Understanding Gender Wage Gaps in the Moroccan Labour Market

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Motivation

- Women labour force participation rate was 27% lower than that of men, with disparities between different regions of the word (The Global Wage Report 2018/19).
- Women are not only excluded from the labour market but are also less likely to be employed in high-quality jobs.
- The study of wage discrimination is of great interest if we want to adjust public policies on women's employment to labour market trends.

Literature review

- The literature on the subject attributes the gender wage gap to three elements: differences in personal and professional characteristics (age, education, and experience), labor market structure (level of informality, occupational segregation by gender) and social and institutional norms
- At the national level, few studies have addressed this issue; we distinguish between:
- Studies on the determinants of female activity and the economic gains of reducing the gap between men and women in employment ((**Alaoui 2017**), **Paterno, Gabrielli, et DAddato (2008)**).
- Studies on gender pay gap: a positive wage gap at the expense of women **(Soudi 2008),(Zouari (2011)).**

Research question and contribution

- Through this paper, we aim to fill the gaps in the national literature and analyze the evolution of the gender wage gap in Morocco in 2012, 2015 and 2017.
- To do so, we use the Oaxaca and Blinder decomposition method, and the recentered influence function decomposition. The second method will allow us to analyze the wage gap along the wage distribution.

Oaxaca and Blinder decomposition

The starting point is the Mincer equation:

$$Y = \beta X + U$$

Where: Y is the wage (in logarithm), X is a set of K individual determinants $(X_1, X_2 \ldots\ldots X_K)$.β is the vector of returns associated with these determinants and U is the error term.

In each group, we model a linear relationship between Y and its determinants:After modeling the parameters of each estimated model, we note:

$$\overline{Y_A} = \hat{\beta}_{AO} + \sum_{k=1}^{K} \bar{X}_{Ak} \hat{\beta}_{Ak}$$

$$\overline{Y_B} = \hat{\beta}_{BO} + \sum_{k=1}^{K} \bar{X}_{Bk} \hat{\beta}_{Bk}$$

The wage gap between the two groups in decomposed as follows:

$$\overline{Y_B} - \overline{Y_A} = \hat{\beta}_{BO} + \sum_{k=1}^{K} \bar{X}_{Bk}\hat{\beta}_{Bk} - \left(\hat{\beta}_{AO} + \sum_{k=1}^{K} \bar{X}_{Ak}\hat{\beta}_{Ak}\right)$$

$$\overline{Y_B} - \overline{Y_A} = \sum_{k=1}^{K} \left(\bar{X}_{Bk} - \bar{X}_{Ak}\right)\hat{\beta}_{Bk} + \left(\hat{\beta}_{BO} - \hat{\beta}_{AO}\right) + \sum_{k=1}^{K} \bar{X}_{Ak}\left(\hat{\beta}_{Bk} - \hat{\beta}_{Ak}\right)$$

This gap is made up of two parts:

- An an explained part: $\sum_{k=1}^{K} \left(\bar{X}_{Bk} - \bar{X}_{Ak}\right)\hat{\beta}_{Bk}$
- An unexplained part (usually due to discrimination): $\left(\hat{\beta}_{BQ} - \hat{\beta}_{AQ}\right) + \sum_{k=1}^{K} \bar{X}_{Ak}\left(\hat{\beta}_{Rk} - \hat{\beta}_{Ak}\right)$.

The Recentered Influence Function method

- Firpo et al (2007) build on the Oaxaca and Blinder decomposition and propose a decomposition adapted to other statistics than the mean, namely quantiles of the distribution. It consists of expressing this quantile as a linear function of the average values of X:

$$\hat{Q}^{\tau}(Y) = \bar{X}\hat{\gamma}^{\tau}$$

- The coefficient γ represents the estimated valuations for each given order quantile τ in each interest group. The difference between the two quantiles is written as follows:

$$\hat{Q}^{\tau}{}_{B}(Y) - \hat{Q}^{\tau}{}_{A}(Y) = \sum_{k=1}^{K} (\bar{X}_{Bk} - \bar{X}_{Ak})\hat{\gamma}^{\tau}{}_{Bk} + (\hat{\gamma}^{\tau}{}_{BO} - \hat{\gamma}^{\tau}{}_{A0}) + \sum_{k=1}^{K} \bar{X}_{Ak}(\hat{\gamma}^{\tau}{}_{Bk} - \hat{\gamma}$$

- This gap is broken down into two parts: the difference in mean characteristics between the two groups: $\sum_{k=1}^{K}(\bar{X}_{Bk} - \bar{X}_{Ak})\hat{\gamma}^{\tau}{}_{Bk}$, and the difference in the valuation of the characteristics of the two groups at a given point in the wage distribution $(\hat{\gamma}^{\tau}{}_{BO} - \hat{\gamma}^{\tau}{}_{A0}) + \sum_{k=1}^{K}\bar{X}_{Ak}(\hat{\gamma}^{\tau}{}_{Bk} - \hat{\gamma}^{\tau}{}_{Ak})$.
- In order to estimate the valuations γ, we will use regressions on the RIF. Indeed, the influence function provides information on how a particular observation affects the value of a given statistic. In our case, we consider Q^{τ} the quantile of order τ of the distribution of Y, the associated influence function is:

$$RIF(Y_i; Q^{\tau}) = Q^{\tau} + \frac{\tau - 1(Y_i \leq Q^{\tau})}{fY(Q^{\tau})}$$

Accounting for selection bias

- The decision to participate in the labor market and the possibility of having a job differ between the two groups. There is no guarantee that the variables operate in the same direction for both groups, or with the same magnitude.
- In order to correct for selection bias, we apply the heckman procedure for women as well as for men. We first estimate a probit model of labor market participation (LFP) without restricting the analysis to the salaried population.
- We use the following variables: age, marital status and number of dependent children (age$<$5 years). This estimation allows us to obtain the Mills ratio for both genders, that will be introduced in the decomposition process and gives results corrected for selection bias

- The data come from the National Employment Survey in 2012, 2015 and 2017.
- We used the following variables: age, residence (urban, rural), marital status and region. We also collected variables on employment: hourly salary, employment status, type of employment contract, employment sector (private, public and formal, informal), sector (agriculture, industry, construction, trade, transport, repair, general administration, social services).

- Men receive a higher salary than women.
- The Moroccan population is generally young,
- More than a quarter of the population has no schooling,
- The proportion of individuals who have never attended school is higher among women (39%) than among men (22%),
- More than 60% of the Moroccan population is engaged in non-contractual work,
- In rural areas, the majority of the population is employed in the agricultural sector (more than 70%), while in urban areas, trade ranks first (24% of the urban population). Women are present in the agricultural and service sectors, while they are almost absent in construction and public works, transport and repair sectors.

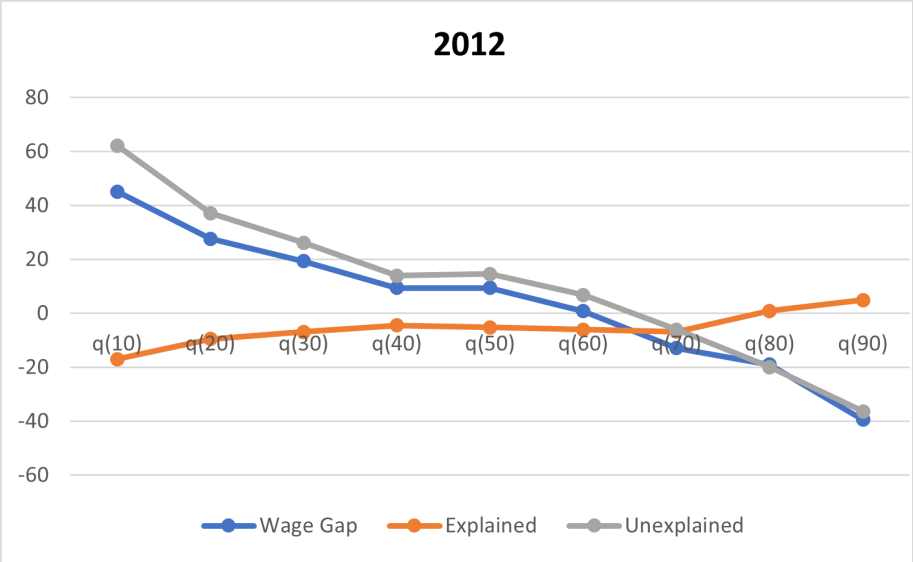
OB results, with correction for selection bias

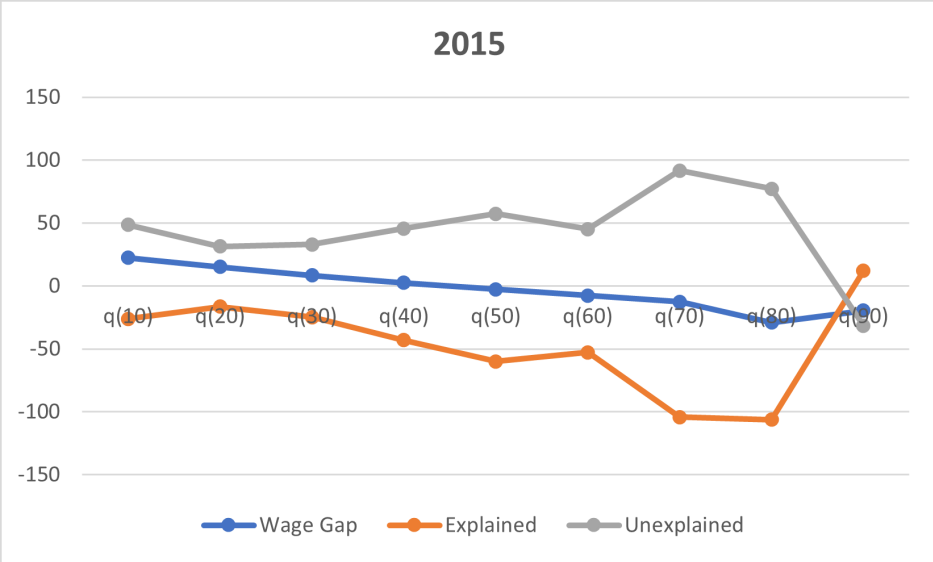
We worked with the Moroccan population aged between 25 and 60. We conducted three specifications called models 1 to 3, model 1 with only personal characteristics, model 2 with educational attainment variables and model 3 with all explanatory variables.

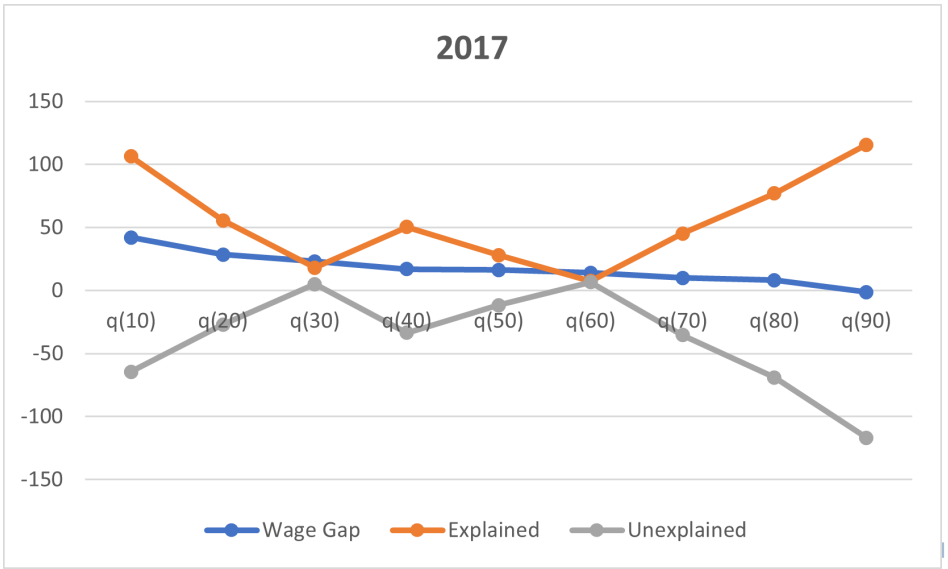
	Overall wage gap	Explained	Unexplained	M.A	F.D
Model(3): personal characteristics + education+ industry+ contract+ region, in %					
2012 GWG	**8.53*****(0.01)	-4.76 (0.01)	9.01 (0.01)	-9.01***(0.01)	18.02***(0.02)
2015 GWG	**-0.59** (0.01)	-12.88***(0.01)	12.29***(0.01)	-12.29*** (0.01)	24.56***(0.03)
2017 GWG	**18.28*****(0.01)	5.85***(0.01)	12.43***(0.01)	-12.439*** (0.01)	24.86***(0.03)

Figure 1: **Gender wage gap in 2012, 2015 and 2017**

RIF results


2012
80
60
40
20
0
-20
-40
-60
q(10)
q(20)
q(30)
q(40)
q(50)
q(60)
q(70)
q(80)
q(90)
Wage Gap
Explained
Unexplained


2015
150
100
50
0
-50
-100
-150
q(10)
q(20)
q(30)
q(40)
q(50)
q(60)
q(70)
q(80)
q(90)
Wage Gap
Explained
Unexplained


2017
150
100
50
0
-50
-100
-150
q(10)
q(20)
q(30)
q(40)
q(50)
q(60)
q(70)
q(80)
q(90)
Wage Gap
Explained
Unexplained

Policy recommendations

An urgent need for policy interventions to address gender wage discrimination in Morocco:

- Strengthening Gender Equality Legislation
- Awareness and Training Initiatives
- Evaluation of Existing Policies
- Continued Data Collection

Conclusion

Thank you for your attention!