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Scrutinizing the sticky floor/glass ceiling phenomena in the informal labour market in Cameroon

An unconditional quantile regression analysis

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Abstract: Cameroon’s informal labour market largely harbours female workers, engaged mainly in low-productivity and low-paying jobs. We investigate the sticky floor and glass ceiling phenomena in the informal labour market as a whole and across its segments. We use the 2010 Cameroon labour market survey, employing the recentred influence function and blending the Oaxaca-Ransom and Neuman-Oaxaca decomposition methods. The resulting framework enables us to account for selectivity bias at the mean, resolve the index number problem of the standard decomposition, and examine earnings differentials across the unconditional earnings distribution. We find compelling evidence of a sticky floor phenomenon in the informal labour market manifested essentially among wage earners. Returns to experience mitigate the gender earnings gap at the mean, and 10th and 50th percentiles of the unconditional earnings distribution. Female workers have an unambiguous human-capital-based advantage over their male counterparts at the mean, lower tail, and median of the distribution.

Key words: gender, earnings gap, sticky floor, glass ceiling, unconditional quantile regression, Cameroon

JEL classification: C21, J16, J31, J46

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1 Introduction

The informal sector *à la* Hart (1973) has long been viewed as a resourceful sector of the economy expected to be an ancillary of the formal sector in less-developed countries. Since the 1970s, informal employment has not only persisted on a global scale, but has also expanded, especially in the wake of intensive globalization, neo-liberalism, and cross-border and rural–urban mobility, largely following gendered processes (Bach 2003; Carr and Chen 2002; Chen et al. 2004). Among the numerous characteristics of the informal sector, non-compliance with legal principles is often viewed as its most common attribute. According to Castells and Portes (1989), the most central attribute of informal employment is that it is not regulated by the legal or social environment in which similar activities in the formal sector are regulated. Turnham (1993) regards informal employment as composed of wage workers in small enterprises and the self-employed, excluding professionals and technicians. It is widely perceived that informal employment plays a vital role in the efforts to alleviate poverty and in the economic empowerment of women and gender equality (Chen 2012).

The reasons given for the persistence of informality depend on the school of thought. The neoliberal (or legalist) approach argues that the informal sector is a rational response to excessive public regulations and bureaucracy and will persist so long as these procedures remain cumbersome and costly (De Soto 1989, 2000). The structuralist school treats the informal sector as a subordinated segment serving to improve the competitiveness of large capital firms (Castells and Portes 1989; Moser 1978). According to the dualist school, informal workers are excluded from modern economic opportunities due to imbalances between the growth rates of the population and of modern industrial employment, and a mismatch between people’s skills and the structure of modern economic opportunities (Sethuraman 1976; Tokman 1978). Finally, the voluntarist approach argues that informal actors choose deliberately to operate informally after weighing the costs and benefits of informality relative to formality (Maloney 2004). Contrary to the legalist school, it does not blame the cumbersome registration procedures.

A great body of empirical literature has indicated significant gender-based disparities in informal employment in developing countries (ILO 2002, 2012). According to Adom and Williams (2012), these gender disparities are due to differences in motivational characteristics like choice and necessity. The observation of gender earnings differentials is well supported in both developed and developing countries. According to the global wage report for 2014/15 by the International Labour Organization (ILO 2015), on average women earn between 4 and 36 per cent less than men. A striking observation is that the gender earnings disparities have persisted with fluctuating magnitudes over time and across space. A plethora of studies have considered the gender earnings gap as based on average differences in wages between men and women. Yet it is most likely that the gender earnings gap varies across the earnings distribution.

Examining the gender wage-gap beyond the mean decomposition is likely to provide interesting information. For instance, the ILO (2015) indicates that the gender earnings gap is larger at the upper tail of the earnings distribution. Decomposing the gender earnings gap across the earnings distribution provides a framework for testing the existence of the glass ceiling and sticky floor phenomena. The ‘glass ceiling’ concept is a situation where the gender wage gap is wider at the top of the wage distribution, and there is an under-representation of women in well-paid jobs. Agrawal (2013) regards the glass ceiling phenomenon as a scenario wherein female workers do reasonably well in the labour market up to a point, beyond which they encounter limits to their prospects. In contrast, the ‘sticky floor’ is a phenomenon whereby the gender wage gap is wider at the lower tail of the wage distribution, revealing that women are over-represented in low-paid occupations.

Albrecht et al. (2003) were among the first to empirically assess the glass ceiling phenomenon, looking at Sweden and using the conditional quantile regression technique. Since then, a myriad of empirical studies in developed countries have emerged—for example, Arulampalam et al. (2007) for European countries, Kee (2006) among Australian private workers, Jellal et al. (2008) for France, and Le and Miller (2010) for the USA. In developing countries there is limited, but growing empirical literature on the existence of the sticky floor and glass ceiling phenomena—for example, Duraisamy and Duraisamy (2016) for India, and Fang and Sakellariou (2011) for Thailand.

Although a great body of literature exists on gender earnings differentials in the labour market as a whole, few empirical studies have endeavoured to study the gender earnings gap in the informal labour market (Akem et al. 2019). However, the few studies that have endeavoured to examine gender earnings inequality in the informal labour market have done so at the mean. Studying the gender earnings gap in the informal labour market across the earnings distribution is likely to provide an interesting message for policy analysis and debate. As such, more evidence-based research is needed across the earnings distribution on the extent of the gender earnings gap, which is likely to differ across the informal labour market segments, but above all, on the factors that explain the earnings differential across the earnings distribution among informal employees.

Gendered earning disparities in the informal sector mimic, and in numerous cases exceed, those in the formal economy (Abramo and Valenzuela 2006; Silveira and Matosas 2003), as a result of vertical and horizontal segregation in employment and ongoing gendered differences related to women's unpaid reproductive work (Perrons 2005). In this context, the multifaceted relationships between self-employment, informal wage employment, informal employment, and gender disparities require careful analysis. The present paper, therefore, provides more evidence-based research to advance public policy debates and decisions on a more equal society.

In this regard, this paper contributes to empirical literature by addressing a key question: what is the extent of gender earnings disparity in informal employment across the unconditional quantiles in Cameroon? The ensuing objectives are: (1) to assess the extent of gender disparity in the joint probability of labour market participation and informal employment in Cameroon, (2) to assess the extent of the gender earnings gap across the unconditional earnings distribution in the informal labour market segments in Cameroon, and (3) to identify the relative contributions of the different factors in explaining gender earnings disparities in the different informal labour market segments across percentiles. The rest of the paper is organized into four sections. Section 2 focuses on the empirical literature. Section 3 presents the empirical strategy. Section 4 presents the data used and descriptive information. Section 5 presents the empirical results, and Section 6 provides concluding remarks and policy implications.

2 Literature review

The 'glass ceiling phenomenon' denotes the barrier to further progression faced by a subgroup when they reach a certain threshold. In the context of gender analysis, the glass ceiling phenomenon is perceived as a situation whereby female workers perform very well in the labour market up to a point, beyond which there is a limit on their prospects. Empirically, a wider gender earnings gap at the upper tail of the distribution compared with the other portions of the earnings distribution is a demonstration of the glass ceiling phenomenon. Meanwhile, the 'sticky floor effect' refers to a phenomenon whereby a subgroup faces difficult working conditions when they enter the labour market for the first time (Ge et al. 2011). Empirically, in gender analysis, the sticky floor phenomenon is demonstrated by a wider gender earnings gap at the lower tail of the earnings distribution (Arulampalam et al. 2007).

Several studies have assessed the sticky floor and glass ceiling phenomena for developed countries; meanwhile, research on this topic in developing-country settings is still scanty, but it is gaining research attention. In Sweden, Albrecht et al. (2003) indicated the existence of a glass ceiling in the Swedish labour market. Using data from 11 European countries, Arulampalam et al. (2006) explored the gender wage gap across the wage distribution and inferred that the glass ceiling phenomenon is more prevalent than the sticky floor effect in most countries studied. In Spain, Dolado and Llorens (2004) studied the Spanish labour market and revealed that the glass ceiling effect has been witnessed for highly educated women; meanwhile, the sticky floor effect is observed for women with primary and secondary education. Kee (2006) used Australia data to examine the gender wage gap across the wage distribution in the public and private sectors and confirmed the existence of the glass ceiling phenomenon in the private sector.

As intimated earlier, literature on the sticky floor and glass ceiling effects appears to be limited for developing-country settings. In the Sri Lanka labour market, Gunewardena et al. (2008) examined the gender wage gap across the wage distribution and found that the sticky floor phenomenon is prevalent. Agrawal (2013) scrutinized the sticky floor and glass ceiling phenomena in the urban and rural Indian labour market. The results revealed the existence of a sticky floor phenomenon in the Indian urban labour market and a glass ceiling phenomenon in the Indian rural labour market. In Thailand, Fang and Sekelleriou (2011) investigated the gender wage differentials across the unconditional wage distribution and found evidence of a strong sticky floor effect in the Thai labour market.

In the African context, Aderemi and Alley (2019) employed quantile regression-based decomposition and Nigerian data to study the gender wage gap across the wage distribution in the public and private sectors. The results indicated that the glass ceiling effect prevails in the public sector, while the sticky floor phenomenon exists in the private sector. Using Ghanaian data, Agyire-Tettey et al. (2017) employed unconditional quantile regression based on the recentred influence function to study the gender wage gap in the formal and informal sectors. Their findings revealed the existence of a sticky floor effect in the formal sector; meanwhile, in the informal labour market neither a glass ceiling nor a sticky floor phenomenon was observed. In South Africa, Ntuli (2007) used a counterfactual decomposition technique to examine whether the glass ceiling or the sticky floor phenomenon is prevalent in the South African labour market; the findings indicated that the sticky floor effect is more prevalent.

Using Cameroon data, Baye et al. (2016) employed quantile regression and Oaxaca-Ransom decomposition to examine the gender wage gap across the conditional wage distribution in the labour market. They found that men were overpaid, while women were underpaid on average and across the conditional wage distribution. Akem et al. (2019) examined gender earnings differentials in the Cameroon informal labour market. They found that women suffer an earnings penalty as a whole. To the best of our knowledge, published works investigating the sticky floor and glass ceiling phenomena in the informal labour market using Cameroon data are yet to materialize. This paper, therefore, aims to fill this gap in the literature, by decomposing the gender earnings gap in the informal labour market segments across the unconditional earnings distribution using the recentred influence function and the Neuman-Oaxaca-Ransom-based decomposition.

3 Methodology

3.1 Modelling the determinants of earnings in the informal labour market

As in most of the studies on gender earnings inequality, we adopt the Mincerian earnings equation, taking into account selectivity bias emanating from the non-random selection process into the labour market and informal employment captured via the inverse Mills ratio (IMR= λ_1), and including it into an augmented Mincerian earnings equation as in Equation 1:

$$W = X'\varphi + \Omega\lambda_1 + \varepsilon_1 \quad (1)$$

where W denotes the log hourly earnings; X is a vector of exogenous variables expected to determine earnings in the informal setting—including a vector of 1; φ is a vector of parameters to be estimated; and Ω is the coefficient of the IMR, which captures the unobserved factors that determine selection into the labour market.

The identification strategy here entails including instrumental variables in a bivariate sample selection equation (not modelled explicitly in this paper) that are excluded from the earnings Equation 1. After estimating the joint probability of participation in the labour market and informal employment using the bivariate probit model, we generate the IMR that is hosted in Equation 1.

The extension of the analysis across the labour market segments also requires the correction of sample selectivity problems resulting from three censored decisions: participation, informal employment, and self/wage employment. These three decisions are likely to be jointly determined and thus, a multivariate probit model is plausible. We therefore generate an IMR after the multivariate probit model and include it in the earnings equation. The corresponding earnings equations for informal self-employed workers and informal wage earners can take the forms in Equations 2 and 3, respectively.

$$W_1 = X'\pi_1 + \theta_{11}\lambda_{11} + \eta_1 \quad (2)$$

$$W_2 = X'\pi_2 + \theta_{22}\lambda_{22} + \eta_2 \quad (3)$$

where, λ_{11} and λ_{22} are the IMRs corresponding to informal self-employment and informal wage employment obtained from the multivariate probit. The vectors π and θ are parameters to be estimates and η_1 and η_2 are the random error terms.

3.2 Identification

In order to identify the selection effect and thus obtain estimates of the earnings equation that are free from selectivity bias, we make exclusion restrictions. The variable excluded is the number of children below six years of age. To reduce the potential endogeneity of this instrument, they are captured as non-self-cluster means. In particular, the number of children below six years is considered as the average number of children younger than six in the neighbourhood of a household harbouring a labour market participant—captured as a non-self-cluster mean using cluster-level information. A non-self-cluster variable is exogenous to the informal sector worker under consideration and does not influence their earnings, except indirectly through the decision to participate in the labour market as an informal worker. This instrumental variable is considered in the bivariate and multivariate sample selection model as an exogenous identifier of the structural earnings equations.

3.3 Recentered influence function regression

We employ the unconditional quantile regression technique suggested by Firpo et al. (2009) to examine the determinants of earnings across the earnings distribution. This technique entails regressing the recentered influence function (RIF) of the unconditional quantile of the outcome variable (earnings) on the set of exogenous variables. The RIF is obtained by replacing the dependent variable for a linear approximation using the influence function (IF). By definition, $\int_{-\infty}^{\infty} IF(\omega, \tau) dF(\omega) = 0$. Specifically, for quantiles, the IF is obtained as:

$$IF(\omega; Q_{\tau}) = \frac{\tau - \mathbb{I}\{\omega \leq q_{\tau}\}}{f_{W(q_{\tau})}} \quad (4)$$

where IF stands for the influence function, W represents the log hourly earnings, and $f_{W(q_{\tau})}$ denotes the probability density function of W evaluated at q_{τ} . $\mathbb{I}\{\omega \leq q_{\tau}\}$ represents an indicator function which takes the value 1 when the outcome variable (earnings) is less than q_{τ} and 0 otherwise. τ denotes the quantile in question. Based on this information, the RIF is computed as:

$$RIF(\omega; q_{\tau}) = q_{\tau} + \frac{\tau - \mathbb{I}\{\omega \leq q_{\tau}\}}{f_{W(q_{\tau})}} \quad (5)$$

An essential characteristic of the unconditional quantile (RIF) over the conditional quantile is that RIF regression is linear in expectation—that is, $\mathbb{E}[RIF(\omega; q_{\tau})] = q_{\tau}$. Thus, the expectation of the RIF is basically the specific quantile in question. In keeping with the consideration of X as a vector of independent variables, and β the corresponding parameters to be estimated, then the expected value of the RIF is linear in X .

$$\mathbb{E}[RIF(\omega; q_{\tau}) | X] = X\beta \quad (6)$$

Following Firpo et al. (2009), the plausible interpretation attributable to the parameter vector β is that it is a location shifter of X across the unconditional quantile distribution.

3.4 Mean and RIF-regression-based decomposition of the gender earnings gap

Mean decomposition of the gender earnings gap

We employ the Neuman-Oaxaca-Ransom decomposition framework in order to decompose the mean gender earnings gap in the Cameroon informal labour market. The Neuman-Oaxaca-Ransom decomposition is a refinement of the traditional Oaxaca-Blinder technique, and a blend of the Oaxaca and Ransom (1994) technique and the Neuman and Oaxaca (2004) technique. The implied Neuman-Oaxaca-Ransom decomposition is given by:

$$\overline{\Delta W} = [(\overline{X}_m - \overline{X}_f)' \hat{\beta}^*] + [\overline{X}'_m(\hat{\beta}_m - \hat{\beta}^*) + \overline{X}'_f(\hat{\beta}^* - \hat{\beta}_f)] + [\overline{\lambda}_m \hat{\theta}_m - \overline{\lambda}_f \hat{\theta}_f] \quad (7)$$

The first term $[(\overline{X}_m - \overline{X}_f)' \hat{\beta}^*]$, represents the access-to-endowments effect, while the second term, $[\overline{X}'_m(\hat{\beta}_m - \hat{\beta}^*) + \overline{X}'_f(\hat{\beta}^* - \hat{\beta}_f)]$, denotes the discrimination effect, which is further split into the male advantage, $[\overline{X}'_m(\hat{\beta}_m - \hat{\beta}^*)]$, and the female disadvantage, $[\overline{X}'_f(\hat{\beta}^* - \hat{\beta}_f)]$. The last term, $[\overline{\lambda}_m \hat{\theta}_m - \overline{\lambda}_f \hat{\theta}_f]$, represents the selectivity term. $\hat{\beta}^*$ is the vector of estimated parameters using the pooled model (male and female).

To assess the existence of the sticky floor and glass ceiling phenomena in the Cameroon informal labour market, we extend the Oaxaca-Ransom decomposition framework across the unconditional earnings distribution using the RIF regression. For any specific quantile τ , the unconditional gender earnings gap computed as the earnings differentials between the male subsample and the female subsample can be recovered as:

$$\overline{\Delta W}^\tau = q_{m,\tau} - q_{f,\tau} \quad (8)$$

Fortin et al. (2010) and Carrillo et al. (2014) indicate that the gender earnings-gap can easily be implemented across the unconditional earnings distribution using the RIF regression. At any specific quantile τ , the unconditional gender earnings gap is obtained as:

$$\overline{\Delta W}^\tau = \mathbb{E}[RIF(W_m^\tau)] - \mathbb{E}[RIF(W_f^\tau)] \quad (9)$$

Introducing the counterfactual, we obtain the following:

$$\overline{\Delta W}^\tau = \{\mathbb{E}[RIF(W_m^\tau)] - \mathbb{E}[RIF(W_f^{\tau C})]\} + \{\mathbb{E}[RIF(W_f^{\tau C})] - \mathbb{E}[RIF(W_f^\tau)]\} \quad (10)$$

To derive the Oaxaca-Ransom decomposition for a given quantile τ , across the distribution, use is made of the law of iterative expectations. Based on this, the Oaxaca-Ransom decomposition for any unconditional quantile, τ , is computable as:

$$\overline{\Delta W}^\tau = [(\bar{X}_m - \bar{X}_f)' \hat{\beta}^{*,\tau}] + [\bar{X}'_m (\hat{\beta}^\tau_m - \hat{\beta}^{*,\tau}) + \bar{X}'_f (\hat{\beta}^{*,\tau} - \hat{\beta}^\tau_f)] \quad (11)$$

The estimated parameters $\hat{\beta}^\tau_m$ and $\hat{\beta}^\tau_f$ are obtained by implementing separate regressions for the male and the female sample. The outcome (dependent) variable in this linear regression is the estimated RIF of the informal labour market earnings, as well as of the self-employed and the informal wage-employed.

It should be noted that in the RIF-regression-based decomposition, the sample selectivity correction based on the Heckman (1979) approach has not been taken on board. This is because in blending the RIF decomposition and the Heckman selectivity approach, the normality assumption is violated.

4 Data and descriptive statistics

4.1 Presentation of data

The study uses the Cameroon labour force survey collected in 2010 by the government statistics office (NIS 2010). This second wave of the Cameroon labour force survey—captioned the ‘Cameroon Employment and Informal Sector Survey’ (CEISS)—was carried out from 16 May to 17 July. The survey captured sets of indicators on (1) labour market employment conditions and earnings, and (2) the size of informal employment. The geographical scope of the survey was the Cameroon national territory. The national territory was subdivided into 12 regions, including the political capital city, Yaoundé, and the economic capital, Douala. The sampling frame employed was the stratified two-stage sampling frame. At the first stage of the sampling, the primary sampling

units were drawn; at the second stage, 8,160 households were drawn from the 756 primary sampling units retained. From the 8,160 households, 7,932 households hosting 18,742 individuals of between 15 and 64 years, with 8,845 labour market earners, stratified into the 12 regions, were identified and interviewed.

According to the National Institute of Statistics, informal employment comprises workers who are not registered with the social welfare system and have no written contracts or paid leave (NIS 2010). As such, informal workers include own-account workers, contributing family workers, informal sector wage earners, and informal employees in the formal sector. The latter is composed of formal sector temporal workers—who are typically concealed in official statistics as unclassified workers, for strategic reasons.

4.2 Presentation of descriptive statistics

Descriptive statistics of variables

Table 1 presents the descriptive statistics for variables of interest. As shown in Table 1, the descriptive statistics reveal that the labour force participation rate, which is the proportion of the population aged 15–64 that is economically active, was about 74.4 per cent in 2010. Concerning the percentage of workers in the Cameroon informal sector, the descriptive findings reveal that 89.1 per cent of the workforce were informal employees. Statistics equally show that 48.1 per cent of individuals surveyed were male. The average earnings were about 1,557 Central African Francs (XAF) per hour.

Statistics also show that about 19 per cent of the interviewees had no education. Of those educated, 30.6 per cent had primary education, 41.9 per cent secondary education, and 8.5 per cent tertiary education. Further, the results reveal that 43.8 per cent of the interviewees were urban dwellers. On average, the age of individuals surveyed was 31. Descriptive results indicate that the average length of experience of workers in the Cameroon labour market was about eight years. About 56.4 per cent of employees were married.

Regarding the branch of activity, descriptive findings reveal that about 48.8 per cent of the workers were in the agricultural sector, 13.5 per cent were working in industries, 11.7 per cent were in trade, and 26 per cent were in the service sector. Concerning the type of employment, descriptive results indicate that the proportion of workers who were own-account workers is 52.9 per cent, while the proportion of workers who were contributing family workers and apprentices is 20.7 per cent and 3 per cent, respectively. The proportion of self-employed is therefore 76.6 per cent (that is, own-account workers plus contributing family workers plus apprentices). The proportion of individuals surveyed that were wage earners is 23.4 per cent (those unclassified were considered as wage earners). On average, households in the neighbourhood where a worker lives hosted at least one child less than six years old.

Table 1: Descriptive statistics (ages 15–64)

Variables	Obs.	Mean	Std Dev.	Min.	Max.
Labour force participation	18,454	0.744	0.436	0	1
Informal employment	12,959	0.891	0.311	0	1
Male	18,614	0.481	0.500	0	1
Hourly earnings (XAF)	10,416	1,557	2,980	2,777	61,509
No level of education	18,614	0.190	0.392	0	1
Primary education	18,614	0.306	0.461	0	1
Secondary education	18,614	0.419	0.493	0	1
Tertiary education	18,614	0.085	0.279	0	1
Urban residency	18,614	0.438	0.496	0	1
Age	18,614	31.079	12.398	15	64
Experience	12,940	8.467	9.194	0	49
Married	18,614	0.564	0.496	0	1
Agriculture	12,959	0.488	0.500	0	1
Industry	12,959	0.135	0.342	0	1
Trade	12,959	0.117	0.322	0	1
Service	12,959	0.260	0.439	0	1
Own-account workers	12,959	0.529	0.499	0	1
Contributing family workers	12,959	0.207	0.405	0	1
Apprentice	12,959	0.030	0.171	0	1
Unclassified	12,959	0.001	0.036	0	1
Self-employed	12,959	0.766	0.424	0	1
Wage earners	12,959	0.234	0.423	0	1
No. of other earners	17,444	1.722	1.071	0	8
No. of children <6 (nscm)	18,614	1.337	0.752	0	5.163
IMR (λ)	18,614	0.238	0.107	0.031	0.535

Note: nscm = non-self-cluster mean.

Source: authors' computation using Stata 14, based on NIS (2010).

Table 2 displays the descriptive information along gender lines for the informal labour market as a whole. On average, the hourly earnings of informal male workers were higher than the earnings of informal female workers. As indicated by the RIF values, informal male workers enjoyed higher earnings compared with their female counterparts at the 10th, 50th, and 90th percentiles. This is a preliminary revelation of gender earnings differences at the mean and across the unconditional earnings distribution.

About 15.4 per cent of informal male workers had no education, while 23.7 per cent informal female workers had no education. The descriptive results also reveal that about 36.8 per cent and 37.5 per cent of male and female informal workers had primary education, respectively. The proportion of informal workers with secondary education was 42.7 per cent of male workers against 36.3 per cent of female workers, while the proportion of workers with higher education was 5.1 per cent and 2.5 per cent of male and female workers, respectively. The average length of experience was about eight years for informal male workers and about nine years for informal female workers. The proportion of informal workers residing in urban areas was 50.8 per cent and

45.5 per cent for male and female workers, respectively. About 54.2 per cent of male workers against 67.4 per cent of female workers were married.

Table 2: Descriptive statistics for informal sample by gender

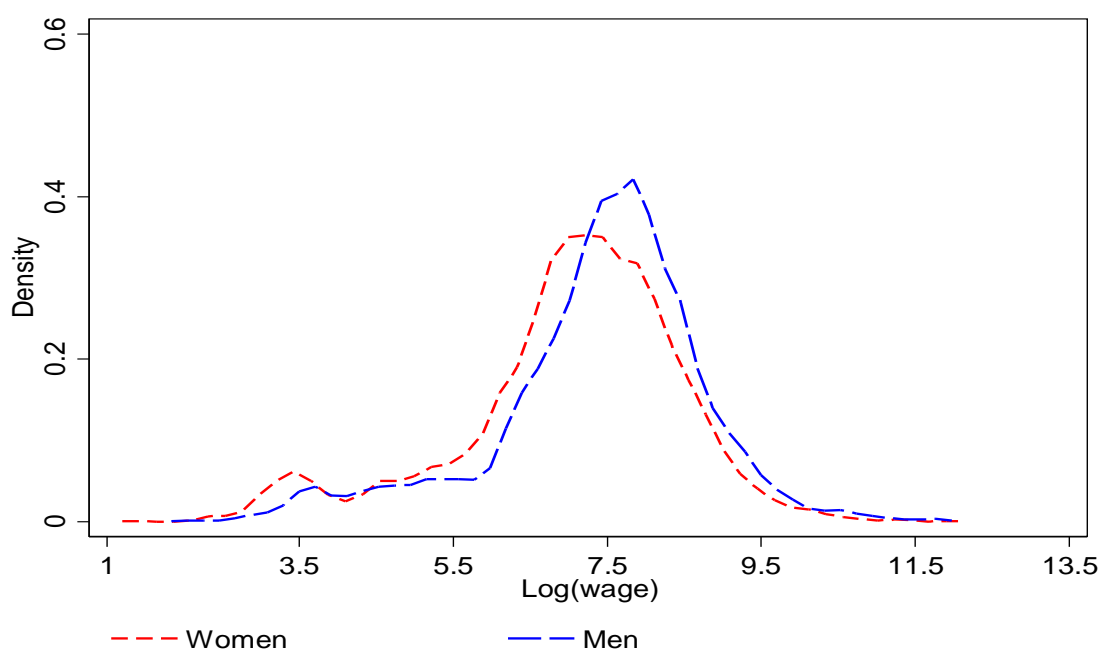
Variables	Male	Female	Difference in means/proportions
Log (hourly earnings)	6.4550 (0.0202)	6.1547 (0.0235)	0.3003*** (0.0308)
RIF_10	4.4084 (0.0707)	3.8994 (0.0825)	0.5090*** (0.1081)
RIF_50	6.6617 (0.0187)	6.3791 (0.0224)	0.2826*** (0.0289)
RIF_90	7.9345 (0.0281)	7.742403 (0.0306)	0.19209*** (0.0416)
No education	0.1535 (0.0048)	0.2373 (0.0057)	-0.0838*** (0.0074)
Primary	0.3681 (0.0064)	0.3748 (0.0065)	-0.0066 (0.0091)
Secondary	0.4278 (0.0066)	0.3631 (0.0064)	0.0647*** (0.0092)
Tertiary	0.0505 (0.0029)	0.0248 (0.0021)	0.0257*** (0.0036)
Experience	7.8193 (0.1129)	8.5994 (0.1282)	-0.7801*** (0.1706)
Urban	0.5084 (0.0066)	0.4536 (0.0067)	0.0547*** (0.0094)
Married	0.5421 (0.0066)	0.6743 (0.0063)	-0.1321*** (0.0091)
IMR	0.1921 (0.0012)	0.2477 (0.0013)	-0.0556*** (0.0017)

Source: authors' computation using Stata 14, based on NIS (2010).

Figure 1 depicts the kernel distribution of earnings by gender in the informal labour market of Cameroon. The kernel density provides insights on gender earnings disparities in the Cameroon informal labour market.

According to Figure 1, earnings differentials exist between men and women in the Cameroon informal labour market, with the differentials in favour of men. In particular, Figure 1 depicts that hourly earnings differences between women and men are not the same across the earnings distribution of hourly wages. At the lower earnings, the gender difference in earnings is wider compared with higher levels of earnings.

Figure 1: Kernel density distribution of earnings by gender in Cameroon informal labour market



Source: authors' illustration based on NIS (2010).

5 Empirical results

5.1 Labour force participation and informal employment

In Table 3, the coefficients and the marginal effects of the bivariate probit model are presented. Specifically, Columns 1 and 2 display the regression coefficients of labour force participation and informal employment, respectively. Column 3 shows the marginal effects of engaging in the labour market as an informal worker, while Column 4 displays the marginal effects of participating in the labour market and in formal employment. The statistical significance of the Wald test statistic provides us with enough evidence to reject the null hypothesis that the two decisions are independently determined. This entails testing the hypothesis that $\rho = 0$, entailing that the correlation between the two disturbance terms in the separate probit models is statistically non-significant. Rejecting the null hypothesis indicates that the two decisions are dependent. The results also show that the predicted value of the joint probability of participating in the labour market and engaging in informal employment ($LFP = 1$ and $IE = 1$) is 0.809—implying 80.9 per cent of successes.

The bivariate probit marginal effects in Column 3 show that women are more likely to make the joint decision to participate in the labour market and engage in informal employment. Specifically, women are 3.4 per cent more likely than men to participate in the labour market and undertake informal employment. Column 4, which contains the estimates of the joint probability of participating and engaging in formal employment, indicates that women are less likely than men to secure formal employment. In particular, the results provide evidence that women are 6.1 per cent less likely than men to secure formal employment in the Cameroon labour market. The high probability of women's engagement in informal employment is expected to be due to social norms and inadequate family planning that compromises women's competitiveness in the labour market.

Gender roles inflict burdens on women that hinder them from participating in the labour market. However, if a woman decides to participate in the labour market, she is likely to choose an informal job that will provide her with more flexibility to maintain the ‘double shift’ of work—within and outside of the home. Another reason for women’s higher likelihood of being in informal employment might be the observation that women are generally less educated than men, and formal employment usually demands more skills and education compared with informal jobs. These findings are similar to those obtained by Malta et al. (2019) using Senegalese data and Aikaeli and Mkenda (2014,) who found that women were more likely to be informally employed than were men in construction companies in Tanzania.

Table 3: Determinants of the probability of labour force participation and informal employment (bivariate probit)

Variables	Coefficients			Marginal effects
	(1)	(2)	(3)	(4)
	LFP	Informal	Pr [LFP = 1, IE = 1]	Pr [LFP = 1, IE = 0]
Female	-0.221*** (0.0330)	0.399*** (0.0330)	0.0342*** (0.0059)	-0.0605*** (0.0050)
Primary	0.0886 (0.0626)	-0.482*** (0.0847)	-0.0606*** (0.0143)	0.0711*** (0.0121)
Secondary	-0.0140 (0.0663)	-1.228*** (0.0859)	-0.1801*** (0.0141)	0.1784*** (0.0120)
Tertiary	0.0294 (0.0980)	-2.319*** (0.0975)	-0.3342*** (0.0171)	0.3377*** (0.0128)
Urban	-0.0609 (0.0389)	-0.299*** (0.0367)	-0.0500*** (0.0066)	0.0428*** (0.0054)
Age	0.0980*** (0.00871)	-0.134*** (0.0104)	-0.001** (0.00042)	0.0041*** (0.00022)
Age squared x 10 ⁻²	-0.00117*** (0.000116)	0.00147*** (0.000134)		
Married	0.141*** (0.0378)	-0.0666* (0.0373)	0.00555 (0.0067)	0.0113** (0.0055)
Children < 6 years (nscm)	0.119*** (0.0328)	0.0413 (0.0338)	0.0189*** (0.0060)	-0.00467 (0.00495)
Constant	-0.335** (0.158)	4.949*** (0.217)		
Predicted probabilities			0.8087	0.1269
The parameter Athrho				-0.07205** (0.03558)
Rho (ρ)				-0.07192** (0.0354)
Log likelihood				-6,511.7683
Wald chi2(18)				2,917.57
Wald test of rho = 0				3.81045**
[Prob > chi2]				[0.0509]
Observations				12,956

Note: bootstrapped standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; nscm = non-self-cluster mean, Source: authors’ computation using Stata 14, based on NIS (2010).

Column 3 of Table 3 also shows that education is statistically relevant in determining the joint probability of an individual participating in the labour market as an informal worker. These findings indicate that compared with workers with no education, workers who are educated are incrementally less likely to undertake informal employment. Specifically, the findings indicate that compared with having no education, possessing primary education decreases the likelihood of undertaking informal employment by 6.1 per cent. Meanwhile, workers with secondary and tertiary education are less likely to undertake informal employment by 18 per cent and 33.4 per cent respectively, compared with those with no education. The economic explanation to which these findings can be attributed is that the formal sector requires highly educated and skilled human resources, and hence, the more educated an individual is, the higher their likelihood of working in the formal sector. Conversely, as the informal sector assumes the status of employer of last resort, it absorbs the less-educated individuals who have been rationed out of the formal labour market. These results corroborate those of Garcia-Andres et al. (2019) in Mexico and Malta et al. (2019) in Senegal.

The results also indicate that workers residing in urban areas are less likely to participate in the labour market and engage in informal employment compared with their rural counterparts. Specifically, urban residents are 5 per cent less likely to make the joint decision to participate in the labour market and undertake informal employment. The low likelihood of urban residents participating in informal employment is expected to be due to the observation that most of the formal jobs are found in urban areas. The findings further depict that age relates negatively with the probability of participating in the labour market as an informal worker and positively with the probability of participating in the labour market as a formal worker. These findings tie in with the intuition that younger individuals can more easily secure informal jobs at the beginning but, as they gain experience, network in the labour market, and become more skilled in information and communication technologies, they can more easily secure formal jobs as they get older.

The findings displayed in Column 3 of Table 3 further show that a unit increase in the neighbourhood number of children younger than six increases an individual's chances of working by undertaking informal employment by 1.9 per cent. This is assumed to be based on the likelihood that individuals may prefer informal employment based on its flexible nature, which provides them with more time to take care of their children (or for home production activities). These results largely corroborate those obtained by Nwaka et al. (2016) in Nigeria which indicate that having dependent children in the household reduces the likelihood of participating in formal paid employment.

5.2 Determinants of earnings in the informal labour market: mean and unconditional quantile regressions

Table 4 displays the estimates for the mean regression and the RIF regressions. The main objective of this section is to assess the correlates of earnings in the informal labour market of Cameroon. In particular, Column 1 shows the mean regression estimates, Column 2 the estimates of the Heckman selection correction model. The ordinary least squares (OLS) results reveal preliminary findings that female informal workers are likely to earn in the order of 24.4 per cent less than their male counterparts. After accounting for sample selectivity bias, female informal sector workers suffer an earnings penalty in the order of 11.8 percentage points compared with their male counterparts.

Columns 3, 4, and 5 display the RIF regression estimates. It should be noted that the Heckman selectivity correction model has not been extended in the RIF regression because the normality assumption is violated. The RIF regression results show that across the different unconditional quantiles considered in the analysis, women are likely to suffer an earnings penalty. An essential

inference is that the earnings penalty decreases as we move from the lower tail to the upper tail of the unconditional distribution. This is a preliminary revelation of the sticky floor phenomenon in the Cameroon informal labour market.

The mean regression results indicate that education has an incremental effect on earnings in the informal labour market. Specifically, compared with informal labour market workers with no education, informal labour workers with primary education are likely to earn 0.103 log points more; meanwhile, informal labour market workers with secondary and tertiary education are expected to earn 0.499 and 0.962 log points more than those with no education, respectively. The unconditional quantile regression confirms that workers with at least some level education enjoy an earnings advantage over their counterparts with no education across the wage distribution, which is incrementally greater at the 50th and 90th percentiles. However, at the lower tail of the distribution (10th percentile), only workers with a tertiary level of education are expected to enjoy an earnings premium over their uneducated counterparts. These findings are qualitatively similar to those obtained in the Ghanaian informal labour market by Agyire-Tettey et al. (2017).

Table 4: Determinants of earnings in the informal labour market

Variables	Mean regression				RIF regression
	(1) OLS	(2) Heckman	(3) 10th percentile	(4) 50th percentile	(5) 90th percentile
Female	-0.244*** (0.0301)	-0.118*** (0.0337)	-0.387*** (0.101)	-0.237*** (0.0291)	-0.154*** (0.0382)
Primary	0.159*** (0.0463)	0.103** (0.0493)	0.0908 (0.192)	0.194*** (0.0427)	0.1000** (0.0509)
Secondary	0.412*** (0.0466)	0.499*** (0.0471)	0.218 (0.189)	0.466*** (0.0468)	0.386*** (0.0605)
Tertiary	1.006*** (0.0787)	0.962*** (0.0723)	0.518** (0.201)	1.027*** (0.0643)	1.644*** (0.152)
Experience	0.00416 (0.00530)	-0.00917* (0.00527)	-0.0764*** (0.0193)	0.0182*** (0.00489)	0.0254*** (0.00631)
Experience squared x10 ⁻²	-0.0367** (0.0156)	-0.00057 (0.0161)	0.0674 (0.0626)	-0.0540*** (0.0140)	-0.0641*** (0.0166)
Urban	0.647*** (0.0306)	0.621*** (0.0296)	1.910*** (0.101)	0.418*** (0.0366)	0.204*** (0.0389)
Married	0.00893 (0.0283)	-0.226*** (0.0484)	-0.406*** (0.0983)	0.0619** (0.0298)	0.231*** (0.0506)
IMR		-2.429*** (0.335)			
Constant	5.841*** (0.0523)	6.499*** (0.108)	4.025*** (0.204)	6.010*** (0.0490)	7.280*** (0.0697)
Observations	8,728	8,728	8,728	8,728	8,728
R-squared	0.120	0.125	0.073	0.079	0.038

Note: bootstrapped standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' computation using Stata 14, based on NIS (2010).

Regarding experience, which enters the wage-generating function in its quadratic form, the mean regression results show that it has an inverse linear relationship with earnings in the informal labour market. These results are contrary to those obtained by Aderemi and Alley (2019) in the public sector, where experience rather registered a diminishing effect. The RIF regression results reveal

that at the 10th percentile, informal experience exhibits an inverse linear relationship with earnings. The results further reveal that at the median (50th percentile) and at the upper tail of the distribution (90th percentile), experience displays concave quadratic behaviour—thereby revealing a diminishing effect on earnings in the informal labour market. In particular, the earnings of informal labour market workers at the 10th and 50th percentiles increase with experience up to a threshold, beyond which they start falling.

Results also show that informal workers residing in urban areas are expected to have higher earnings than their counterparts residing in rural areas. Both the mean and the RIF regressions provide significant evidence to support this claim. Indeed, based on the mean regression results, informal urban workers are likely to enjoy an earnings premium of 0.621 log points over their informal rural counterparts. Table 4 further reveals that married informal workers are likely to suffer an earnings penalty over their unmarried counterparts at the mean and at the 10th percentile of the earnings distribution. At the median and at the upper tail of the earnings distribution, married workers rather enjoy an earnings premium compared with their unmarried counterparts. The premium is found to be higher at the upper tail of the distribution. The IMR, which captures the unobserved factors that account for selection into the labour market and informal employment, indicates a negative relationship with earnings in the informal labour market at the mean. This is an indication that workers in the informal labour market are expected to earn less than an individual randomly selected from the working-age group in the population.

5.3 The RIF-Oaxaca-Ransom-based decomposition results

This section provides the gender earnings decomposition results using the 2010 CEISS. In particular, we present the summary and the detailed decomposition of the gender earnings gap for the informal labour market as a whole, and across the informal labour market segments (self-employed and wage earners).

Gender earnings gap decomposition among informal labour market workers

Table 5 contains the key components of the mean and the RIF-based decomposition results for the informal labour market as a whole. Columns 1 and 2 of Table 5 specifically display the mean decomposition results. These results indicate that the unadjusted gender earnings gap stood at 0.300 log points, while the gender earnings gap adjusted for selectivity bias is 0.361 log points. This is an indication that in the informal labour market, male workers enjoy an earnings premium over their female counterparts in the order of 0.361 log points.

Results further reveal that the endowment effects marginally contribute to fuelling the adjusted gender earnings gap among informal labour market participants by 0.0905 log points. Returns to endowments, which capture labour market discrimination, are found to be the largest contributing factor in augmenting the gender earnings gap by 0.224 log points. Employing the Oaxaca-Ransom technique (Oaxaca and Ransom 1994), the returns to endowments component is further split into male advantage and female disadvantage. The findings in Column 2 of Table 5 show that on average, relative to the reference structure, informal female participants are under-remunerated. In particular, of the informal labour market discrimination of 0.224 log points, the female disadvantage is 0.247 log points, revealing that informal female workers are highly under-remunerated with respect to the benchmark structure by 24.7 per cent.

Table 5: Main components of the gender earnings gap in the Informal labour market

Components	Mean decomposition		RIF decomposition		
	Unadjusted	Adjusted	10th percentile	50th percentile	90th percentile
Endowments	0.0617 (0.0112)	0.0905 (0.0133)	0.130 (0.0349)	0.0504 (0.009)	0.0408 (0.011)
Returns to endowments	0.239 (0.0280)	0.224 (0.148)	0.379 (0.0960)	0.2320 (0.0317)	0.151 (0.042)
Male advantage	0.1080 (0.0125)	-0.0235 (0.0662)	0.171 (0.0479)	0.105 (0.0139)	0.0684 (0.020)
Female disadvantage	0.131 (0.0152)	0.247 (0.0881)	0.207 (0.0584)	0.127 (0.0173)	0.0828 (0.024)
Gender earnings-gap	0.300 (0.0305)	0.314 (0.134)	0.509 (0.108)	0.283 (0.0315)	0.192 (0.047)

Note: bootstrapped standard errors in parentheses.

Source: authors' computation using Stata 14, based on NIS (2010).

Columns 3, 4, and 5 of Table 5 present the gender earnings gap decomposition across the earnings distribution using the RIF decomposition. The results indicate that women suffer an earnings penalty at the 10th, 50th, and 90th percentiles of the unconditional earnings distribution. Specifically, the raw (unadjusted) gender earnings gap is in the order of 0.509, 0.283, and 0.192 log points for the 10th, 50th, and 90th percentiles, respectively. An observation that can be drawn from these raw gender earnings gaps across the unconditional earnings distribution is that towards the bottom of the distribution (10th percentile), the raw gender earnings gap is wider. This is evidence of the presence of the sticky floor phenomenon in the informal labour market in Cameroon. This finding corroborates those obtained in other less-developed countries comparable to Cameroon. Sakellariou (2004) and Gunewardena et al. (2008) obtained qualitatively similar results using data on the Philippines and Sri Lanka, respectively. These results are contrary to those obtained in several developed countries, where it is rather the glass ceiling phenomenon that is predominant. According Arulampalam et al. (2007), the glass ceiling phenomenon in developed countries has been due to the implementation of gender-specific public policies such as those on the availability of childcare, paid leave, minimum wage setting, and collective bargaining, while the poor implementation of such policies in developing countries accounts for the widening of the gender earnings- gap at the lower tail of the earnings distribution.

The unconditional quantile decomposition results further indicate that the endowments component contributes to fuelling the gender earnings gap across the unconditional earnings distribution. However, we observe that the contribution of the endowment effect to the overall gender earnings gap decreases as we move from the lower to the upper tail of the earnings distribution. Regarding the relative contribution of the returns to endowments component to the overall gender earnings gap, we find that it was the main contributing factor in fuelling the gender earnings gap across the different quantiles considered in the analysis. Another inference is that the returns to endowments decrease in magnitude as we move from the lower to the upper tail of the distribution. This is an indication that informal female workers are being discriminated against across the unconditional earnings distribution.

Table 6 displays the detailed decomposition of the gender earnings gap in the informal labour market in Cameroon, providing information on the relative contributions of the different variables to the overall gender earnings gap. The mean detailed decomposition results reveal that in terms of endowments, the variables of education, urban residency, marriage, and experience have net augmenting effects on the gender earning gap.

Table 6: Detailed Neuman-Oaxaca-Ransom-RIF decomposition among informal employees

Variables	Mean	10th percentile	50th percentiles	90th percentiles
<i>Endowments effect attributable to:</i>				
Education	0.0436 (0.0065)	0.0226 (0.0089)	0.0421 (0.0061)	0.0554 (0.0091)
Experience	0.0095 (0.0033)	0.0371 (0.0158)	0.00603 (0.0025)	0.00373 (0.0032)
Urban	0.00850 (0.0062)	0.0264 (0.0215)	0.00572 (0.0042)	0.00279 (0.0020)
Married	0.0290 (0.0047)	0.0444 (0.0120)	-0.00347 (0.0028)	-0.0211 (0.0051)
Total endowment effect	0.0905 (0.0133)	0.1300 (0.0349)	0.0504 (0.0092)	0.0408 (0.0105)
Selection term	0.1250 (0.0139)			
<i>Male advantage attributable to:</i>				
Education	0.0637 (0.0333)	0.357 (0.134)	-0.0415 (0.0290)	-0.00765 (0.0365)
Experience	-0.0181 (0.0237)	-0.149 (0.0913)	-0.0390 (0.0222)	0.0170 (0.0334)
Urban	0.0247 (0.0160)	0.0133 (0.0569)	0.0255 (0.0160)	0.00024 (0.0246)
Married	0.0709 (0.0340)	0.133 (0.0527)	0.0599 (0.0204)	0.0285 (0.0261)
Constant term	-0.165 (0.116)	-0.184 (0.200)	0.100 (0.0481)	0.0303 (0.0613)
Total male advantage	-0.0235 (0.0662)	0.171 (0.0479)	0.105 (0.0139)	0.0684 (0.0199)
Selectivity term	0.0618 (0.0762)			
<i>Female disadvantage attributable to:</i>				
Education	0.0743 (0.0336)	0.382 (0.132)	-0.0155 (0.0301)	0.0119 (0.0374)
Experience	-0.0408 (0.0264)	-0.125 (0.0951)	-0.0128 (0.0249)	0.0392 (0.0379)
Urban	0.0179 (0.0203)	-0.0002 (0.0691)	0.0248 (0.0185)	-0.0031 (0.0298)
Married	-0.00268 (0.0316)	0.0941 (0.0743)	0.0394 (0.0299)	0.0293 (0.0384)
Constant term	0.198 (0.137)	-0.143 (0.212)	0.0913 (0.0608)	0.00554 (0.0769)
Total female advantage	0.247 (0.0881)	0.207 (0.0584)	0.127 (0.0173)	0.0828 (0.0240)
Selectivity term	-0.2010 (0.0837)			

Note: bootstrapped standard errors in parentheses.

Source: authors' construction using Stata 14, based on NIS (2010).

The findings also indicate that the IMR, which captures the unobserved factors regarding selection into informal employment, contributes to fuelling the gender earnings gap in terms of endowments

at the mean. This is a revelation that men are more endowed with these unobserved factors than women in the Cameroon informal labour market. Gauging the contribution of the different variables in terms of endowments across the unconditional earnings distribution, we observe that the variables of education, experience, and urban residency contribute to fuelling the overall gender earnings gap at all the quantiles considered, while the variable of marriage is found to have an expansionary effect on the gender earnings gap at the 10th percentile, but to narrow it at the 50th and 90th percentiles.

Regarding the effects of the returns to education on the gender earnings gap, the results reveal that educated male workers are overpaid relative to the reference structure at the mean and at the lower tail of the earnings distribution. However, at the middle and the upper tail of the distribution, the results reveal that educated women are marginally over-remunerated with respect to the reference structure, while men with same level of education as women are remunerated marginally below the benchmark structure. Though women are over-remunerated and men under-remunerated at these quantiles, the returns to education are not sufficient to cancel out the gender earnings gap at these points of the distribution.

The findings provide evidence that the returns to experience are consistent in reducing the gender earnings gap at the mean, 10th percentile, and 50th percentile. This finding reveals that at these segments of the distribution, women with same number of years of experience as men in the informal setting are likely to be overpaid relative to the reference structure, while men are underpaid with respect to the reference structure. At the upper tail of the earnings distribution, we observe that returns to experience have augmenting effects on the gender earnings gap.

The findings equally reveal that women residing in urban areas are expected to earn less than the reference earnings, while men residing in urban areas are likely to be overpaid compared with the benchmark earnings structure at the mean and the 50th percentile. Meanwhile, at the upper tail of the distribution, informal urban male workers are marginally underpaid relative to the reference structure. The returns to unobservable variables determining selection into the labour market captured in the IMR have a net narrowing effect on the gender earnings gap in the informal labour market at the mean of the earnings distribution.

Main components of the gender earnings gap among the informal self-employed

Table 7 shows the mean and quantile decomposition of the gender earnings gap among informal self-employed workers. The adjusted earnings gap shows that male workers have an earnings advantage over their female counterparts at the mean. The RIF decomposition of the gender earnings gap shows that the overall gender earnings gap is wider at the middle of the distribution compared with the tails of the distribution. This is evidence that among informal self-employed workers, neither the sticky floor phenomenon nor the glass ceiling phenomenon is compelling. Another important inference is the low gender earnings gap at the lower tail of the distribution among informal self-employed workers. This is supported by the idea that a great proportion of women are engaged in low-paying, low-productivity jobs.

The results adjusted for selectivity bias reveal that the endowments effect contributes to marginally widening the gender earnings gap at the mean, while across the unconditional earnings distribution the RIF decomposition results indicate that the endowments effect has a widening effect on the gender earnings-gap at the middle and upper tails of the distribution. At the lower tail of the distribution, the endowments effect instead helps to narrow the gender earnings gap. The findings also indicate that the adjusted discrimination effect has a large widening effect on the gender earnings gap among informal self-employed workers at the mean. An essential inference is that the

returns to endowments effect greatly accounts for the gender earnings-gap across the unconditional earnings distribution.

Table 7: Summary of Oaxaca-RIF decomposition results among informal self-employed workers

Components	Mean decomposition		RIF decomposition		
	Unadjusted	Adjusted	10th percentile	50th percentile	90th percentile
Endowments	0.0210 (0.014)	0.0314 (0.0122)	-0.0361 (0.0400)	0.0308 (0.011)	0.0381 (0.013)
Returns to endowments	0.244 (0.036)	0.350 (0.135)	0.203 (0.124)	0.284 (0.035)	0.225 (0.043)
Male advantage	0.125 (0.018)	0.0105 (0.081)	0.104 (0.0615)	0.145 (0.016)	0.115 (0.023)
Female disadvantage	0.119 (0.017)	0.339 (0.083)	0.0990 (0.0588)	0.139 (0.016)	0.110 (0.022)
Gender earnings-gap	0.265 (0.039)	0.381 (0.142)	0.166 (0.122)	0.315 (0.034)	0.263 (0.045)

Note: bootstrapped standard errors in parentheses.

Source: authors' construction using Stata 14, based on NIS (2010).

Table 8 displays the detailed decomposition of the gender earnings gap among the informal self-employed. In terms of endowments, education has a widening effect on the gender earnings gap at the mean and across the earnings distribution. The results show that the endowments effect attributed to informal labour market experience has a net mitigating role on the gender earnings gap at the mean and at the lower tail of the distribution, while at the middle and upper tail of the distribution informal labour market experience rather has an augmenting effect on the gender earnings gap. The IMR, which captures informal employment selection bias, contributes to fuelling the gender earnings gap in terms of endowments at the mean.

In addition, the findings depict that the returns to education unambiguously contribute to widening the gender earnings gap at the mean and at the lower tail of the distribution in terms of male advantage and female disadvantage. At the middle and upper tails of the distribution, returns to education are solidly reducing the gender earnings gap in terms of male advantage and female disadvantage. The results show that returns to experience are consistent in mitigating the gender earnings gap at the mean, 10th percentile, and 50th percentile. At the upper tail of the distribution, returns to experience have a net augmenting effect on the gender earnings gap. Among informal self-employed workers, the returns of the IMRs which reflect unobserved factors have mitigating effects on the gender earnings gap at the mean. This is an indication that the returns to these unobserved factors are in favour of informal self-employed women.

Table 8: Detailed Oaxaca-Ransom-Neuman-RIF decomposition among informal self-employed workers

VARIABLES	Mean	10th percentile	50th percentiles	90th percentiles
<i>Endowments effect attributable to:</i>				
Education	0.0399 (0.00597)	0.0248 (0.0112)	0.0360 (0.0057)	0.0523 (0.0095)
Experience	-0.00363 (0.00494)	-0.0206 (0.0183)	0.00522 (0.0037)	0.0093 (0.0041)
Urban	-0.027 (0.00747)	-0.0790 (0.0271)	-0.0178 (0.0058)	-0.0115 (0.0049)
Married	0.0219 (0.0042)	0.0387 (0.0130)	0.00741 (0.00337)	-0.0120 (0.0045)
Total endowment effect	0.0314 (0.0122)	-0.0361 (0.0400)	0.0308 (0.0107)	0.0381 (0.0134)
Selection term	0.0944 (0.0160)			
<i>Male advantage attributable to:</i>				
Education	0.0659 (0.0412)	0.449 (0.171)	-0.0616 (0.0435)	-0.0287 (0.0400)
Experience	-0.0598 (0.0360)	-0.170 (0.121)	-0.0996 (0.0332)	-0.0213 (0.0418)
Urban	0.0540 (0.0165)	0.0767 (0.0564)	0.0554 (0.0144)	0.0342 (0.0270)
Married	0.116 (0.0491)	0.175 (0.101)	0.0735 (0.0239)	0.0713 (0.0361)
Constant term	-0.165 (0.132)	-0.428 (0.244)	0.177 (0.0645)	0.0596 (0.0737)
Total male advantage	0.0105 (0.0807)	0.104 (0.0615)	0.145 (0.0157)	0.115 (0.0230)
Selectivity term	0.0615 (0.0877)			
<i>Female disadvantage attributable to:</i>				
Education	0.0640 (0.0340)	0.382 (0.141)	-0.0243 (0.0351)	-0.00119 (0.0325)
Experience	-0.0632 (0.0293)	-0.0899 (0.0961)	-0.0247 (0.0264)	0.0291 (0.0332)
Urban	0.0312 (0.0178)	0.0527 (0.0615)	0.0379 (0.0146)	0.0195 (0.0261)
Married	-0.0153 (0.0414)	0.127 (0.117)	0.0121 (0.0279)	0.0415 (0.0407)
Constant term	0.323 (0.135)	-0.372 (0.227)	0.138 (0.0593)	0.0212 (0.0730)
Total female advantage	0.339 (0.0827)	0.0990 (0.0588)	0.139 (0.0157)	0.110 (0.0222)
Selectivity term	-0.271 (0.0772)			

Note: bootstrapped standard errors in parentheses.

Source: authors' construction using Stata 14, based on NIS (2010).

Gender-based wage decomposition among informal wage earners

The main components of the gender wage gap among informal wage earners are presented in Table 9. The results on the raw gender wage gap show that informal male wage earners enjoy a wage advantage over their female counterparts at the mean, and consistently at the lower tail of the distribution. These findings provide us with evidence of a sticky floor effect (a larger gender wage gap at the bottom of the distribution). At the median of the distribution, the gender wage gap is virtually zero.

Table 9: Main components of the gender earnings gap among informal wage earners

Components	Mean decomposition			RIF decomposition	
	Unadjusted	Adjusted	10th percentile	50th percentile	90th percentile
Endowments	-0.069 (0.020)	-0.118 (0.0217)	-0.0349 (0.0238)	-0.0666 (0.024)	-0.118 (0.035)
Returns to endowments	0.150 (0.036)	-0.199 (0.193)	0.202 (0.0552)	0.0780 (0.063)	0.265 (.0783)
Male advantage	0.0381 (0.009)	-0.0696 (0.051)	0.0510 (0.0119)	0.0197 (0.015)	0.0669 (0.018)
Female disadvantage	0.112 (0.025)	-0.129 (0.147)	0.151 (0.037)	0.0583 (0.044)	0.198 (0.054)
Gender earnings gap	0.0815 (0.041)	-0.316 (0.180)	0.167 (0.049)	0.0114 (0.068)	0.147 (0.075)

Note: bootstrapped standard errors in parentheses.

Source: authors' construction using Stata 14, based on NIS (2010).

The results indicate that the adjusted endowments effect has a reducing effect on the gender wage gap at the mean. Across the unconditional wage distribution, we observe that the endowments effect has a mitigating effect on the gender wage-gap. Also, the endowments effect increases in magnitude as we move from the lower to the upper tail of the distribution. The results reveal that the adjusted returns to endowments have a reducing effect on the gender wage-gap at the mean. The finding that both the adjusted endowments and the adjusted returns to endowments have a reducing effect on the gender wage gap implies that the overall raw gender wage gap of 0.0815 log points (unadjusted) is overwhelmingly accounted for by unobserved factors captured in the selectivity term. Another finding obtained from the RIF decomposition is that the returns to endowments have a widening effect on the gender wage gap across the unconditional wage distribution. The magnitude of the effect is found to be higher at the tails of the distribution compared with the middle of the distribution.

Table 10 presents the detailed decomposition of the gender wage differentials among informal wage earners. In particular, we present the contributions of the different variables to the gender wage differentials in terms of endowments, male advantage, and female advantage. In terms of endowments, education and urban residency contribute to reducing the gender wage gap at the mean and across the unconditional wage distribution, while informal labour market experience contributes to widening the gender wage gap at the mean and across the unconditional wage distribution. Marriage has a reducing effect on the gender wage gap at the mean and at the lower tail of the distribution, while at the median and upper tail of the distribution, marriage has a widening effect on the gender wage gap in terms of endowments.

Table 9: Detailed Neuman-Oaxaca-Ransom-RIF decomposition among informal wage earners

Variables	Mean	10th percentile	50th percentiles	90th percentiles
<i>Endowments effect attributable to:</i>				
Education	-0.119 (0.0175)	-0.0052 (0.0156)	-0.125 (0.0191)	-0.145 (0.0338)
Experience	0.0247 (0.0078)	0.00071 (0.0111)	0.0531 (0.0148)	0.0194 (0.0116)
Urban	-0.016 (0.0060)	-0.0271 (0.0145)	-0.0139 (0.0070)	-0.00632 (0.00747)
Married	-0.0075 (0.0048)	-0.00325 (0.00616)	0.0193 (0.0082)	0.0135 (0.00675)
Total endowment effect	-0.118 (0.0217)	-0.0349 (0.0238)	-0.0666 (0.0237)	-0.118 (0.0346)
Selection term	0.1830 (0.0263)			
<i>Male advantage attributable to:</i>				
Education	-0.0161 (0.0176)	0.0220 (0.0280)	-0.0715 (0.0334)	0.0427 (0.0243)
Experience	-0.0185 (0.0119)	-0.0187 (0.0201)	-0.0557 (0.0210)	-0.0148 (0.0263)
Urban	0.0157 (0.0137)	0.0139 (0.0334)	0.0177 (0.0283)	-0.0142 (0.0274)
Married	0.0159 (0.0189)	-0.0199 (0.0140)	0.00495 (0.0186)	0.00552 (0.0211)
Constant term	-0.0665 (0.0755)	0.0537 (0.0533)	0.124 (0.0443)	0.0477 (0.0395)
Total male advantage	-0.0696 (0.0508)	0.0510 (0.0119)	0.0197 (0.0147)	0.0669 (0.0182)
Selectivity term	0.0737 (0.0587)			
<i>Female disadvantage attributable to:</i>				
Education	-0.0493 (0.151)	0.00475 (0.187)	-0.535 (0.232)	-0.0066 (0.142)
Experience	-0.0491 (0.0318)	-0.0338 (0.0505)	-0.122 (0.0489)	-0.0013 (0.0715)
Urban	0.0370 (0.0685)	-0.0169 (0.166)	0.0151 (0.137)	-0.150 (0.139)
Married	0.00557 (0.0301)	-0.0469 (0.0376)	0.000547 (0.0428)	0.0286 (0.0533)
Constant term	-0.0731 (0.222)	0.243 (0.271)	0.700 (0.290)	0.327 (0.219)
Total female advantage	-0.129 (0.147)	0.151 (0.0369)	0.0583 (0.0438)	0.198 (0.0538)
Selectivity term	0.141 (0.153)			

Note: bootstrapped standard errors in parentheses.

Source: authors' construction using Stata 14, based on NIS (2010).

The findings reveal that the returns to education have net mitigating effects on the gender wage gap among informal wage earners at the mean and at the middle of the distribution, while at the

lower and upper tails the returns to education rather have a net widening effect on the gender wage gap among informal wage earners. Similarly, the empirical findings show that returns to experience are consistent in reducing the gender wage gap at the mean and across the unconditional wage distribution among informal wage earners. Among informal wage earners, returns to the unobserved variables determining informal labour market employment denoted by the IMR have a widening effect on the gender wage gap at the mean.

6 Concluding remarks and policy implications

This paper scrutinized the presence or absence of the sticky floor and glass ceiling phenomena in the informal labour market in Cameroon. Specifically, it (1) assessed the extent of gender disparity in informal employment in Cameroon, (2) investigated the extent of the gender earnings gap at the mean and across the unconditional earnings distribution in the informal labour market in Cameroon, and (3) evaluated the relative contributions of different factors in accounting for gender earnings disparities at the mean and across percentiles.

To achieve our objectives, we employed a set of micro-econometric and decomposition techniques. Particularly, use was made of the bivariate probit model, multivariate probit, the unconditional quantile (RIF) regression method, and the RIF-Oaxaca-Ransom decomposition framework. The decomposition results provided evidence of the existence of a sticky floor phenomenon in the informal labour market in Cameroon as a whole. Extending the decomposition across the informal labour market segments, we found that among informal self-employed workers, there was no compelling evidence of a sticky floor or a glass ceiling effect. Meanwhile, among informal wage earners the decomposition results indicated evidence of the sticky floor phenomenon.

Our findings also revealed that returns to informal labour market experience are solidly mitigating the gender earnings gap at the mean and at the 10th and 50th percentiles of the unconditional earnings distribution. Implementing the decomposition across the informal labour market segments, we find that among the informal self-employed, informal labour market discrimination is in favour of male workers at the mean and across percentiles, while among informal wage earners, discrimination is in favour of female workers at the mean. In addition, female workers have an unambiguous human-capital-based advantage over their male counterparts at the mean and at the 10th and 50th percentiles of the distribution. These findings have public policy implications for a model for the human capital development of female children that factors in the dynamics of labour market vocational training.

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Appendix

Table A1: Multivariate probit estimates (reduced form)

Variables	(1) Participation	(2) Informal	(3) Self-employment
Female	-0.190*** (0.0523)	0.380*** (0.0502)	0.708*** (0.0391)
Primary	0.0986 (0.0824)	-0.230** (0.115)	-0.297*** (0.0746)
Secondary	-0.120 (0.0846)	-0.949*** (0.114)	-0.616*** (0.0741)
Higher	0.0250 (0.113)	-2.056*** (0.121)	-1.522*** (0.0962)
Urban	0.00776 (0.0584)	-0.373*** (0.0560)	-0.715*** (0.0443)
Age	0.0771*** (0.0123)	-0.122*** (0.0138)	-0.104*** (0.0106)
Age squared	-0.000892*** (0.000161)	0.00134*** (0.000172)	0.00134*** (0.000140)
Married	0.231*** (0.0582)	0.0489 (0.0596)	0.258*** (0.0496)
Children < 6 years (nscm)	0.0687 (0.0440)	0.1000* (0.0574)	0.155*** (0.0374)
Constant	-0.0212 (0.226)	4.378*** (0.291)	2.722*** (0.205)
atrho	-0.0887*** (0.0337)	-0.135*** (0.0320)	0.863*** (0.0340)
Observations	12,959	12,959	12,959

Note: robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1.

Source: authors' computation using Stata 14, based on NIS (CEISS 2010).