals in the access to finance group who did not find a suitable match.

APPENDICES

Table A1: Test of endogeneity and validity of instruments

Test of endogeneity and validity of instruments	
Robust score chi2(1)	3.925** (0.0476)
Robust regression F (1,909)	3.994** (0.0460)
Test of validity of instruments	
Score chi2(2)	1.431 (0.488)

Note: p.value in parentheses; *** p<0.05

Table A2: Determinants of rural male youth male access to finance and entrepreneurship status

	(1)	(2)	(3)
		Entrepreneurial intention	
VARIABLES	Access to Finance	Access	No access
Age (ln)	0.668	1.248	-1.292***
	(0.587)	(1.091)	(0.403)
Especial training(1=yes)	0.173	1.273***	0.299
	(0.170)	(0.475)	(0.193)
Married (1=yes)	-0.0156	1.078	-0.545**
	(0.327)	(0.794)	(0.254)
Poverty statuts (1=poor)	-0.0848	-0.477	-0.0177
	(0.166)	(0.351)	(0.161)
Have a child (1=yes)	-0.232	-1.282*	-0.0766
	(0.307)	(0.735)	(0.242)
Satisfied with Job (1= yes)	0.285	-0.475	0.000910
	(0.179)	(0.515)	(0.160)
Make Money l(1=yes)	-0.701***	-0.229	-0.784
	(0.199)	(0.944)	(0.561)
Good family life_goal(1=yes)	-0.470**	-0.148	-0.773
	(0.196)	(0.878)	(0.559)
Health problem (1=yes)	0.823***	0.633	-0.107
	(0.237)	(0.685)	(0.260)
Educated (1=yes)	0.499**	-0.973	-0.132

	(0.244)	(0.784)	(0.178)
Father_educated(1=yes)	-0.0653	-1.039***	-0.0481
	(0.163)	(0.393)	(0.173)
Father entrepreneur(1=yes)	-0.554***	0.375	0.537***
	(0.161)	(0.487)	(0.158)
Mother entrepreneur(1=yes)	-0.425*	-0.0445	-0.135
	(0.234)	(0.731)	(0.186)
Ageunder18	0.494*		
	(0.286)		
Agri_sector	-1.171***		
	(0.228)		
Constant	-2.533	-1.304	4.478***
	(1.863)	(3.463)	(1.414)
athrho1		-0.00832	
		(0.865)	
athrho0			-1.193***
			(0.436)
Observations	432	432	432

Note : Standard errors in parentheses ; *** p<0.01, ** p<0.05, * p<0.1

Table A3: Determinants of rural female youth male access to finance and entrepreneurship status (ESP results)

	(1)	(2)	(3)
		Entrepreneurial intention	
VARIABLES	Access to Finance	Access	No access
Age (ln)	2.304***	-0.374	-2.035***
	(0.621)	(1.735)	(0.421)
Especial training(1=yes)	0.0379	1.125**	0.191
	(0.219)	(0.491)	(0.241)
Married (1=yes)	-0.211	-1.466***	-0.147
	(0.203)	(0.490)	(0.194)
Poverty statuts (1=poor)	0.508***	0.160	-0.423***
	(0.149)	(0.473)	(0.132)
Have a child (1=yes)	-0.288	-0.527	-0.269
	(0.207)	(0.576)	(0.192)
Satisfied with Job (1= yes)	0.0428	-0.416	-0.232
	(0.158)	(0.389)	(0.151)
Make Money l(1=yes)	-0.482**	0.0643	0.623***
	(0.201)	(0.870)	(0.203)
Good family life_goal(1=yes)	-0.483**	0.357	0.529***
	(0.191)	(0.901)	(0.196)
Health problem (1=yes)	0.597***	-0.315	-0.634***
	(0.196)	(0.547)	(0.216)
Educated (1=yes)	0.289	-0.327	-0.0758
	(0.185)	(0.475)	(0.159)
Father_educated(1=yes)	-0.0581	-0.762*	-0.103
	(0.176)	(0.401)	(0.162)
Father entrepreneur(1=yes)	-0.431***	0.646	0.319**
	(0.150)	(0.478)	(0.138)
Mother entrepreneur(1=yes)	0.0798	-0.377	0.0999
	(0.203)	(0.480)	(0.177)
Age under18	0.222		
	(0.281)		
Agri_sector	-0.567**		
	(0.224)		
Constant	-7.597***	2.240	6.282***

	(1.934)	(6.151)	(1.299)
athrho1		0.132	
		(0.828)	
athrho0			-1.817
			(1.173)
Observations	495	495	495

Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A4: Gender gap in rural youth entrepreneurship engagement impact of access to finance

Entrepreneurial engagement	Treatment effect	Average Treatment Effects (ATE)
Young Male	Youth that has access to Finance (ATT)	0. 174 (0.019) ***
	Youth that did not have access to Finance (ATU)	0.063 (0.018) ***
Young Female	Youth that has access to Finance (ATT)	0.122(0.022) ***
	Youth that did not have access to Finance (ATU)	0.034 (0.012) ***

Note : Standard errors in parentheses ; *** p<0.01

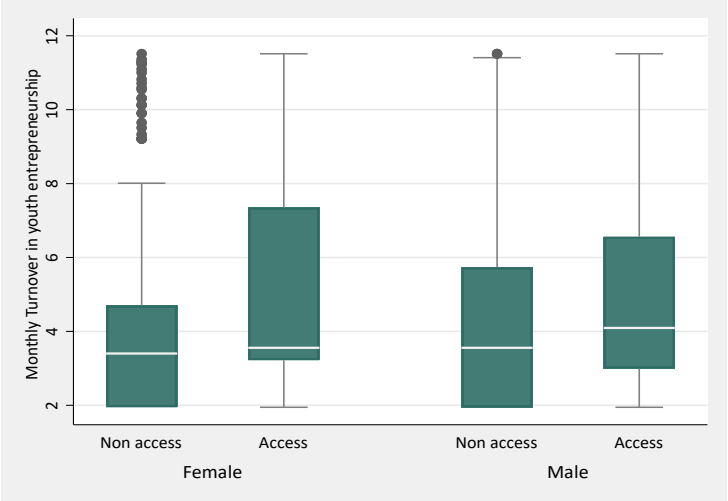


Figure A1: boxplot for entrepreneurship performance