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### On Promoting Entrepreneurship and Job Creation in Africa: Evidence from Ghana and Kenya

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#### Abstract

We use a large and rich dataset containing retrospective information on entrepreneurs at startups in urban Ghana and Kenya to show that employers have distinct characteristics and skills when compared to own-account workers. Specifically, we find that noncognitive skills are highly associated with the likelihood of becoming an entrepreneur among individuals with higher cognitive skills. In establishing these characteristics, we present new evidence on the determinants and the consequences of entrepreneurship in Ghana and Kenya. We document that large earning differentials between employers and own-account workers are due to the difference in their observable characteristics.

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## 1. Introduction

Entrepreneurship is a viable route to economic development due to its effect on employment generation, income growth, and innovation (Schumpeter 1934; De Soto 1989; van Praag and Versloot 2007). However, the experience of Africa poses a puzzle: higher rates of entrepreneurship appear to coexist with high levels of underemployment, low-paying jobs, and high rates of vulnerability (African Development Bank 2017). Several explanations for this puzzle have arisen in the literature. These include the prevalence of the informal sector (Falco et al. 2011; Günther and Launov 2012), job mismatch (Herrera and Merceron 2013), lack of structural transformation, and poor business environment (African Development Bank 2017), as well as the lack of a business culture supportive of skills and entrepreneurship (Loayza and Rigolini 2011). A more or less ignored explanation is that entrepreneurship is not a homogenous group (Haltiwanger, Jarmin, and Miranda 2013; de Mel, McKenzie, and Woodruff 2010; Gindling and Newhouse 2014). For instance, Earle and Sakova (2000) find that a significant percentage of entrepreneurs have been shown to have characteristics similar to unpaid family workers and the unemployed. We suggest a possible avenue to explain this puzzle by distinguishing different types of entrepreneurs. In Africa, entrepreneurship, which has been equated to self-employment, is generally used to refer to two groups, namely, own-account workers and employers.<sup>1</sup> But what are the earnings differentials between own-account workers and employers? Do they have similar skills? How do their characteristics differ? These are the questions we attempt to answer in this paper.

To do so, we construct measures of entrepreneurship that account for the differences between own-account workers and employers at startup. We refer to own-account workers as those who are operating individual enterprises and working alone or with no paid family workers. An employer is a person operating an individual enterprise and employing others, or a self-employed individual with hired workers. The proposed distinction in how to proxy entrepreneurship has important implications for policy practice and targeting, particularly in the context of which entrepreneurship is deemed to increase innovation and productivity and boost employment. We use a large representative survey of Ghana and Kenya<sup>2</sup>, the World Bank STEPS surveys, which combine detailed measures of entrepreneurship at startup, together with a battery of retrospective information regarding household characteristics during childhood.

We find that employers and own-account workers do not have similar features, meaning that the characteristics of employers, as well as their skills, are fundamentally different from those of own-account workers. Our findings show that noncognitive skills are highly associated with the likelihood of becoming an entrepreneur among individuals with higher cognitive skills. In establishing these characteristics, we present new evidence on the determinants and the consequences of entrepreneurship in Ghana and Kenya. To our knowledge, we are among the first to document that the economic returns of employers are significantly higher than for own-account workers and much of these earnings gap are due to the difference in their observable characteristics.

The study is organized as follows. Section 2 presents the empirical hypotheses and strategy. Section 3 describes the data. Section 4 presents the determinants of business startups, Section 5 estimates the returns of entrepreneurship. Section 6 concludes.

## 2. Empirical strategy

This study employs several empirical models. We first test the hypothesis that employers and own-account workers differ by their skills. Prior research on the determinants of entrepreneurship has primarily focused on individual and household characteristics. However, a fundamental aspect of

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<sup>1</sup> Own-account workers include independent contractors (e.g., manual workers) and freelancers (e.g., journalists and artists).

<sup>2</sup> We focus on the two countries because of data availability. In the empirical analysis, we combine the data of the two countries because of their similarities (See appendix 1 for details).

the argument that explains the high prevalence of own-account workers in the labor market in Africa is partly attributable to the lack of managerial capability to grow and expand business (La Porta and Shleifer 2014). Our goal is therefore to extend the literature with new variables that have not been tested before, such as noncognitive skills. Since entrepreneurship is a binary event, we define entrepreneur as a binary variable that takes 1 if the individual is the employer at startup and 0 if the individual is an own-account worker at startup. We estimate the following specification:

$$Y_i = \alpha + \beta_1 A_i + \beta_x X_i + \varepsilon_i, \quad (1)$$

where  $Y_i$  is our entrepreneurship status at startup;  $A_i$  represents a vector of skills;  $X_i$  is a vector of potential explanatory variables; and  $\varepsilon_i$  is the error term. We define  $A_i$  to contain both cognitive skills and noncognitive skills. Among the other controls are age, gender, and years of schooling. One potential concern is sample selection as our data does not include information for wage employee. To partially solve this problem, we take advantage of our retrospective structure of data and use predetermined variables as additional controls. These include socioeconomic status at age 15, number of economic shocks before age 15, whether the individual had a wage job before startup, and the highest level of educational attainment of the parents. We also include the source of startup finance and country-region fixed-effects. Another concern is that skills may be correlated with some household socioeconomic characteristics and socioeconomic status may affect the probability of being an employer. We attempt to address these issues using the age at which a person started school as the instrument for the cognitive skills and the variable indicating whether the individual lived with both parents at age 12 as an instrument of the noncognitive skills<sup>3</sup>.

We next test the hypothesis that the economic returns of being an employer are higher compared to an own-account worker. In order to better capture this heterogeneity, we estimate economic returns using Equation (2), as shown in Mincer (1974):

$$W_i = \alpha + \beta_1 E_i + \beta_x X_i + \varepsilon_i, \quad (2)$$

where  $W_i$  is the current log of earnings of individual  $i$ ;  $E_i$  represents the binary variable of entrepreneurship;  $X_i$  is the Micerian characteristics, such a gender, years of schooling, and quadratic function for the potential work experience; and  $\varepsilon_i$  is the error term. Our estimation strategy follows Firpo, Fortin, and Lemieux (2009) and uses an unconditional quantile regression to estimate the effect of entrepreneurship along the entire distribution of current earnings. This estimation technique makes it possible to directly estimate the effect of entrepreneurship without changing the distribution of other covariates, meaning that the interpretation of unconditional quantile regression coefficients does not depend on the group of covariates. We then decompose the earnings differentials across quantiles based on a counterfactual distribution.<sup>4</sup> We follow Melly (2005) and Chernozhukov, Fernández-Val, and Melly (2013), because their approach does not assume rank preservation, nor does it invoke the zero conditional mean assumption. In addition, the approach by Chernozhukov, Fernández-Val, and Melly (2013) uses conditional quantile regressions to decompose earnings at a certain quantile for employers and own-account workers who share the same characteristics. Moreover, this approach follows the procedure suggested by Juhn, Murphy, and Pierce (1993) to decompose the earnings differentials between employers and own-account workers into (1) differences in earnings that would prevail if employers and own-account workers had the same earnings setting function but different distribution of covariates, (2)

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<sup>3</sup> We closely follow Acosta, Muller, and Sarzosa (2015) who used STEP data for Columbia and found that these instruments are valid in first stage per the Sargan-Hansen test. They also found that most of the results are similar to the ordinary least squares.

<sup>4</sup> See Fortin, Lemieux, and Firpo (2011) for a review.

differences in earnings that would be observed if employers and own-account workers had the same characteristics but the prevailing earnings setting functions, and (3) differences in residuals.

### **3. Data and summary statistics**

#### **3.1. Data**

The empirical analysis carried out in this study uses a sample of individual entrepreneurs from the World Bank's Skills Towards Employability and Productivity (STEP) surveys (World Bank 2013) for Ghana and Kenya. The STEP Skills Measurement program, which was initiated by the World Bank to generate internationally comparable data on skills available in developing countries, measures the cognitive skills, job-relevant skills, and noncognitive skills of adults aged 15 to 64 living in urban areas, whether or not they work (Pierre et al. 2014). In addition to available skills in low- and middle-income countries, this survey contains detailed information on socioeconomic, employment, education and training, and family background characteristics. The year of data collection for Ghana and Kenya is 2013. The sample from Ghana is collected from urban areas in 10 primary cities, including the larger cities of Accra and Kumasi. The target population of the STEP Household survey of Kenya is representative of the country's four main cities and their metropolitan areas. STEP data is particularly well-suited for the behavioral analysis of workers because the questionnaire includes many questions about noncognitive skills and attitude toward work. To focus on entrepreneurs in their first job after education, we restrict our sample to individuals aged 17 to 64 and those who are not currently in formal education. Additionally, workers in the armed forces are excluded from the analysis. Eliminating these observations yields a combined sample of 2,283 households for the empirical analysis. Both countries have a reasonably large sample: Ghana includes 1,300, and Kenya 983.

The variables constructed are intended to assess entrepreneurship and job creation. The STEP data classify workers as employees, entrepreneurs (self-employed, own-account workers, and owners with or without hired labor), or unpaid family workers. Those responding that they are entrepreneurs were also asked to provide the number of (paid and/or unpaid) employees working in their businesses. We construct our entrepreneur variable as a combination of information from these questions. We define as own-account worker self-employed working alone with unpaid family workers, whereas we refer to employer as an owner with hired labor. The STEP survey questionnaire provides direct and indirect measures of cognitive skills. The direct measurement is done through the direct literacy assessment designed by Educational Testing Services. Cognitive skills are measured indirectly using self-reported answers on the use of reading, writing, and numeracy skills in daily life and at work. In this study, we use the direct measurement of reading proficiency as an indicator of cognitive skills.

The STEP survey includes a short version of established psychological personality traits, such as the Big 5, GRIT, decision making, and hostile bias. The Big 5 set of questions consists of 10 of the 44 standard BFI items. It assesses the Big 5 with two items per factor, one keyed in the positive and one in the negative direction. All items used 5-point Likert-type response options ranging from fully agree to fully disagree. Our measurement of noncognitive skills is constructed by aggregating all of the Big 5 traits into one latent personality trait. We acknowledge that the different dimensions of the personality traits may influence entrepreneurial success differently. To aggregate these items into a single measure of noncognitive skills, we first eliminated the acquiescence bias in all Big 5 related questions. We then employed principal component analysis (PCA) and constructed our indicator as a weighted sum of principal components whose eigenvalues were higher than one (six factors). The weight attributed to each principal component corresponds to its relative contribution to the variance of the initial indicators and is calculated from the cumulative percentage of explained variance.

Other important variables are socioeconomic status, number of economic shocks at childhood, source of funds for starting business, and parent's education. Our self-reported variable

of household socioeconomic status at age 15 ranges between 0 to 10, with 10 being the wealthiest level. Respondents were asked to rank their socioeconomic status based on the question “imagine a 10-step stairs where on the bottom, the FIRST step, stand the poorest people, and on the highest step, the TENTH, stand the richest”. Economic shocks are defined as instances of significant worsening of respondent’s household financial situation during childhood due to death or illness of a household member, family breakup, alcohol or drug problem, loss of employment, bankruptcy, loss of crops, natural catastrophe, violence or theft, forced displacement, social unrest or other factors. Regarding the source of funds for starting business, STEP data gathered information of various sources such as household savings or sales of assets, loans or grants from relatives in country, remittances from relatives abroad, money from inheritance, business partners, bank loan, informal loan (trader, landlord, moneylender), profits from other household enterprises, or inherited business. We used this information to classify the sources of funds as “used family money” and “did not use family money”.<sup>5</sup> Finally, parent’s education is defined to take 1 if either parent has at least upper secondary education and higher, and 0 otherwise.

### **3.2. Summary statistics**

Table 1 summarizes the descriptive statistics of our sample, stratifying it by types of entrepreneurship. As one would expect, employer constitutes the smallest group at startup, representing less than 20 percent of our sample, whereas own-account worker makes up the largest group within our sample. The sample of own-account worker has fewer males than employers, at 35 percent compared to 56 percent. Our data reproduce an interesting feature of the labor market in Africa, where many working women still remain own-account workers and a high proportion work as contributing family workers (International Labour Office 2016). The sample of employers has more individuals with higher educational attainment than the own-account worker sample. Employers also have higher working experience, measured in terms of previous wage jobs. It is interesting to note, for instance, that 44 percent of employers had a wage job before starting their own business. This is nearly 10 percentage points higher compared to the sample of own-account workers. We see also significant differences in the source of startup financing. For instance, 81 percent of own-account workers are financed by family money, while this source of finance is less common among employer. Finally, Table 1 also provides controls for household characteristics at age 15. We observe substantial differences among the samples. Own-account workers experience more economic shocks before age 15 than employers, at 0.97 compared to 0.85, respectively. Moreover, they are more likely to come from families with low socioeconomic status compared to employers. Finally, we plot log earnings differentials between employers and own-account workers in Figure 1. It is clear that the low earnings differential is positive in favor of employers in the entire earnings distribution, meaning that employers have higher average earnings than own-account workers

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<sup>5</sup> Family money include household savings or sales of assets, loans or grants from relatives.

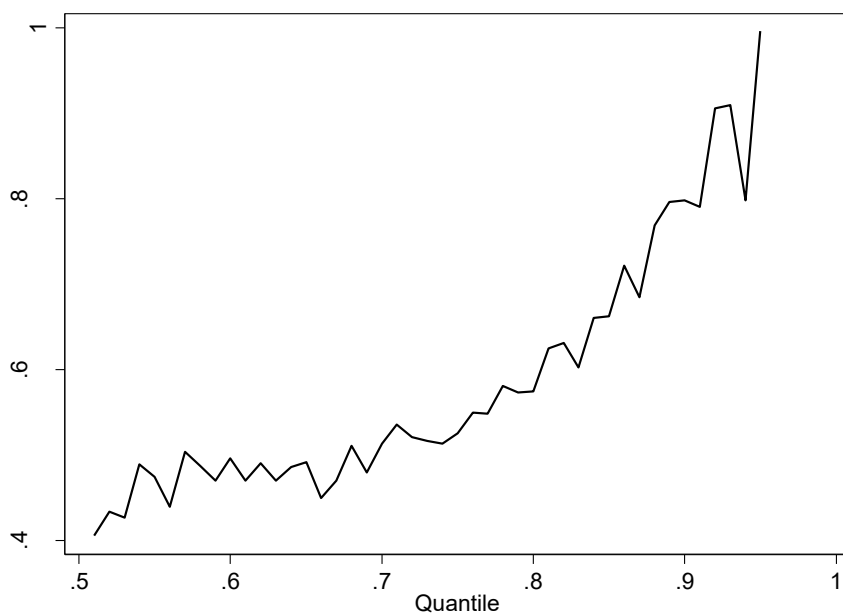
Table 1: Descriptive statistics

	Total		Own-account worker		Employer	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Employer	0.18	0.39				
Cognitive skills	-0.31	0.96	-0.36	0.94	-0.09	1.03
Noncognitive skills	-0.37	1.23	-0.40	1.23	-0.24	1.21
Years of schooling	8.10	4.62	7.81	4.48	9.39	4.99
Male	0.39	0.49	0.35	0.48	0.56	0.50
Age	35.63	10.64	35.34	10.44	36.92	11.42
Maximum of parents' education	0.11	0.32	0.10	0.30	0.17	0.37
Socioeconomic status at age 15	4.78	2.90	4.72	3.04	5.02	2.15
Number of economic shocks before age 15	0.95	1.30	0.97	1.32	0.85	1.23
Used family money to start business	0.80	0.40	0.81	0.39	0.71	0.45
Had a wage job before startup	0.37	0.48	0.35	0.48	0.44	0.50

Note: mean sample values for continuous variables and sample proportions for categorical variables. Pooled representative samples of urban adults between 17 and 64 years old from Ghana and Kenya

Source: own calculations based on STEP Skills Measurement Surveys data

Figure 1: Wage differential between employer and own-account worker



Note: Logarithm of hourly wages for employers and own-account workers (in 2011 PPP-adjusted U.S. dollars).

Source: own calculations based on STEP Skills Measurement Surveys data

#### 4. Initial condition and the determinants of business startups

Table 2 presents the results for eight specifications of equation (1). Our main goal in this section is to test the hypothesis that the probability of becoming an employer will increase in accordance with higher individual scores in cognitive and noncognitive skills. The first column reports results based on a specification that excludes years of schooling. In this specification, the coefficients of

cognitive and noncognitive skills measure the direct effect of skills plus the effect of skills acquired through schooling. As expected, these coefficients are positive but the magnitude of cognitive skills is smaller and not statistically significant. Column 2 repeats the estimation in column 1, controlling for years of schooling to measure the mediating effect of schooling. Two important points are worth noting. Consistent with our prior, education enters the model positively and significantly, showing that it plays an important role in entrepreneurship. Another key finding is that the magnitude of noncognitive skills is largely reduced compared to cognitive skills. This finding indicates that a large part of noncognitive skills is primarily acquired inside the educational system. Column 3 reports the estimates with the interaction between cognitive and noncognitive skills. The magnitude of noncognitive skills remains large and significant, while the effect of cognitive skills becomes marginal. The reason is that noncognitive skills are a strong determinant for becoming an entrepreneur among individuals with higher cognitive skills. Finally, column 4 reports results based on cognitive skills alone, and column 5 reports the specification with only noncognitive skills. The estimated effects of cognitive and noncognitive skills are smaller when each measure is included separately, but again, the coefficient of noncognitive skills is larger. Taken together, our findings are consistent with previous research (Zhao, Seibert, and Lumpkin 2010; Rauch and Frese 2007) and reinforce the importance of personality in the emergence and success of entrepreneurs.

Table 2: Determinants of entrepreneurship

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cognitive skills	0.0915 (0.0958)	0.0664 (0.0905)	0.00671 (0.104)	0.0902 (0.0613)		0.0688 (0.0966)	0.0816 (0.101)	0.096 (0.0936)
Noncognitive skills	0.162*** (0.0573)	0.101* (0.0564)	0.161*** (0.0587)		0.118*** (0.0384)	0.121** (0.0600)	0.122** (0.0622)	0.120** (0.0597)
Years of schooling		0.00956*** (0.00241)				0.00936*** (0.00240)	0.00743*** (0.00247)	0.00710*** (0.00247)
Cognitive#Noncognitive skills			0.0381*** (0.0105)					
Male						0.123*** (0.0170)	0.126*** (0.0171)	0.124*** (0.0171)
Age						0.00202*** (0.000776)	0.00216*** (0.000786)	0.00192** (0.000788)
Maximum of parents' education							0.0564** (0.0266)	0.0538** (0.0267)
Socioeconomic status at age 15							0.0206 (0.0128)	0.0196 (0.0127)
Number of economic shocks before age 15							-0.00312 (0.00639)	-0.00452 (0.00640)
Used family money to start business								-0.0897*** (0.0199)
Had a wage job before startup								0.0186 (0.0173)
Observations	2,255	2,255	2,255	2,255	2,255	2,255	2,255	2,255

Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: own calculations based on STEP Skills Measurement Surveys data

In the rest of this section, we extend our specification in column 2 with individual characteristics as well as household characteristics at age 15. We include individual characteristics in column 6 and find that our results are marginally affected by these controls. Column 7 adds parent's education, socioeconomic status at age 15, and the number of economic shocks before age 15. The last column adds the source of startup financing and prior wage job experience. The results are revealing in several ways. We find that gender has an important effect on the decision to become an employer. This result is robust across all of our three specifications and is consistent with

previous research about the gender gap phenomena in occupations. However, importantly, it adds that men are more likely to become employers and women are more likely to become own-account workers. A possible explanation for this result might be unequal social and legal rights that disadvantage women (Klugman and Twigg 2016). Another possible explanation is that women's decisions to engage in self-employment are necessity-driven and tend to be related to family support. We also find that the probability of becoming an entrepreneur increases with age. Our results show that the marginal effect of age is positive but small and becomes smaller when we control for prior wage job experience and source of funding.

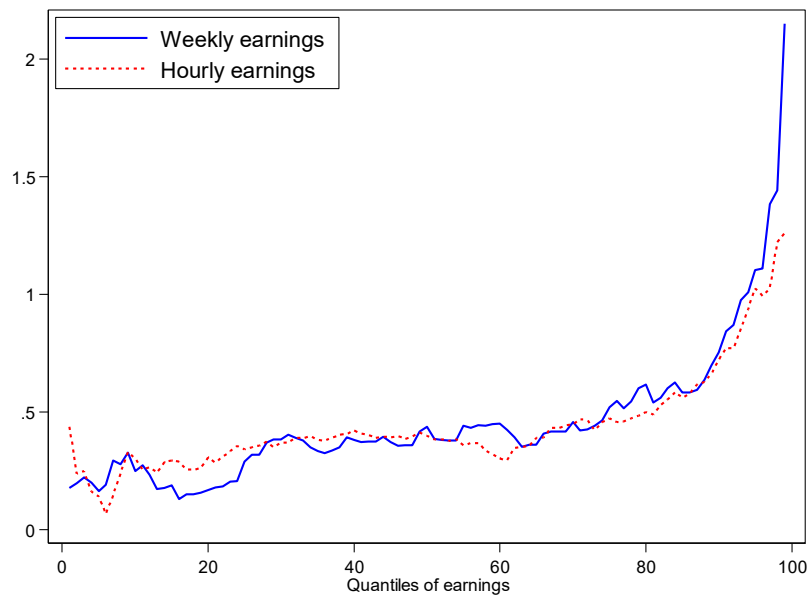
Turning to household characteristics at age 15, it is interesting to note that parent's education is the only variable that is statistically associated with higher probability to become employer. We find that socioeconomic status at age 15 enter the model positively, implying that being in a high socioeconomic class increases the probability of becoming an entrepreneur. However, its magnitude is small and not statistically significant. This is primarily because the effect of socioeconomic status at age 15 is mediated by parents' education. Other predetermined characteristics have expected signs but remain statistically insignificant. For instance, the number of economic shocks before age 15 is negative, implying that those who have encountered economic shocks before age 15 are less likely to become entrepreneurs. Overall, these results strengthen the idea that parents' education remains an important factor in explaining the probability of becoming an entrepreneur for children. One obvious interpretation of these findings is that parents' education affects household wealth, which is usually interpreted as evidence of liquidity or credit constraints to entrepreneurship (Quadrini 1999; Hurst and Lusardi 2004; Holtz-Eakin, Joulfaian, and Rosen 1994). When we assess the relative importance of sources of funding in explaining the likelihood of being an employer at startup against an own-account worker, we find for instance that individuals setting up their business with family money are less likely to become entrepreneurs. One unanticipated finding is that prior wage job before startup increases the likelihood of being an employer.

## **5. Entrepreneurship and earnings**

In the previous section, we established that the determinants of being an employer are different from those of own-account worker. This difference persists even when we control for the source of startup finance. Whether their earnings differ remains for consideration. We plot the estimated coefficients from equation (2) in Figure 2 to provide a visual representation of how the earnings differential between employer and own-account worker vary along the earnings distribution. The solid line compares entrepreneurship by weekly earnings to illustrate the fact that employers might have higher flexibility than own-account workers in choosing number of work hours (Hurst and Pugsley 2011). It is clear that employers have the highest economic return, and the magnitude differential tends to become very large at the upper tail of the earnings distribution. The dashed line reproduces an analogous analysis for hourly earnings. The results for employers yield similar qualitative conclusions, but the estimated earnings gaps are smaller in the 75th and 95th percentiles, meaning that employers at the upper end of the earnings distribution tend to work longer than own-account workers.



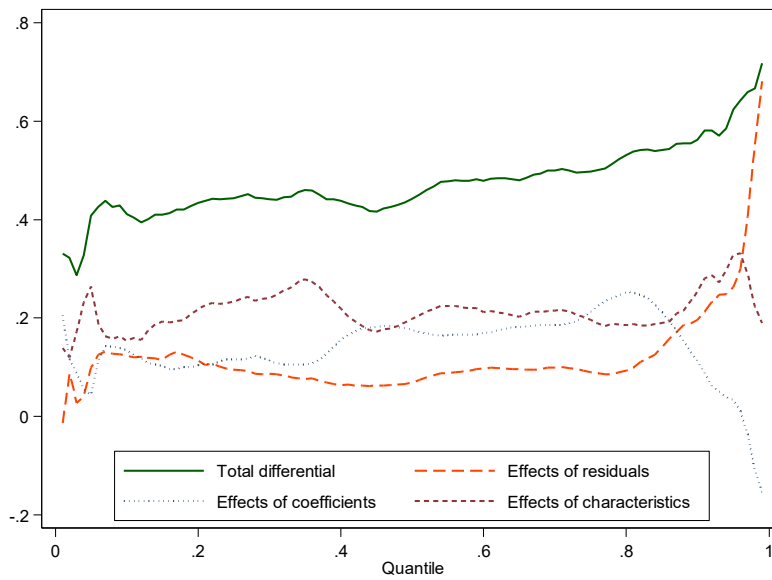
Figure 2: Returns to earnings



Source: own calculations based on STEP Skills Measurement Surveys data

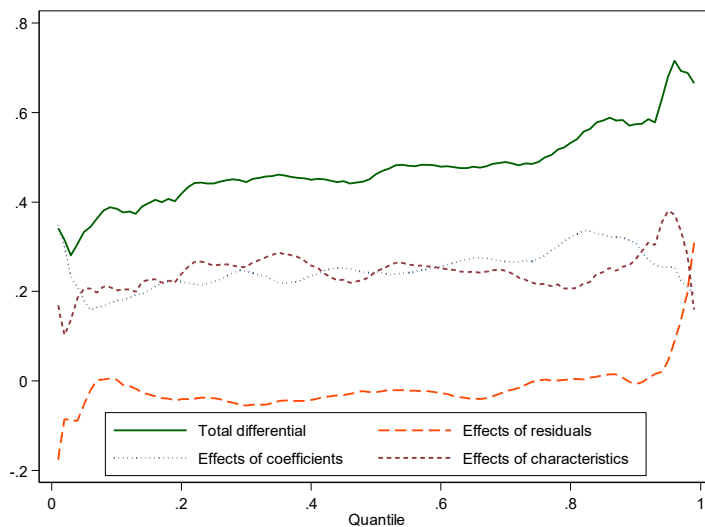
We now turn to the decomposition of the earnings differentials across quantiles, estimating the sources of earnings differentials at different earnings quantiles. Figure 3 plots the decomposition results over the quantiles of the earnings distribution. Differences in characteristics explain the greatest part of total differences over all quantiles. Differences in coefficients are larger for average earnings at between the 4<sup>th</sup> and the 9<sup>th</sup> quantile and drastically drop after the 9<sup>th</sup> quantile. Inversely, the effect of residuals is the lowest along the entire earnings distribution, except from the 8<sup>th</sup> quantile, where it picks up to overtake the effect of coefficients and characteristics. This pattern of the effects of the residuals is somewhat surprising and suggests that there could be an omitted variable in the model. To ascertain that an omitted variable can significantly influence the pattern of the effects of the residuals, we consider an alternative specification that controls for occupational categories. We use an additional regressor, which takes 1 for white collar workers and 0 otherwise. A comparison of Figure 3 and Figure 4 makes it possible to see the impact of controlling for the occupational category. Figure 4 shows that as before, the effects of characteristics are the largest and are almost stable along the earnings distribution. The inclusion of the occupational category improves the effects of coefficients, especially at the lower tail of the earnings distribution, where the effect of residuals is reduced and is nil in almost the entire earnings distribution.

Figure 3: Decomposition of the returns to entrepreneurship



Source: own calculations based on STEP Skills Measurement Surveys data

Figure 4: Decomposition of the returns to entrepreneurship (controlling for white collar)



Source: own calculations based on STEP Skills Measurement Surveys data

## 6. Conclusion

What should Africa do to promote entrepreneurship and job creation? We provide econometric evidence relevant to the determinants of entrepreneurship. First, we construct a new measurement of entrepreneurship, distinguishing own-account workers from employers. Using a rich dataset containing retrospective information on Ghana and Kenya, we show robust evidence that entrepreneurship is a highly heterogeneous group. This is consistent with previous research (Levine and Rubinstein 2017; Haltiwanger, Jarmin, and Miranda 2013), which demonstrates that the concept of employers is closely aligned with the Schumpeterian view of entrepreneurship, while own-account workers are not Schumpeterian entrepreneurs. We establish that the economic returns between employer and own-account worker are different and much of these differences are due to observable characteristics. We also demonstrate that employers and own-account workers

differ with regard to their noncognitive skills, while cognitive skills and years of education plays a minor role. More importantly, we find that noncognitive skills are a strong determinant for becoming an entrepreneur among individuals with higher cognitive skills. Contrary to previous research, we find little empirical support for family money as the primary sources of startup finance.

Taken together, the findings suggest that the determinants of the decision to become an entrepreneur are not the same as the determinants to become an own-account worker. Accordingly, it is inappropriate to use self-employment as a proxy for entrepreneurship. By failing to take the difference between own-account workers and employers into account, previous empirical studies may have produced misleading results, especially for policy that promotes employment growth and welfare. Another critical finding is that an important earnings gap is found within the employer category, meaning that there seems to exist high heterogeneity among employers. It is worth noting that this gap persisted even after controlling for occupational category. From a policy perspective, this suggests that many outstanding issues and research questions remain. First, understanding the determinants of the heterogeneous earnings differential among employers is a vitally important question. Here, further work must be done to establish whether a specific and targeted policy package is needed to promote highly successful entrepreneurs. A second and related question is why do African firms have low survival potential? Despite this need for further research, this study may serve as a starting point for impactful empirical and theoretical studies related to entrepreneurship and job creation in Africa.

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