



Gender Wage Gap in Morocco: is there any evidence for discrimination?

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Abstract

The aim of this paper is to investigate for substantial discrimination in wage differential between men and women. Taking advantage from the Moroccan Labor Force Survey (LFS, 2012) we try to quantify the magnitude of the wage-based discrimination between men and women by using Oaxaca-Blinder decomposition and its modification developed by Neumark (1988). The Neumark's modification of Oaxaca decomposition allowed us to decompose the mean difference between men and women to two parts, one related to the difference in endowment (explained part) and the other not explained by the difference in individual characteristics (unexplained part). We then corrected this decomposition, following the Neumark's modification of Oaxaca decomposition, for sample selection bias by using the Heckman approach. Results of this decomposition highlight an important share of discrimination in gender wage differential.

Keywords: wage gap; Oaxaca and Blinder; decomposition; discrimination; Heckman; Morocco.

1. Introduction

It is well known that economic and social development depend, among many other factors, upon a rational exploitation of human resources endowment. In this regard, the contribution of women is crucial to this development. However, in Morocco, the level of participation of women in the labor market remains largely below men's level and the differences between the both genders are consistent at different levels: human capital endowment, sectoral insertion, jobs qualities and remunerations. Over the past years, Moroccan women have benefited from several institutional and social reforms guaranteeing wider rights and favouring their emancipation and their contribution to national development. The result of these reforms was a larger participation of women in the politic, economic and social arenas. However, their participation in the labor market has not improved; it has even declined in recent years and even she is in labor market she suffers from a penalty and discrimination. In spite of its structural feature in Morocco, little is known about the magnitude of this phenomenon (discrimination).

Introducing a dummy variable for female (0 or 1) in the regression in the total sample is not sufficient to accurately measure the extent of wage discrimination against women because this method assumes that the wage formation structure is the same for both gender which is obviously not the case. Some economists have developed new econometric tools that would decompose the mean difference between men and women to two parts; one related to the difference in the endowments (explained part) and the other not explained by the difference in individual characteristics (unexplained part).

This last one refers, generally, to discrimination¹. Oaxaca-Blinder decomposition (Oaxaca 1973; Blinder 1973) is one of these methods developed to quantify the magnitude of the wage gap based discrimination. Often researchers select the male wage structure as a non-discriminatory group which leads to interpret the discrimination part in the wage difference is due to underpayment of women group rather than to overpayment of male group. A general framework of the decomposition of the mean difference in wage is developed in many research papers (Reimers (1983), Cotton (1988), Neumark(1988), Oaxaca and Ransom (1988)) to disaggregate the discrimination part to two subparts; one related to favoritism or overpayment (let's say of men for labor market studies) and the other one related to pure discrimination or underpayment (of women). By comparing four scenarios for the choice of the non-discriminatory wage structure, Oaxaca and Blinder (1994) argued that the pooled model using both sexes (Neumark's approach (1988)) yielded the smallest estimated standard errors in comparison to the female wage structure, male wage structure or weighted average of the observed structures (Cotton's (1988) approach).

2. Methodology and Data

In this paper we follow Neumark's modification of the Oaxaca&Blinder decomposition. The non-discriminatory wage structure is chosen to be the pooled sample of male and female and without taking into account the female variable among the explanatory variables in this model. Mincer type wage regressions for males and females are as follow:

$$\ln w_m = X_m' \beta_m + \varepsilon_m \quad (1)$$

$$\ln w_f = X_f' \beta_f + \varepsilon_f \quad (2)$$

From (1) and (2) and using the Ordinary Least Squares (OLS) estimation we obtain this equation:

$$\overline{\ln w_m} - \overline{\ln w_f} = \underbrace{(\overline{X_m} - \overline{X_f})' \hat{\beta}^*}_{\text{Explained part} \equiv \text{Endowment}} + \underbrace{\overline{X_m}' (\hat{\beta}_m - \hat{\beta}^*)}_{\text{male advantage}} + \underbrace{\overline{X_f}' (\hat{\beta}^* - \hat{\beta}_f)}_{\text{female disadvantage}} \quad (3)$$

Unexplained part = Discrimination

Where $\overline{\ln w}$ is the mean log wage ("m" for men and "f" for women), \overline{X} 's is vector of mean values of the explanatory variables in each wage regression, $\hat{\beta}$'s are the estimated coefficients, and $\hat{\beta}^*$ is the vector of estimated coefficients for a non-discriminatory wage structure.

In the presence of sample selection OLS estimation of Mincerian equations can yield inconsistent estimators. In order to correct for sample selection bias, we use the Heckman's two step approach.

The estimated wage function under the selection-corrected Heckman model is:

$$\ln w_i^s = X_i^{s'} \beta_i^s + \theta^s \lambda_i^s + \varepsilon_i^s \quad \text{with } s \in \{f, m\}, \quad \theta = \rho \sigma_\varepsilon \quad \text{and} \quad \lambda_i = \frac{\varphi(Z_i \gamma)}{\phi(Z_i \gamma)}$$

Where φ and ϕ are the standard normal density and distribution functions respectively, Z_i represents the vector of explanatory variables of the participation equation² and ρ is the correlation coefficient of the wage and participation equations.

¹ It's may be due too to omitted variables in the model.

² They are different, at least in one variable, from that included in the wage equation

To correct the sample selection bias in the Neumark's modification of the Oaxaca&Blinder decomposition, we add another component to the decomposition equation. This component (selectivity effect), shows how the raw gender wage gap would change if non-participating individuals started working.

$$\overline{\ln w_m} - \overline{\ln w_f} = \underbrace{(\overline{X_m} - \overline{X_f})' \hat{\beta}^*}_{\text{Explained part} \equiv \text{Endowment}} + \underbrace{\overline{X_m}' (\hat{\beta}_m - \hat{\beta}^*)}_{\text{male advantage}} + \underbrace{\overline{X_f}' (\hat{\beta}^* - \hat{\beta}_f)}_{\text{female disadvantage}} + \underbrace{(\hat{\theta}_m \hat{\lambda}_m - \hat{\theta}_f \hat{\lambda}_f)}_{\text{Selectivity}} \quad (4)$$

Unexplained part \equiv Discrimination

The first term on the right hand side of equation (4) is the estimate of difference in the characteristics between men and women (part of the wage gap that is explained); the second term refers to the estimation of the male wage advantage, the third term refers to the women wage disadvantage, these two last terms constitute the discrimination (part of the wage gap that is unexplained), and the last term constitutes the selectivity component.

The sample used in this paper is constituted of urban full-time salaried people (wage workers) aged between 15 and 64 years old. Self-employed, employers and unpaid-workers are excluded from the sample. The data comes from the Moroccan Labor Force Survey of 2012 (LFS, 2012) which is an annual household survey covering all residents of Morocco with sample size about 60,000 households (approximately 250,000 individuals). The sampling unit is the household which is chosen on the basis of three-stage stratification scheme on Primary Unit, Secondary Unit and Households. These LFS are conducted by High Commission of Planning (HCP).

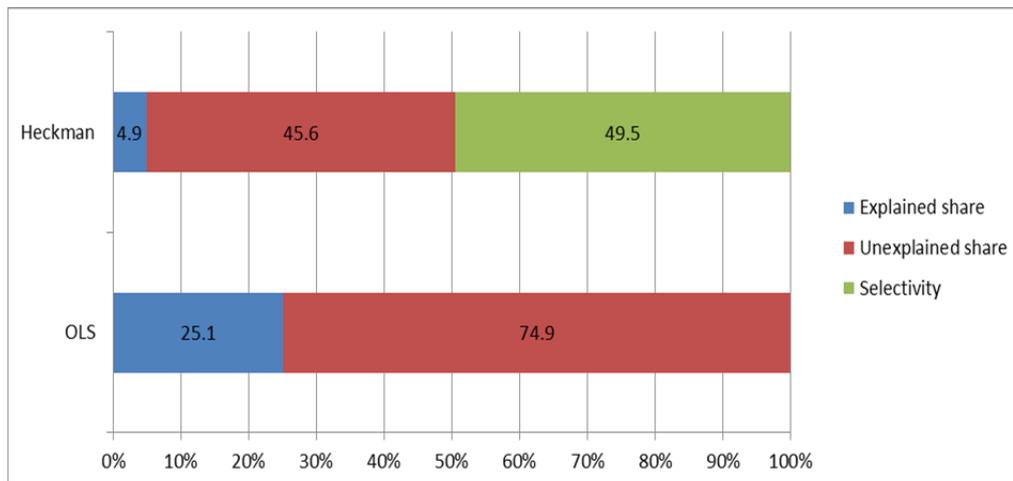
3. Oaxaca-Blinder decomposition results

In the Mincerian equations we included educational attainment (five dummy variables), potential experience variable and its square as proxies for the human capital endowments. We controlled these variables with industry (2 dummies), Marital Status (3 dummies), Contract (2 dummies), Regions (15 dummies) and one dummy variable for being head of household or not. The OLS estimation was used to both males and females to indicate the impact of each individual variable to the log wage. Results of the estimation shows an increasing return on education with the level of the degree obtained. From primary education diploma to superior diploma, the estimated coefficients are increasing and consistently. In Heckman's correction for the wage equations, we included in the participation equations, adding to the previous variables, the number of the children in the household under the age of 6 years old and the number of children between 6 and 17 year old.

Once we determined variables with significant impact on wage structure we run two Oaxaca-Blinder decompositions following the Neumark's modification. One is using the OLS estimations and the second using the Heckman's two steps correction for the wage equations in order to take into account for selectivity.

The raw wage gap, expressed as the difference between the male and female mean monthly log-wage (the expression on the left-hand side of equation (4)), amounts to 0.1890 log points. The Oaxaca-Blinder decomposition points to a significant difference in individual characteristics that explains a part of the wage gap between men and women. Indeed, 0.0475 log points is the amount of endowment part, which means that 25.1% of the wage gap is explained by the difference in human capital endowment controlled by other personal characteristics. The remaining share (74.9%) is unexplained part of the wage gap, that is considered as discrimination.

Figure1. Oaxaca-Blinder decompositions following the Neumark's modification



For the OLS estimation, the unexplained part (remuneration effect) is very high (74.9%) and the difference in mean wages due to difference in personal characteristics is estimated at 25.1%. In fact, gender wage gap in Moroccan labor market arises because of unequal treatment against women rather than differences in their human capital characteristics. Heckman's estimations confirm this result and also highlight an important selection effect (49.5%).

4. Conclusions

Using data coming from the Moroccan labor force survey (2012), this paper has examined the gender wage gap differentials in urban area. It applied the Neumark's modification of the Oaxaca-Blinder decomposition where the non-discriminatory wage structure supposed to be the pooled wage regression of male and female and without taking into account the variable female in the model.

In the first step, we estimated Mincerian wage regressions for both gender and for the non-discriminatory model. The results of these regressions show the importance of human capital characteristics in wage determination. Indeed, level of education, approximated by the level of degrees which is itself a proxy for the year's number of education, plays a significant role in wage determination.

In the second step, the mean gender wage differential is decomposed in three parts; one related to explained part, which refers to the difference in the individual endowments, the second part is the male advantage and the third one is the female disadvantage. These two last parts constitute what we call unexplained part that we refer to discrimination. In order to correct selection bias we used Heckman's two steps approach for wage equations and we added a term to the Oaxaca&Blinder decomposition to take into account the selectivity in the decomposition. The results of this study indicate the presence of a substantial gender wage gap in Morocco, most of which cannot be explained by included individual characteristics, and thus it's due to unequal treatment against women.

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