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Investigating Gender Wage Gap in Employment: A Microeconometric Type-Analysis for Cameroon

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Abstract

Using the 2007 Cameroon Household Consumption Survey, we study gender wage disparity in pay-employment and self-employment. The main question considered in this paper is to know why women pay-employment and self-employment wages are relatively low. More generally, what is the underlying factors generating and explained wage gap between men and women householder in employment? To answer to our question, firstly, we use the Oaxaca-Blinder (OB) Decomposition to explain wage gap. Afterward, we perform Quantile Regression Decomposition using Machado and Mata (MM) method to see at different level of wage distribution the gap behaviour. Our main findings indicate that in the both methods, the wage gap is due to unexplained component in self-employment and to explained component in pay-employment with particularly strong effects at the extreme of wage distribution. In fine, governments should promote further development of work/life balance policies and other public employment supports to facilitate female labour force participation. Besides, future policy development should focus on remaining gender gaps in employment outcomes, including persistent occupational and sectorial concentration.

JEL codes: J31, J71

Keywords: Gender; Pay-employment; Self-employment; Wage gap; Quantile regression; Cameroon.

1. Introduction

Female employment participation has generally increased, and gender wage gaps in labour force participation have narrowed, but in Africa in general and Cameroon in particular gender wage gaps remain considerable. The wage gap refers to the differences between the wages earned by two groups of individual. It is well establish that in pay employment, women earn less than men. This differential of wage in pay-employment was the subject of several studies (Xin, 1997; Siphambe and Malebogo, 2001; Temesgen, 2006) and raised some questions on the determinants of this wage gap (e.g. see Blau and Kahn, 2000). The first works showed that the differences of wage in pay employment can largely due to the difference of endowment in human capital (Becker, 1975), more important at the men compared to the women. Beside, Juhn, Murphy, and Pierce (1991 and 1993), advance the argument that this rising wage gap is due to an increase in the return to skills.

Thereafter, explanations based structural inequalities such as segregation (for example segregation in activity sector and access to training) have been advanced (Groshen, 1991; Breen and Garcia-Penalosa, 2002), but unfortunately, even though its differences count, they don't succeed in improving our understanding on the wage gap in pay-employment. To this effect, a substantial part of the wage gap between the sexes in the pay-employment cannot be explained, and suppose to reflect the discriminations of which is victim the women in pay employment.

An alternative to escape the discriminations of which women are victim in pay-employment is to be self-employed. Hence, if discriminations played a major role in the explanation of the wage gap in pay-employment, the gender gap in self-employment earning could be expected to be significantly lower than the gender wage gap in paid employment (Moore 1983). Some empirical evidence, however, suggesting the opposite and argue that gender wage gaps seem to be higher in self-employment than in paid employment (Eastough and Miller, 2004; Alvarez, Gradin and Otero, 2009).

Several studies tempted to explore the reasons of this wage gap in self-employment (Aronson, 1991; Agesa, 1999; Appleton, Hoddinott, and Krishnan, 1999; Hamilton, 2000; Kabubo-Mariara, 2003; Lechmann and Schnabel, 2012). The first arguments put forward the experience. Has this effect, female self-employed have generally few years of experience than males (Aronson, 1991; Lee and Rendall, 2001). Also, female self-employees tend to have more diverse backgrounds than their male counterparts: women are more likely than men to set up a business without having a track record of achievement, vocational training, or

experience (Watkins and Watkins, 1984). Second, women have greater opportunities or preferences for potentially less remunerative home working. Third, females tend to operate a smaller scale of business, utilizing less capital and finance from banks and other lenders than males do (Aronson, 1991). This might reflect a preference for smaller enterprises since these minimize the disruptions to a family that could result from operating a larger enterprise. Of course, a lower capital base can be expected to reduce future entrepreneurial incomes and increase the probability of business failure.

When we comes to Cameroon, while considering the factors that the theory puts forward as explain the wage gap, he come out that at the level of education, the women/men ratio in primary education is estimated at 0.89 in 2007 against 0.83in 2001: a slight improvement of 6 decline of 7 points in secondary education where it dropped from 0.93 to 0.86. As to health, the third demographic and health survey carried out in 2004 shows that the prevalence of HIV/AIDS on that date was 5.5 % for women and 4.1 %for men aged between 15 and 49.

While, on average, women participate less in the labour market than men, they are also less well paid than men and are employed in less secure jobs, with very few prospect of career advancement and fewer opportunities of holding managerial position. Ewoudou and Vencantachellum (2006) showed that men received monthly income higher than that of women: an average of 69300FCFA per month for the former against only 37700 FCFA for the latter. Across various activity sectors, this wage differential in favour of men is about 13000 in the informal sector and more than 20000 FCFA in the formal sector. These differences remain even when the level of education is taken into account. In this connection, the monthly wage gap between men and women is 20000 FCFA for those with just primary level of education, 15000 FCFA for those secondary level of education and 3500 for those with the tertiary level of education.

Concerning empirical evidence, it is especially rare. A study of Nzeuyang (2012) which uses 2010 Employment and Informal Sector Survey in Cameroon (EISSC) to investigate wage differentials in urban labor market in order to identify the potential existence of discrimination on that market. For that she use an endogenous switching model corrected for the working decision selection process and she run an Oaxaca-Blinder decomposition to identify the two parts of the differentials: the first explained by the difference in characteristics and the second unexplained and attributed to discrimination. Her results indicate that there is a significant differential between male workers salaries and female ones in the two sectors and that the

discrimination accounts for 78% of the differential in the formal sector and 34% in the informal sector.

Our study attempts to fill an empirical assessment by identifying and decomposing the causes of pay-employment and self-employment gender wage gap in Cameroon, using the gender wage gap in paid-employment as a reference. Utilizing Cameroonian cross-sectional dataset with continuous information on wage, we analyse that factors that explained gender wage gap between self-employment and paid employment among men and for women. Our dataset provides, among others, detailed information on human capital endowment of individuals, on personal characteristics including job characteristics such as working hours, professional field (formal and informal), and on firm size.

To assess and explain the earning difference in Cameroonian labour market, we consider microeconometric approaches based on the standard Oaxaca-Blinder (1973) decomposition and the quantile regression using Machado-Mata (2005) and Melly (2006) decompositions.

Accordingly, this paper is structured as follows: Section 2 outlines econometric methodology and data. Section 3 presents our empirical results. Finally, Section 4 provides conclusion and policy implications.

2. Econometric Methodology and Data

2.1 Econometric Methodology

In this sub-section, we present the decomposition technique and quantile regression used in this paper.

Oaxaca-Blinder (hereafter OB) decomposition technique is the popular approach used to explain wage gaps observed on the labour market between two groups of population (e.g. men and women, black and white). Leaving from the idea that the characteristics of the individuals can be differently valorised on the labour market, Oaxaca (1973) and Blinder (1973), suggest that the differences of wage between two groups can be disintegrated in two elements: (i) the component of the features that is the part of the wage gap that is caused by the differences in qualification. (ii) The component of the coefficient that is the part of the wage gap that is caused by the discrimination.

The method consists in a first time to estimate the equations of wage for each group. The determinant of the wage of a group being her owns characteristics and the coefficients estimated of the characteristics represents the contribution or the output of this last in the determination of the wage of the group. Then the gap between the middle wage of the two

groups maybe decomposed in a component explained by the difference of the characteristics (the part of the difference between the gains due to the characteristics of the two groups) and a component explained by the difference of the output of the characteristics (the part of the difference between the gain due to the outputs).

OB decomposition permits to identify the reasons of wage gap, firstly between groups and secondly, to quantify the contributions of each group in differences in the characteristics as the level of education, the work experience etc., and the contribution of the difference of output of these characteristics.

The OB decomposition method is used to check difference in characteristics between men (*m*) and women (*w*) separately as follow:

$$\begin{cases} W_{ij}^{m} = X_{ij}^{m}\beta^{m} + \varepsilon_{ij}^{m} \\ W_{ij}^{w} = X_{ij}^{w}\beta^{w} + \varepsilon_{ij}^{w} \end{cases} \quad (1)$$

More formally, following Mincer (1974), a wage equation that relates to the logarithm of earnings as a function of individual characteristics is specified as:

$$\overline{W}^{m} - \overline{W}^{w} = \underbrace{(\overline{X}^{m} - \overline{X}^{w})\hat{\beta}^{m}}_{\substack{differences\ in \\ caracteristics}} + \underbrace{\overline{X}^{w}(\hat{\beta}^{m} - \hat{\beta}^{w})}_{\substack{differences\ in\ yield \\ of\ \ caracteristics}} \quad (2)$$

where W represents the average earnings evaluated by an earnings equation, the indices *m* and *w* represent *men* and *women* earnings respectively, $\overline{X}_i$ is the average characteristics and is the estimated returns on these characteristics. This regression brings essential information but limited[1] nevertheless the survey on the interest variable (Landais, 2007; Solard 2010).

Recently, a new literature has estimated gender wage gap based on the quantile regression, by looking at the effects of gender and other variables at different quantiles of log wage distribution and not only at the average of variables (Kandil, 2009; Nicodemo, 2009). The quantile regression (Koenker and Basset, 1978; Koenker, 2005) permits more detailed description than the classic linear regression, since they are interested in the set of the conditional distribution of the interest variable and not only to the average of this one. The importance to analyze the set of the distribution of the variable of interest and its determinants doesn't limit itself of the measure gaps.

[1]Quantile regression and linear regression are similar in certain respects. Both models deal with a continuous response variable that is linear in unknown parameters.

Indeed, in some cases the conditional average proves to be difficult to modelise. It can be due firstly to the presence of extreme or aberrant values to mistakes of measures, to which the average is a lot more sensitive than the quantile. Secondly, when the distribution variable of interest is much spread for example the distribution of incomes, in which of the very elevated incomes can be observed sometimes, the average will be able to be very variable according to the used sample. Otherwise, the evaluation of the average is also compromised in presence of censored data, that means when one doesn't observe the variable of interest that beyond or on this side of a stationary doorstep (Buchinsky, 1994).

The quantile regression permits to answer these inherent limits to the average. It permits to have a more precise description of the distribution of a conditional interest variable to its determinants that a simple linear regression, that focuses on the conditional average. Even though its principle is old, it knew a renewal of interest lately (Koenker and Hallock, 2001; Charnoz, Coudin and Gaini. 2011).

The method of regression by quantile, are initiated by Koenker and Basset (1978). This regression consists in a generalization of the modeling technique done to the level of conditional average of the dependent variable to express the quantiles of the conditional distribution of the dependent variable, according to the explanatory variables. In terms of optimization, as the mean and the median are defined as the solutions respectively of the minimization of the sum of the squares of the residues and the one of the non-weighted sum of the absolute values of the residues, the quantiles can be defined as the solutions of minimization of the sum of the absolute values of the residues, while affecting weights appropriated to the values positive and negative of the residues. We can formalize it as follows:

The simple linear regression consists in finding the solution of the following program:

$$\hat{\beta} = \min \sum_{i=1}^{n} \left(y_i - f\left(x_i, \beta\right)\right)^2 \qquad (3)$$

where i is the number of observations, y_i the value of the dependent variable and x_i the explanatory variables for the i individual and β the vector of the parameters to estimate.

The quantile regression consists in generalizing the previous equation (1) and to find the solution of the program:

$$\hat{\beta}(q) = \min \sum_{i=1}^{n} \rho_q \left(y_i - f\left(x_i, \beta_q\right)\right)^2 \qquad (4)$$

where ρ_q is the corresponding ponderation function to the q quantile, and β_q the vector of the parameters to estimate that varies according to the considered quantile. With,

$$\rho_q(\varepsilon_i) = \begin{cases} q\varepsilon_i & \text{if } \varepsilon_i \geq 0 \\ (q-1)\varepsilon_i & \text{if } \varepsilon_i < 0 \end{cases} \qquad (5)$$

where ρ_q is the check function.

Starting from the study of Koenker-Basset (1978), Machado and Mata (hereafter MM) in 2005 proposed a method to extend the traditional OB decomposition based on the quantile regression. Considering two groups, 0 and 1, whose stochastic characteristics for each group are X_0 and X_1, the regression quantile can be written for each group as:

$$Q_y(Y \mid X) = X_i\beta(\varepsilon) \qquad \forall \varepsilon, i \in (0,1) \qquad (6)$$

where $Y \mid X$ is the conditional quantile. MM propose an estimation of the counterfactual unconditional wage distribution, generate a random sample of size *m* from a uniform distribution $U[0;1]$, and then calculate the conditional quantile regression for each group. They simulate the wage distribution of the second group on the basis of the wage distribution and the characteristics of the first group, and repeat these steps *m* times.

The difference of the unconditional quantiles between the two groups can be decomposed as:

$$\hat{F}_{Y_1}^{-1}(\theta \mid T=1) - \hat{F}_{Y_0}^{-1}(\theta \mid T=0) = \underbrace{\hat{F}_{Y_1}^{-1}(\theta \mid T=1) - \hat{F}_{Y_1}^{-1}(\theta \mid T=0)}_{characteristics} + \underbrace{\hat{F}_{Y_1}^{-1}(\theta \mid T=0) - \hat{F}_{Y_0}^{-1}(\theta \mid T=0)}_{coefficients} \qquad (7)$$

where $\hat{F}_{Y_t}^{-1}(\theta \mid T=t)$ is the θ^{th} quantile of wage *Y* for groups *t's* while $\hat{F}_{Y_1}^{-1}(\theta \mid T=0)$ is the counterfactual unconditional wage distribution.

Normally, it is easy to estimate the conditional distribution function by inverting the conditional quantile function. However, the estimated conditional quantile function is not necessarily monotonic and so it may not be easy to invert it.

Thereafter, Melly (2006) proposed to integrate the conditional distributions over the range of variables in order to obtain an estimate of the unconditional distribution. He showed that, if the number of steps *m* repeated in MM goes to infinity the procedure of the decomposition is the same as MM when both the sample size and the number of quantiles are sufficiently large. Melly first estimates the conditional distribution of Y_t:

$$F_{yt}\left(q\middle|X_i\right)=\int_0^1 1\left(F_{yt}^{-1}\left(\tau\middle|X_i\right)\le q\right)=\int_0^1 1\left(X_i\hat{\beta}_t\left(\tau\right)\le q\right)d\tau \tag{8}$$

An estimator of the conditional distribution of Y_t given X_i at q is:

$$\hat{F}_{yt}\left(q\middle|X_i\right)=\int_0^1 1\left(X_i\hat{\beta}_t\left(\tau\right)\le q\right)d\tau=\sum_{j=1}^{n}\left(\tau_j-\tau_{j-1}\right)1\left(X_i\hat{\beta}_t\left(\tau\right)\le q\right) \tag{9}$$

This implies that the unconditional distribution function can be written as:

$$\hat{F}_{yt}\left(q\middle|T=t\right)=\frac{1}{nt}\sum\hat{F}_{yt}\left(q\middle|X_i\right) \tag{10}$$

The unconditional and counterfactual quantiles distributions are respectively:

$$\hat{q}_t\left(\theta\right)=\inf\left\{q:\frac{1}{nt}\sum_t\hat{F}_{yt}\left(q\middle|X_i\right)\ge\theta\right\} \tag{11}$$

The decomposition of the difference between the θ^{th} quantile of the unconditional distribution of two groups is:

$$\hat{q}_1\left(\theta\right)-\hat{q}_0\left(\theta\right)=\underbrace{\hat{q}_1\left(\theta\right)-\hat{q}_{c1}\left(\theta\right)}_{characteristics}+\underbrace{\hat{q}_1\left(\theta\right)-\hat{q}_0\left(\theta\right)}_{coefficients} \tag{13}$$

2.2 Data.

In this study, we use cross-sectional data from 2007 Cameroon Household Consumption Survey (CHCS III). This survey was carried out by the Government, through the National Institute of the Statistical (NIS). It is the logical continuation of CHCS II who permitted to actualize the profile of poverty of 1996 and to have indicators of reference for the follow-up of the progress achieved concerning reduction of poverty. Besides, the results descended of this investigation enriched the final version of the first the Poverty Reduction Strategy Paper (PRSP) that has been adopted in April 2003 by the Cameroonian government as document of reference of the Government and place of convergence of the supports of the technical and financial partners of Cameroon.

The data collected in all 10 regions of Cameroon contain the information on 51232 individuals aged of 0 to 95 years and more. But we concentrate exclusively our attention on the individual chief of households. Which brings us to lose 39841 observations. The individuals in activity are composed respectively of self-employment and the pay-employment to numbers them of 7182 and 3139. The group of workers independent is composed of employers and those who work to their own account. For the pay employees, we have staff, qualified employee and the workhand. But we exclude the domestic helps and the apprentices of our analysis because they are not typically nor independent working, nor

employee. Besides, the matrimonial statute has been divided firstly in person alone with as unmarried modality, widower/widow, divorcee/separate and secondly in person in couple of which married polygamous, monogamous and in free union. Our sample is composed of 18832 individuals who communicate some data on their income. It is notably about 6291 men and women 1553 pay-employees and of 8554 men and 2434 women self-employees.

Table 1 provides the different measures of independent and explanatory variables used in our investigation. Earning equations for both least square and quantile regression are estimated using the natural logarithm of real monthly wage.

_____ [TABLE 1 HERE] _____

3. Empirical Results

In our study, we consider the more general case of regression quantile, which can put in evidence more subtle changes in the shape of the distribution, rather than quantile regression fits for specific quantiles. We use the interpretation of linear regression as shortcoming OB estimates as a starting point and interpret the quantile regression estimates in the context of income inequality.

3.1 Descriptive Statistics

Table 2 provides the descriptive statistics of our sample. It reveals that there are more individuals who work in self-employment than pay employment, and the large majority, more than 90% don't have a handicap. Among the 10,988 people who are self-employment, women have more years of experience (13 years) than men (11 years). This can be explained by the fact that women quits early in the school system. As we increase the level of education, they are less represented (40% with primary level, 22% to the secondary level and less than 1% with the higher level). Furthermore 77% of self-employed women are alone against 23% in couple, with 5 persons in her responsibility. 81% of men are in couple against 19% who are alone with 6 persons in her responsibility. More change with age group [41-51 years [and [51 years and more[, women are more represented in self-employment (27% and 41% respectively against 23% and 31% for men), while at the age group [less than 30 years[and [30-41 years[, men self-employment are more represented (18% and 28% respectively against 13% and 20% for women).

The self-employment men and women householder, practise in majority in informal sector (91% and 98% respectively). Women are more represented in primary sector activity

(53% against 47% for men) and in trade activity sector (19% against 15% for men). Otherwise, in industry activity sector and services activity sector, men are more represented than women. The men householders consecrate in average to their activity 44 hours and women 42 hours. Besides 99% of the entrepreneurship householders have an enterprise size [1-10 persons].

_____ [TABLE 2 HERE] _____

3.2 Conditional Mean versus Conditional Median[2]

While the analysis in introduction and section 2 indicates an overview of the literature and which method may be important in explaining wage gap, in this sub-section, we develop the conditional median and the conditional mean to see the effect on the population of the increase of human capital unit.

Regarding **men self-employment**, Table 3 shows that the coefficients for education in the conditional median model are respectively 0.227; 0.501 and 0.729 for primary and secondary and superior education level; which is higher than the coefficient in the conditional-mean model (0.223; 0.488 and 0.718 respectively for primary, secondary and higher education level). This suggests that an increase of one year of primary, secondary or secondary education increase in average of 0.223; 0.488 and 0.718 the wage. The fact that the median wage is higher than average wage implies that wage increase by one year of education is substantial for most of the men self-employment population. This implies that a large proportion of the self-employment men would be willing to work one hour more to see their income increase by one unity. Otherwise, the coefficient of number of hours in the conditional-median model is equal to the coefficient in the conditional-mean model (0.015). The fact that the average wage is equal to median wage implies that wage increase is substantial for all the population. It indicates that on average all men in self-employment will be willing to work one hour more to see their income increase by one unity.

_____ [TABLE 3 HERE] _____

[2]The median-regression model can be used to achieve the same goal as conditional-mean-regression modeling: to represent the relationship between the central location of the response and a set of covariates. However, when the distribution is highly skewed, the mean can be challenging to interpret while the median remains highly informative. As a consequence, conditional-median modeling has the potential to be more useful.

Contrary, in Table 4, for **women self-employment**, the coefficients for superior education in the conditional mean model is 0.452; which is upper than the coefficient in the conditional-median model (0.393 for the same education level). This means that, an increase of one year of superior education gives rise to an average increase of, 0.452 in wage. Mean wage is higher than median wage implies that, for women self-employment, wage increase follows an additional year of superior education is not substantial for most of the women self-employment population. Similarly, the coefficient for hour in conditional mean is upper than in conditional median. This suggest that wage increase follow an additional hour working is not substantial for most population.

_____ [TABLE 4 HERE] _____

Table 5 illustrates that for **men in pay-employment**, coefficient for experience in conditional median is upper than coefficient in conditional mean (0.0216 against 0.0150). This result show that, for men pay-employment, wage increase follows an additional experience is substantial for most of population. Concerning education, for secondary level, wage increase follow an additional secondary level education is not substantial for most of the target population. For hour working, the result is similar. But, for superior education level; wage increase is substantial of population.

_____ [TABLE 5 HERE] _____

Considering **women pay-employment**, Table 6 shows that, wage increase follows an additional experience is substantial for women pay-employment population. For primary and secondary education, wage increase follows an additional years of schooling is substantial for most de population. But, for superior level education, wage increase follows an additional years of superior schooling is not substantial for most de women pay-employment population. Hour working coefficient is upper at mean than at the median (0.011 against 0.01). This reveal that wage increase follows an additional hour working is not substantial for women pay-employment population.

_____ [TABLE 6 HERE] _____

Consequently, it is evident from this analysis that, in self-employment, firstly experience is non-significant in self-employment. Secondly, compare to the women a large

proportion of the men would be willing to do one year of schooling to see their income increase by one unity. In pay-employment, for men like for women, a large proportion of them would be willing to have one year of experience to see their income increase by one unity. Considering education, a large proportion of men pay-employment would be willing to have one year of superior education to see their income increase by one unity. Nevertheless, a large proportion of women pay-employment would be willing to have one year of primary and secondary education to see their income increase by one unity.

3.3 Quantile Regression Model

The coefficients of quantile regression model (hereafter QRM) for five quantiles in Tables 3, 4, 5 and 6 can be used to examine the variables on various income quantiles. Tables 3 and 4 display our findings for men and women **self-employment**. As regard the lower quantiles, at 10^{th} and 20^{th} quantiles respectively, we see that for men, wage increase with the level education at the 10^{th} quantile. But at the 20^{th} quantile, wage decrease at superior level. For women, superior level is not significant, and wage increase with the primary and secondary education. At the top of quantile, men wage increase with the level education at the 75^{th} and at the 95^{th} quantile, and increase is more important at the 75^{th} quantile. At the same quantile, women wage increase with the level education, but decrease at the superior education level.

Besides, for men, wage decrease with age group at the 10^{th} quantile. For women, wage decrease at the 25^{th} quantile. At the top of quantile, wage decrease for men with age group at the 75^{th} quantile and for the women, only age group [51 years and more[is significant

Household size is not significant for men self-employment and is significant for women only at the top of quantile. Both for men and women, the number of hours is more increase wage at the lower quantile than at the top of quantile.

Otherwise, the activity sector is positive and significant at 1% for the lower and the upper quantiles both for men and women. For men, at the 10^{th} quantile, work in trade sector increase by 0.583 the wage, at the 25^{th} quantile, work in industry increase by 0.69 the wage. For women, both at the 10^{th} and 25^{th} quantile work in services sector more increase wage. When whe look at the upper of quantile, for men, at the 75^{th} and 95^{th} quantile, work in trade sector increase respectively by 0.723 and 0.6 the wage. For women, at the 75^{th} quantile, work in services increase by 0.713 the wage and at the 95^{th} quantile, work in trade increase by 0.483 the wage.

Regarding informal sector, it is positive and significant at the level of 1% for the men at the lower and upper quantiles, and increase of wage in informal sector is more important at the lower quantile. Then, it is not significant for women both in lower and upper quantile.

Size of enterprise variable is positive significant at the 25th quantile and at the top of quantile for men enterprise size [11-50 persons]. For women, size [11-50 persons] is not significant.

Tables 5 and 6 provide the results of QRM for **pay employment**. For men, at the 25th quantile, have an experience increase by 0.0203 the wage. For women, experience is not significant at lower quantiles. At upper quantile, have an experience for men increase by 0.019 and 0.013 the wage at the 75th and at the 95th quantile. For women at tha 75th quantile, experience increase by 0.018 the wage. Considering education, we see that, for men, at the 25th quantile, wage increase by the level of education. For women, education is not significant. At the upper quantiles, both for men and women, wage increase by the level of education; but increase is more important for women. Considering Age group, for men, wage increase by age at the 25th quantile and at the upper quantile. For women, coefficient are significant only at the upper quantiles, and wage increase by age, more at the 95th quantile.

Household size is significant and negative for men all along the quantile, it is more negative at the lower quantile. For women, it is significant and positive at the 75th quantile.
Relating to the number of hours dedicates to an activity, it is positive and significant at all quantile both for men and women and one hour dedicate to activity is more important at the upper quantiles. Regarding activity sector variable, for men, work in the services sector more increase wage compare to all other activity sector. For the women, at the 10th quantile, work in trade increase by 0.913 the wage at the 25th quantile, work in service sector increase by 0.285 the wage. At the upper quantiles, work in services increase wage compare to the other activity sector.

The informal sector variable is negative and significant all along the quantiles for men. It is significant only at the 95th quantile. The size is positive and significant both for men and women. And wage increase with the size of enterprise.

3.4 Decomposition of Differences in Distribution using Oaxaca-Blinder and Quantile Regressions

At this step, we want to quantify employment wage differences. We use Oaxaca-Blinder (1973) decompositions and Machado and Mata (2005) quantile regression decomposition of self-employment and paid-employment.

3.4.1 Standard Oaxaca-Blinder Decomposition Results.

Table 7 provides the OB decomposition results of our analysis, which reveals that pay-employment gender wage gap is more important than self-employment gender wage gap. We observe that, in self-employment, gender wage gap is due to unexplained component; and in pay-employment, this gap is due to explained component.

_____ [TABLE 7 HERE] _____

3.4.2 Machado and Mata (2005) and Melly (2006) Quantile Decomposition Results.

Having reviewed the decomposition results at mean values, now, we examine the results of the quantile regression decomposition of wage gap, following MM (2005) and Melly (2006)[3]. In what follows, we report in Table 8 only the results of the quantile decomposition, which exploits the coefficients from the conditional quantile regression.

Looking self-employment, gender wage gap is more important and increase along the wage distribution. We see that, gender wage gap is due to unexplained component and gap increase a long of quantile. In pay-employment, gender wage gap is due to explained component and increase all along the quantiles.

_____ [TABLE 8 HERE] _____

In fine, OB and MM methods have the same results for gender wage gap. But, MM give the gap evolution along of quantiles.

4. Conclusions and Policy Implications

This paper has analysed wage gap in the Cameroonian labour market, while making and innovative contribution using the CHS III. First, we have moved beyond investigating wage differentials at mean values in order to consider wage differentials at different points of the wage distribution. To this end, we have employed two decomposition techniques (developed

[3]We implement both the Machado and Mata (2005) and Melly (2006) techniques, although they should provide asymptotically similar results.

by Oaxaca-Blinder (1973); Machado and Mata (2005) and Melly (2005 and2006), in order to isolate the endowment and returns contributing to wage differentials at different points of the distribution.

We begin our analysis by compare wage gap at the conditional mean and at the conditional median, and we turn to the analysis at quantiles (at the upper and at the lower side of quantiles). Splitting our sample into two groups of sex with a view to check how far characteristics differ among these groups. For this purpose, we follow the MM (2005) and Melly (2005) procedure to perform the counterfactual decomposition and get a measure for gap along the distribution of wages.

Our findings are in line with some other empirical research on gender wage gap, affirm that in OB decomposition and MM method, self-employment is due to unexplained component and pay-employment wage gap is due to explained component.

We would like to say that, gains in female educational attainment have contributed to a worldwide increase in female labour force participation. This has contributed to a narrowing of the gender gap in pay-employment outcomes in most countries. Nevertheless, despite significant improvements in women's position in the labour market, considerable gender gaps remain in self-employment. Gender gap persists in working hours, occupations and sectors, and earnings. Women continue to undertake a much higher load of unpaid work than men, which then constrains their opportunities in paid work.

Governments should promote further development of work/life balance policies and other public employment supports to facilitate female labour force participation. Besides, future policy development should focus on remaining gender gaps in employment outcomes, including persistent occupational and sectorial concentration.

Otherwise, promote a more gender-equal use of flexible workplace practices that reconcile work and family life and which fit into career patterns. For example, promote a better transition to full-time, permanent and better paid jobs and extend affordable child care opportunities, so as to enhance continuous employment patterns. Also, strengthen public awareness of anti-discrimination laws and improve enforcement of equal pay laws.

Stimulate a broader talent pool of women by identifying women entrepreneurs and female leaders outside of business who can be strong candidates for leadership roles in the corporate world. Stimulate good management practices which, in turn, support better gender balance, for example by making managers accountable, as this enables gender initiatives to become an integral part of the firm's decision making.

Promote a more equal use among parents of policies that temporarily reduce workplace participation because of family and care commitments. For example, promote a more equal sharing of parental-leave entitlement through the use of non-transferable leave entitlement for the exclusive use by fathers or award bonus periods to fathers who are using periods of parental leave.

There is a need for further research on and policy responses designed to address the contribution of social and informal factors to the persistence of the gender wage gap.

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APPENDIX: Tables

Table 1. Measurement of independent and explanatory variables

Wage	Monthly income (including cash and in nature advantages)
Sex	2 dummies: 0=Man; 1=Woman
Type of employment	2 dummies: 0=pay-employment; 1=self-employment.
Experience	Age has which one has begun has work for the first time.
Education	4 dummies: 0=Without education; 1=Primary education; 2=Secondary education; 3=Superior
Age group	4 dummies: 0=[less than 30 years]; 1=[30-40 years]; 2= [41-50 years]; 3=[51 years and more].
Marital status	2 dummies: 0=Alone; 1=in couple
Handicap	2 dummies: 0=Yes; 1=No.
Household size	Number of person who live in household.
Number of hours	Number of hours per week usually dedicates to work.
Activity sector	4 dummies: 0=Primary sector; 1=Industry; 2=Trade; 3=Services.
Formality	2 dummies: 0=Formal sector; 1=informal sector.
Size of enterprise	3 dummies: 0=[1-10 persons]; 1=[11-50 persons]; 2=[51 persons and more].

Table 2. Descriptive Statistics

	Pay-employment		Self-employment	
Variables	**Male**	**Female**	**Male**	**Female**
log Revenu	10.005	9.720	9.694	9.509
Experience	7.209	5.469	11.117	12.534
Education level				
Without	0.2054	0.2683	0.2533	0.3707
Primary	0.3175	0.3511	0.3977	0.4013
Secondary	0.3688	0.3180	0.3092	0.2173
Superior	0.1084	0.0625	0.0397	0.0106
Age groups				
[less than 30 years[	0.1766	0.1085	0.1807	0.1251
[30-40 years]	0.2461	0.1994	0.2806	0.1989
[41-50 years]	0.2479	0.3271	0.2321	0.2703
[51 years and more[	0.3294	0.3650	0.3066	0.4056
Marital status				
Alone	0.2127	0.7557	0.1937	0.7689
In couple	0.7873	0.2443	0.8063	0.2311
Have an handicap				
Yes	0.0311	0.0390	0.0385	0.0526
No	0.9689	0.9610	0.9615	0.9474
Household size	6.5348	5.5115	5.7652	4.7681
Number of hour	41.2214	34.7451	43.7301	41.7678
Activity sector				
Primary sector	0.3923	0.4388	0.4728	0.5345
Industry	0.1310	0.0978	0.1329	0.1194
Trade	0.0774	0.1191	0.1474	0.1858
Services	0.3993	0.3443	0.2469	0.1604
Formality				
Formal sector	0.3366	0.2243	0.0928	0.0234
Informal sector	0.6634	0.7757	0.9072	0.9766
Size of enterprise				
[1-10 persons]	0.7792	0.8564	0.9867	0.9965
[11-50 persons]	0.1711	0.1134	0.0119	0.0031
[51 persons and more]	0.0498	0.0302	0.0014	0.0004
Observations	6291	1553	8554	2434

Table 3. Quantile regression of men self-employment

Variables	OLS	Quantile regression				
		q10	q25	q50	q75	q95
Experience	0.0050***	0.0043**	0.249***	0.0060***	0.0055***	0.0067***
	(0.0011)	(0.0020)	(0.0405)	(0.0014)	(0.0014)	(0.0022)
Primary	0.223***	0.197***	0.552***	0.227***	0.246***	0.151***
	(0.028)	(0.0519)	(0.0454)	(0.0351)	(0.0351)	(0.0565)
Secondary	0.488***	0.462***	0.741***	0.501***	0.464***	0.362***
	(0.0323)	(0.0581)	(0.0897)	(0.0394)	(0.0394)	(0.0633)
Superior	0.718***	0.733***	0.00393**	0.729***	0.731***	0.614***
	(0.0638)	(0.115)	(0.0016)	(0.0778)	(0.0779)	(0.125)
[30-40 years]	0.165***	0.265***	-0.293***	0.176***	0.136***	0.0749
	(0.0339)	(0.0610)	(0.0432)	(0.0414)	(0.0414)	(0.0665)
[41-50 years]	0.205***	0.258***	0.0805	0.225***	0.198***	0.121*
	(0.0372)	(0.0670)	(0.0801)	(0.0454)	(0.0454)	(0.0730)
[51 years and more[	0.161***	0.235***	0.180***	0.183***	0.111**	0.0475
	(0.0384)	(0.0691)	(0.0477)	(0.0468)	(0.0468)	(0.0753)
In couple	-0.188***	-0.307***	0.216***	-0.182***	-0.0874**	-0.0419
	(0.0307)	(0.0554)	(0.0523)	(0.0375)	(0.0375)	(0.0603)
No	-0.0250	-0.0616	0.210***	-0.0210	-0.0390	0.0524
	(0.0570)	(0.103)	(0.0540)	(0.0695)	(0.0695)	(0.112)
Household size	-0.00103	-8.71e-07	-0.00741	-0.0018	0.0060	0.00197
	(0.0035)	(0.0062)	(0.0049)	(0.0042)	(0.0042)	(0.007)
Number of hour	0.0149***	0.0178***	0.362***	0.0154***	0.0129***	0.0093***
	(0.0006)	(0.00113)	(0.140)	(0.0008)	(0.0008)	(0.0012)
Industry	0.528***	0.503***	0.690*	0.618***	0.546***	0.430***
	(0.0349)	(0.0628)	(0.410)	(0.0426)	(0.0426)	(0.0685)
Trade	0.666***	0.583***	0.0173***	0.740***	0.723***	0.559***
	(0.0348)	(0.0626)	(0.0009)	(0.0424)	(0.0424)	(0.0683)
Services	0.592***	0.530***	0.242***	0.657***	0.657***	0.542***
	(0.0307)	(0.0553)	(0.0596)	(0.0374)	(0.0374)	(0.0602)
Informal sector	0.271***	0.306***	0.535***	0.287***	0.250***	0.216***
	(0.0424)	(0.0763)	(0.0490)	(0.0517)	(0.0517)	(0.0832)
[11-50 persons]	0.475***	0.129	0.728***	0.557***	0.664***	0.623***
	(0.0998)	(0.180)	(0.0489)	(0.122)	(0.122)	(0.196)
[51 persons and more]	0.573**	0.722	0.617***	0.413	0.488	0.259
	(0.291)	(0.525)	(0.0432)	(0.356)	(0.356)	(0.572)
Constant	8.185***	6.821***	7.424***	8.127***	8.858***	10.03***
	(0.0886)	(0.159)	(0.125)	(0.108)	(0.108)	(0.174)
Observations	8,554	8,554	8,554	8,554	8,554	8,554
R-squared	0.207					
Pseudo R2		0.0961	0.1208	0.1282	0.1224	0.0904

Note: Standard errors in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% per cent levels respectively.

Table 4. Quantile regression of women self-employment

Variables	OLS	Quantile regression				
		q10	q25	q50	q75	q95
Experience	-4.70e-05	0.00115	9.41e-05	0.00183	-0.00133	-0.00104
	(0.0017)	(0.0032)	(0.0026)	(0.0019)	(0.0022)	(0.0036)
Primary	0.341***	0.211**	0.339***	0.332***	0.432***	0.306***
	(0.0465)	(0.0892)	(0.0715)	(0.0521)	(0.0605)	(0.0993)
Secondary	0.562***	0.369***	0.497***	0.563***	0.667***	0.527***
	(0.0601)	(0.115)	(0.0924)	(0.0673)	(0.0782)	(0.128)
Superior	0.452**	0.119	0.410	0.393*	0.553**	0.354
	(0.199)	(0.381)	(0.306)	(0.223)	(0.259)	(0.425)
[30-40 years]	0.186***	0.126	0.243**	0.157**	0.133	0.164
	(0.0695)	(0.133)	(0.107)	(0.0778)	(0.0904)	(0.148)
[41-50 years]	0.182***	0.0448	0.184*	0.242***	0.110	0.230
	(0.0679)	(0.130)	(0.104)	(0.0761)	(0.0884)	(0.145)
[51 years and more[	0.276***	0.0828	0.192*	0.264***	0.291***	0.302**
	(0.0702)	(0.135)	(0.108)	(0.0786)	(0.0913)	(0.150)
In couple	-0.0802*	-0.200**	-0.0716	-0.0749	-0.0439	-0.0604
	(0.0473)	(0.0908)	(0.0728)	(0.0530)	(0.0616)	(0.101)
No	0.0706	0.0307	0.0840	0.181*	0.114	0.0931
	(0.0865)	(0.166)	(0.133)	(0.0970)	(0.113)	(0.185)
Household size	0.0127*	0.00270	0.0116	0.0154**	0.0248***	0.0363**
	(0.0067)	(0.0130)	(0.0104)	(0.0076)	(0.0088)	(0.0144)
Number of hour	0.0095***	0.0104***	0.0117***	0.0091***	0.0090***	0.0066***
	(0.00107)	(0.00205)	(0.00164)	(0.00119)	(0.00139)	(0.0023)
Industry	0.520***	0.411***	0.534***	0.641***	0.610***	0.379***
	(0.0642)	(0.123)	(0.0986)	(0.0719)	(0.0835)	(0.137)
Trade	0.733***	0.792***	0.858***	0.824***	0.683***	0.483***
	(0.0575)	(0.110)	(0.0884)	(0.0644)	(0.0748)	(0.123)
Services	0.861***	1.127***	1.049***	0.981***	0.713***	0.473***
	(0.0641)	(0.123)	(0.0986)	(0.0718)	(0.0834)	(0.137)
Informal sector	0.284**	0.434	0.340	0.348**	0.177	-0.180
	(0.138)	(0.265)	(0.212)	(0.155)	(0.180)	(0.295)
[11-50 persons]	0.695**	0.670	0.961*	0.547	0.367	0.854
	(0.337)	(0.646)	(0.518)	(0.377)	(0.438)	(0.719)
[51 persons and more]	-0.190	1.051	0.402	-0.255	-0.973	-1.518
	(0.951)	(1.825)	(1.463)	(1.066)	(1.238)	(2.031)
Constant	7.917***	6.777***	7.146***	7.708***	8.592***	9.972***
	(0.188)	(0.360)	(0.288)	(0.210)	(0.244)	(0.400)
Observations	2,434	2,434	2,434	2,434	2,434	2,434
R-squared	0.247					
Pseudo R2		0.1274	0.1518	0.1667	0.1394	0.0991

Note: Standard errors in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% per cent levels respectively.

Table 5. Quantile regression of men pay-employment

Variables	OLS	Quantile regression				
		q10	q25	q50	q75	q95
Experience	0.0150***	0.0034	0.0203***	0.0216***	0.0187***	0.0134***
	(0.0014)	(0.0044)	(0.0019)	(0.00114)	(0.0013)	(0.0023)
Primary	-0.0144	-0.272***	-0.0874**	0.0395	0.0848***	0.178***
	(0.0325)	(0.102)	(0.0433)	(0.0267)	(0.0309)	(0.0544)
Secondary	0.206***	0.101	0.124***	0.195***	0.295***	0.395***
	(0.0356)	(0.112)	(0.0474)	(0.0292)	(0.0338)	(0.0595)
Superior	0.470***	0.0425	0.302***	0.504***	0.750***	0.845***
	(0.0559)	(0.176)	(0.0745)	(0.0459)	(0.0532)	(0.0936)
[30-40 years]	0.114***	0.0517	0.0914*	0.173***	0.167***	0.195***
	(0.0373)	(0.117)	(0.0497)	(0.0306)	(0.0354)	(0.0624)
[41-50 years]	0.140***	-0.0204	0.113**	0.218***	0.184***	0.210***
	(0.0404)	(0.127)	(0.0539)	(0.0332)	(0.0384)	(0.0677)
[51 years and more[	0.108***	-0.0251	0.0678	0.180***	0.171***	0.208***
	(0.0407)	(0.128)	(0.0542)	(0.0334)	(0.0387)	(0.0681)
In couple	0.0515	0.139	0.123***	-0.0358	-0.0248	-0.0681
	(0.0332)	(0.104)	(0.0443)	(0.0272)	(0.0316)	(0.0556)
No	-0.178***	-0.392*	-0.109	-0.0664	-0.156**	-0.174
	(0.0681)	(0.214)	(0.0908)	(0.0559)	(0.0647)	(0.114)
Household size	-0.0267***	-0.0332***	-0.0246***	-0.0211***	-0.0202***	-0.0145***
	(0.0029)	(0.0093)	(0.0039)	(0.0024)	(0.0028)	(0.0049)
Number of hour	0.0132***	0.0125***	0.0113***	0.0123***	0.0134***	0.0159***
	(0.0006)	(0.0018)	(0.0008)	(0.0005)	(0.0006)	(0.0001)
Industry	0.360***	0.433***	0.160***	0.307***	0.491***	0.710***
	(0.0386)	(0.121)	(0.0514)	(0.0317)	(0.0367)	(0.0646)
Trade	0.366***	0.454***	0.270***	0.274***	0.406***	0.670***
	(0.0453)	(0.143)	(0.0604)	(0.0372)	(0.0431)	(0.0759)
Services	0.460***	0.590***	0.274***	0.339***	0.490***	0.833***
	(0.0323)	(0.101)	(0.0430)	(0.0265)	(0.0307)	(0.0541)
Informal sector	-0.178***	-0.300***	-0.153***	-0.171***	-0.271***	-0.277***
	(0.0341)	(0.107)	(0.0455)	(0.0280)	(0.0325)	(0.0572)
[11-50 persons]	0.680***	0.962***	0.608***	0.564***	0.522***	0.495***
	(0.0334)	(0.105)	(0.0445)	(0.0274)	(0.0318)	(0.0560)
[51 persons and more]	0.879***	1.129***	0.924***	0.744***	0.666***	0.655***
	(0.0585)	(0.184)	(0.0780)	(0.0480)	(0.0556)	(0.0980)
Constant	9.029***	8.314***	8.789***	9.066***	9.467***	9.805***
	(0.0925)	(0.291)	(0.123)	(0.0759)	(0.0879)	(0.155)
Observations	6,291	6,291	6,291	6,291	6,291	6,291
R-squared	0.353					
Pseudo R2		0.1306	0.1387	0.2393	0.3252	0.3460

Note: Standard errors in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% per cent levels respectively.

Table 6. Quantile regression of women pay-employment

Variables	OLS	Quantile regression				
		q10	q25	q50	q75	q95
Experience	0.0101**	-0.0120	0.0054	0.0156***	0.0179***	0.0097
	(0.0043)	(0.0146)	(0.0072)	(0.0034)	(0.0043)	(0.0063)
Primary	0.133**	-0.106	0.0595	0.141***	0.178***	0.360***
	(0.0604)	(0.202)	(0.100)	(0.0469)	(0.0593)	(0.0875)
Secondary	0.209***	-0.0748	0.103	0.222***	0.394***	0.392***
	(0.0767)	(0.257)	(0.127)	(0.0595)	(0.0753)	(0.111)
Superior	0.740***	0.0538	0.304	0.686***	1.398***	1.285***
	(0.147)	(0.491)	(0.244)	(0.114)	(0.144)	(0.213)
[30-40 years]	0.195**	0.258	0.200	0.134*	0.163*	0.428***
	(0.0914)	(0.306)	(0.152)	(0.0709)	(0.0898)	(0.132)
[41-50 years]	0.112	0.303	0.121	0.0188	0.126	0.404***
	(0.0886)	(0.297)	(0.147)	(0.0688)	(0.0871)	(0.128)
[51 years and more[	0.200**	0.227	0.147	0.141*	0.277***	0.536***
	(0.0925)	(0.310)	(0.154)	(0.0718)	(0.090)	(0.134)
In couple	-0.0625	0.0464	-0.108	-0.0097	-0.0409	-0.0575
	(0.0554)	(0.186)	(0.0921)	(0.0430)	(0.0545)	(0.0804)
No	-0.0298	0.483	0.174	-0.180*	-0.153	-0.137
	(0.127)	(0.424)	(0.210)	(0.0982)	(0.124)	(0.183)
Household size	0.0078	0.0137	0.00707	0.0112	0.0177**	0.0172
	(0.0088)	(0.0295)	(0.0146)	(0.0068)	(0.0087)	(0.0128)
Number of hour	0.0110***	0.0146***	0.0073***	0.0093***	0.0128***	0.0150***
	(0.0011)	(0.0037)	(0.0018)	(0.0009)	(0.0010)	(0.0016)
Industry	0.200**	0.650**	0.181	0.0744	0.118	0.329***
	(0.0820)	(0.275)	(0.136)	(0.0637)	(0.0806)	(0.119)
Trade	0.378***	0.913***	0.267**	0.187***	0.220***	0.411***
	(0.0775)	(0.260)	(0.129)	(0.0601)	(0.0761)	(0.112)
Services	0.337***	0.664***	0.285**	0.258***	0.241***	0.433***
	(0.0694)	(0.232)	(0.115)	(0.0538)	(0.0682)	(0.101)
Informal sector	-0.184**	-0.441	-0.195	-0.0960	-0.0967	-0.355***
	(0.0857)	(0.287)	(0.142)	(0.0665)	(0.0842)	(0.124)
[11-50 persons]	0.745***	0.884***	0.673***	0.789***	0.674***	0.678***
	(0.0826)	(0.277)	(0.137)	(0.0641)	(0.0812)	(0.120)
[51 persons and more]	1.054***	1.608***	1.008***	0.886***	0.671***	0.674***
	(0.151)	(0.506)	(0.251)	(0.117)	(0.149)	(0.219)
Constant	8.705***	6.890***	8.501***	9.032***	9.074***	9.528***
	(0.186)	(0.625)	(0.310)	(0.145)	(0.183)	(0.270)
Observations	1,553	1,553	1,553	1,553	1,553	1,553
R-squared	0.290					
Pseudo R2		0.1274	0.0927	0.1807	0.2726	0.3250

Note: Standard errors in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% per cent levels respectively.

Table 7. Oaxaca-Blinder decomposition of gender wage gap

Variables	Self-employment	Pay-employment
Men	9.690***	9.825***
	(0.0122)	(0.0142)
Women	9.499***	9.528***
	(0.0221)	(0.0274)
difference	0.191***	0.298***
	(0.0253)	(0.0309)
Characteristics	0.0714**	0.199***
	(0.0313)	(0.0388)
Coefficients	0.204***	0.0497
	(0.0292)	(0.0333)
Interaction	-0.0837**	0.0488
	(0.0346)	(0.0409)
Observations	10,988	7,844

Note: Standard errors in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% per cent levels respectively.

Table 8. Decomposition of differences in distribution using quantile regression

	Self-employment (%)					Pay-employment (%)				
	q10	q25	q50	q75	q95	q10	q25	q50	q75	q95
Raw difference	-1.256	-1.132	-0.943	-0.768	-0.685	1.256	1.132	0.943	0.768	0.685
Characteristics	-0.731 (58.20)	-0.611 (54.00)	-0.642 (60.08)	-0.698 (90.88)	-0.780 (113.87)	0.932 (74.20)	0.99 (87.46)	1.016 (107.7)	1.046 (136.19)	1.352 (197.37)
Coefficients	-0.525 (41.8)	-0.521 (46.02)	-0.301 (31.92)	-0.070 (9.11)	0.096 (-14.01)	0.324 (25.8)	0.144 (12.72)	-0.0735 (-7.79)	-0.278 (-36.19)	-0.667 (93.37)

Note: Standard errors in parentheses.