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

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Outline

I. INTRODUCTION

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Context

➡ Understanding the roots of inequalities between the women and men and reducing gender gaps have a central place in terms of policies (Goal 5 of the SDGs is aimed at Achieve gender equality and empower all women and girls) ➡ Target: End all forms of discrimination against all women and girls everywhere

➡ The *United Nations Convention on the Elimination of All Forms of Discrimination against Women* stated, in early 1979, that for development to be sustainable, it must involve all members of society, especially women.

➡ The 2010 Human Development Report introduced three new multidimensional measures of poverty and inequality: the inequality-adjusted Human Development Index (HDI), the Gender Inequality Index (GII) and the Multidimensional Poverty Index (MPI).

Context

The Gender Inequality index

Note: The size of the boxes reflects the relative weights of the indicators and dimensions.
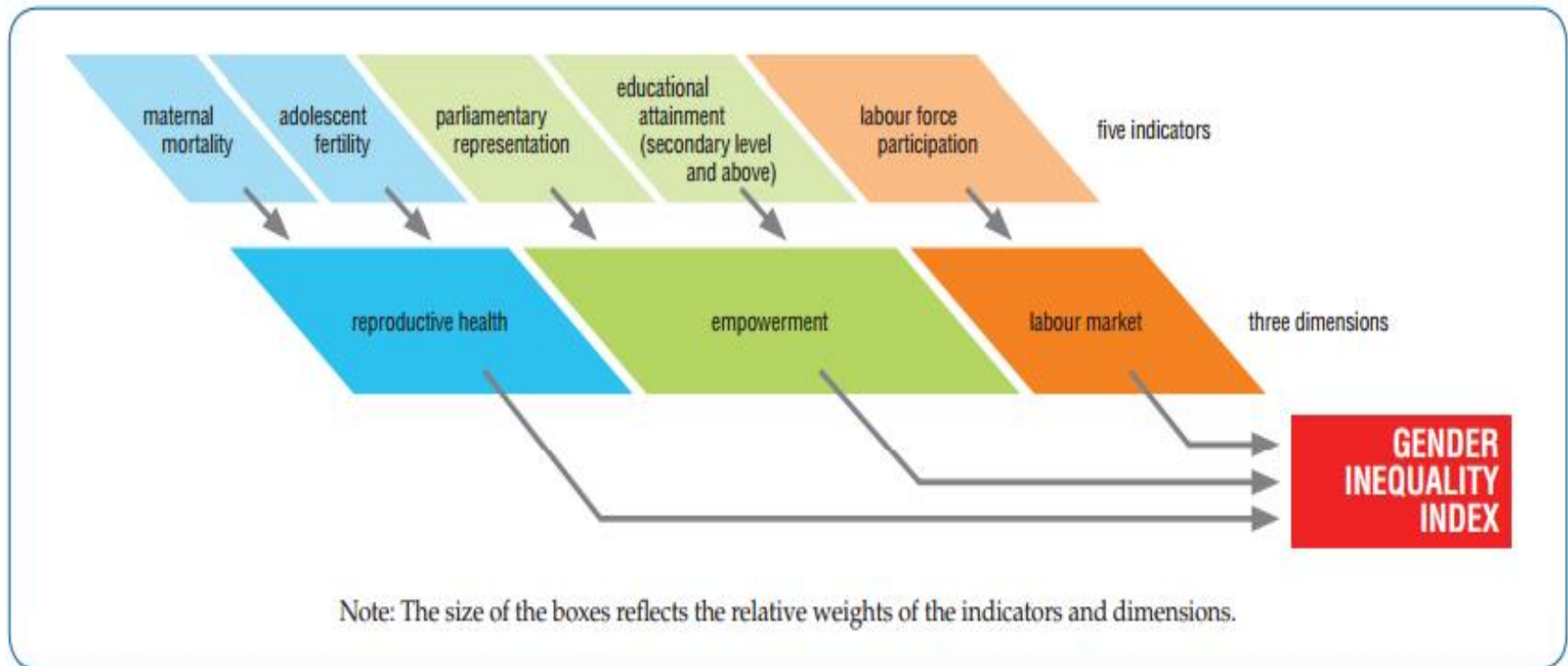
Source: UNDP Human Development Report Office

Context

In Morocco, over the past years, women have benefited from several institutional and social reforms guaranteeing wider rights and favoring 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 the this phenomena. And this paper comes to participate to national debate on this phenomena.

II.   GENDER WAGE GAP: LITERATURE REVEW & MEASURES

○ The literature on the economics of discrimination started with Becker's seminal study ;

○ Since then, a number of authors have calculated gender wage gap at equal productivity (due to the proliferation of the use of microdata in the last three decades)

The most comon way to analyze discriminqtion based on gender is to compare male and female earnings holding productivity constant:

o Include a sex (1 is woman and 0 if not) dummy in the wage resgression model:

$$\ln w_i = \beta x_i + \alpha sex_i + \varepsilon_i$$

o One of the techniques widely used is the decomosition technique as pioneered by Blinder & Oaxaca (1973).

$$\ln w_m = \beta_m x_m + \varepsilon_m \qquad \ln w_f = \beta_f x_f + \varepsilon_f$$

$$\overline{\ln w_m} - \overline{\ln w_f} = \beta_m (\overline{x}_m - \overline{x}_f) + (\beta_m - \beta_f)\overline{x}_f$$

Two methodological issues have to be dealt with:

o First, male and female wage equations have to be estimated consistently.

➔Proper treatment of various methodological problems such:

  ➢ sample selection biases in the estimation. The often-recommended estimation strategy is the use of Heckman's two step procedure;
  ➢ Heterogeneity-biased estimates;
  ➢ Endogeneity.

o Heckman's two steps procedure for Mincerian equations:

$$\begin{cases} \ln w_i = \beta x_i + \varepsilon_i \\ p_i^* = \gamma v_i + \mu_i \end{cases}$$

Where p_i^* is a latent variable associated with participation in labor market, v_i is a vector of determinants of participation to LM, and μ_i and ε_i are i.i.d error terms that are assumed to follow a bivariate normal distribution $(0,0,\sigma_\varepsilon,\sigma_\mu,\rho)$

Wages are observed for those for whom $p_i^* > 0$

It follows that the conditional expectation of wages is:

$$E(\ln w_i / x_i, p_i^* > 0) = \beta x_i + E(\varepsilon_i / x_i, p_i^* > 0)$$

$$= \beta x_i + \rho \sigma_\varepsilon \frac{\varphi(\gamma v_i)}{\phi(\gamma v_i)}$$

Where φ and ϕ denote the standard normal density and distribution functions respectively. ρ Represents the correlation coefficient of the wage and participation equations. And then the final equation will be as follow:

$$\ln w_i = \beta x_i + \theta \lambda_i + \varepsilon_i^*$$

where $\theta = \rho \sigma_\varepsilon$ and $\lambda_i = \frac{\varphi(\gamma v_i)}{\phi(\gamma v_i)}$

o The second methodological issue concerns the appropriate decomposition of the gender wage gap that allows meaningful interpretation of its components.

$$\overline{\ln w_m} - \overline{\ln w_f} = \beta_m (\overline{x}_m - \overline{x}_f) + (\beta_m - \beta_f)\overline{x}_f$$

o The first term on the right hand side captures the earnings differential due to different characteristics of males and females.

o The second term is the earnings gap attributable to different returns to those characteristics or coefficients.

$$\overline{\ln w_m} - \overline{\ln w_f} = \beta_m (\overline{x}_m - \overline{x}_f) + (\beta_m - \beta_f)\overline{x}_f$$

o It can be argued that, under discrimination, males are paid competitive wages but females are underpaid. If this is the case, the male coefficients should be taken as the non-discriminatory wage structure, as in equation above.

o Conversely, if employers pay females competitive wages but pay males more, then the female coefficients should be used as the non-discriminatory wage structure.

o Therefore, the issue is how to determine the wage structure that would prevail in the absence of discrimination. This choice poses the well-known index number problem given that we could use either the male or the female wage structure as the nondiscriminatory benchmark.

II : Gender Wage Gap:
literature review and measures

The literature has proposed different weighting schemes to deal with the underlying index problem:

o Oaxaca (1973) proposes either the current male wage structure or the current female wage structure as the "true" non-discriminatory wage structure;

o Reimers (1983) implements a methodology that is equivalent to assigning identical weights to men and women.

o Cotton (1988) argues that the non-discriminatory structure should approach the structure that holds for the larger group and use as a weighting structure the fraction of males in the sample;

o Neumark (1988) proposes a general decomposition of the gender wage differential such as:

$$\overline{\ln w_m} - \overline{\ln w_f} = \underbrace{\hat{\beta}^*(\overline{x_m} - \overline{x_f})}_{Explained\_part \equiv Endowement}$$

$$+ \underbrace{\underbrace{(\hat{\beta}_m - \hat{\beta}^*)\overline{x_m}}_{male\_advantage} + \underbrace{(\hat{\beta}^* - \hat{\beta}_f)\overline{x_f}}_{female\_disadvantage}}_{Unexplained\_part \equiv Discrimination}$$

o Neumark shows that β* can be estimated using the pooled sample to estimate β*.

o The first term is the gender wage gap attributable to differences in characteristics.

o The second and the third terms capture the difference between the actual and pooled returns for men and women, respectively.

o Using the Heckman's two steps correction, the Neumark decomposition is as follow:

$$\overline{\ln w_m} - \overline{\ln w_f} = \underbrace{\hat{\beta}^* (\overline{x_m} - \overline{x_f})}_{\text{Explained\_part} \equiv \text{Endowement}}$$

$$+ \underbrace{\underbrace{(\hat{\beta}_m - \hat{\beta}^*)\overline{x_m}}_{\text{male\_advantage}} + \underbrace{(\hat{\beta}^* - \hat{\beta}_f)\overline{x_f}}_{\text{female\_disadvantage}}}_{\text{Unexplained\_part} \equiv \text{Discrimination}}$$

$$+ \underbrace{(\hat{\theta}_m \hat{\lambda}_m - \hat{\theta}_f \hat{\lambda}_f)}_{\text{Selectivity}}$$

Some results of Oaxaca&Blinder decomposition (%)

	Madagascar	Czech	Solvakia	Hungary	Poland	France
	OLS PNDWS	Keckman MNDWS	Keckman MNDWS	Keckman MNDWS	Keckman MNDWS	Keckman MNDWS
Unexplained part	78,2	88,3	121,4	136,9	153,4	25,6
Explained part	21,8	16	-9,1	-69	-72,9	71,6
Selection part	--	-4,3	-12,3	32,1	19,5	2,8

III. GENDER & LABOR MARKET: AN OVERVIEW

Female LM Participation

Women : 1999 → 2014

30,4% ↘ 25,3%

Female LF Participation rate, 2013

Gap of 47,1 points

LF participation rate

Arab countries

Men :

Western countries

1999 → 2014

79,?% ↘ 7?,4%

25,1%

Source : World Bank, 2013

Iraq, Algérie, MENA, Arabie saoudite, Le monde arabe, Liban, Égypte, Tunisie, Maroc, Libye, Bahreïn, Koweït, Émirats arabes unis, Zone euro, Monde, France, Union européenne, OCDE, Espagne, Allemagne, Finlande, États-Unis, Australie, Brésil, Suède, Canada, Suisse, Chine

Female Labor Participation

LF participation rate and enrollment ratio of youth aged between 15 à 24 years (%)
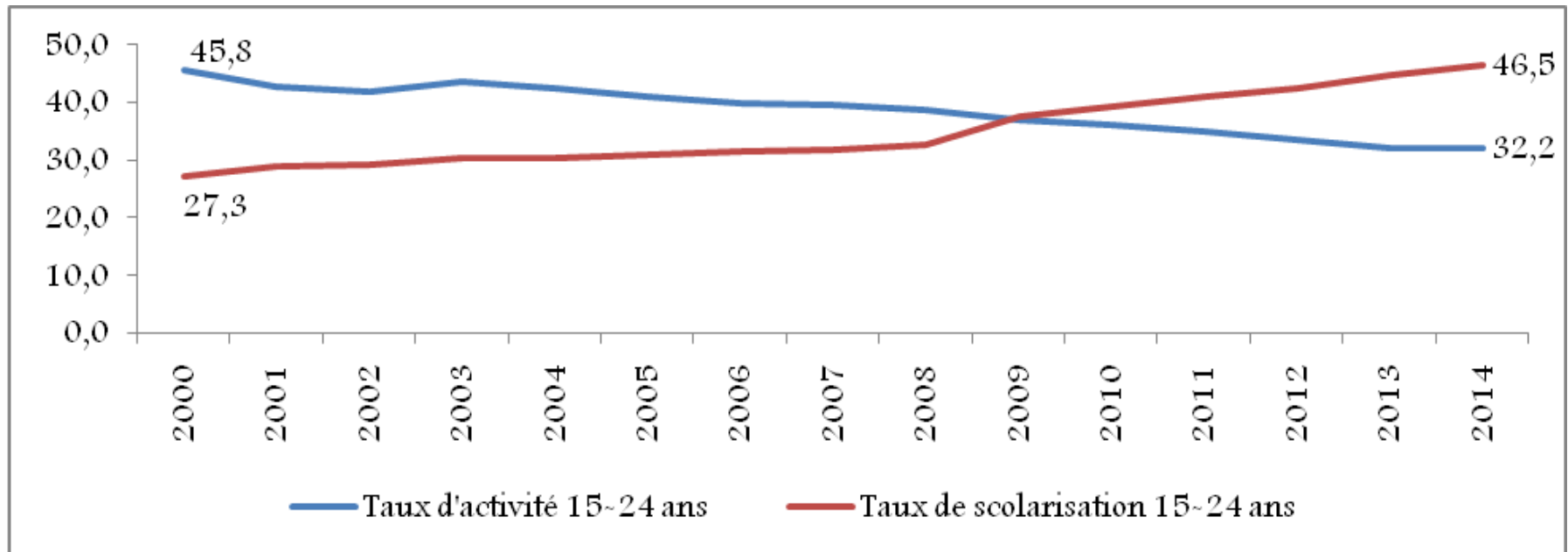
Female Labor Participation
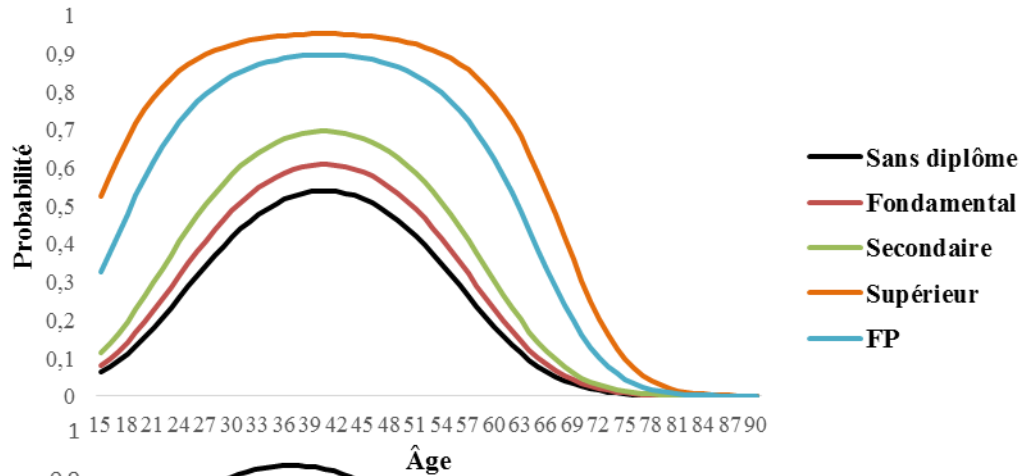
Women

The probability of being in LM increases with the level of diploma.
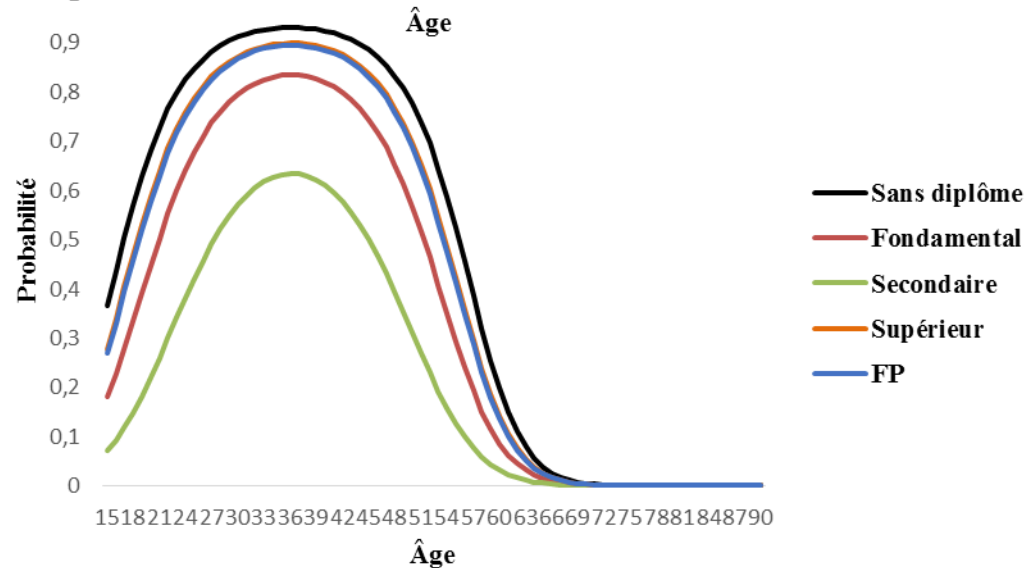
Men

Those with no qualifications are more likely to be in the labor market.

Female Labor Participation
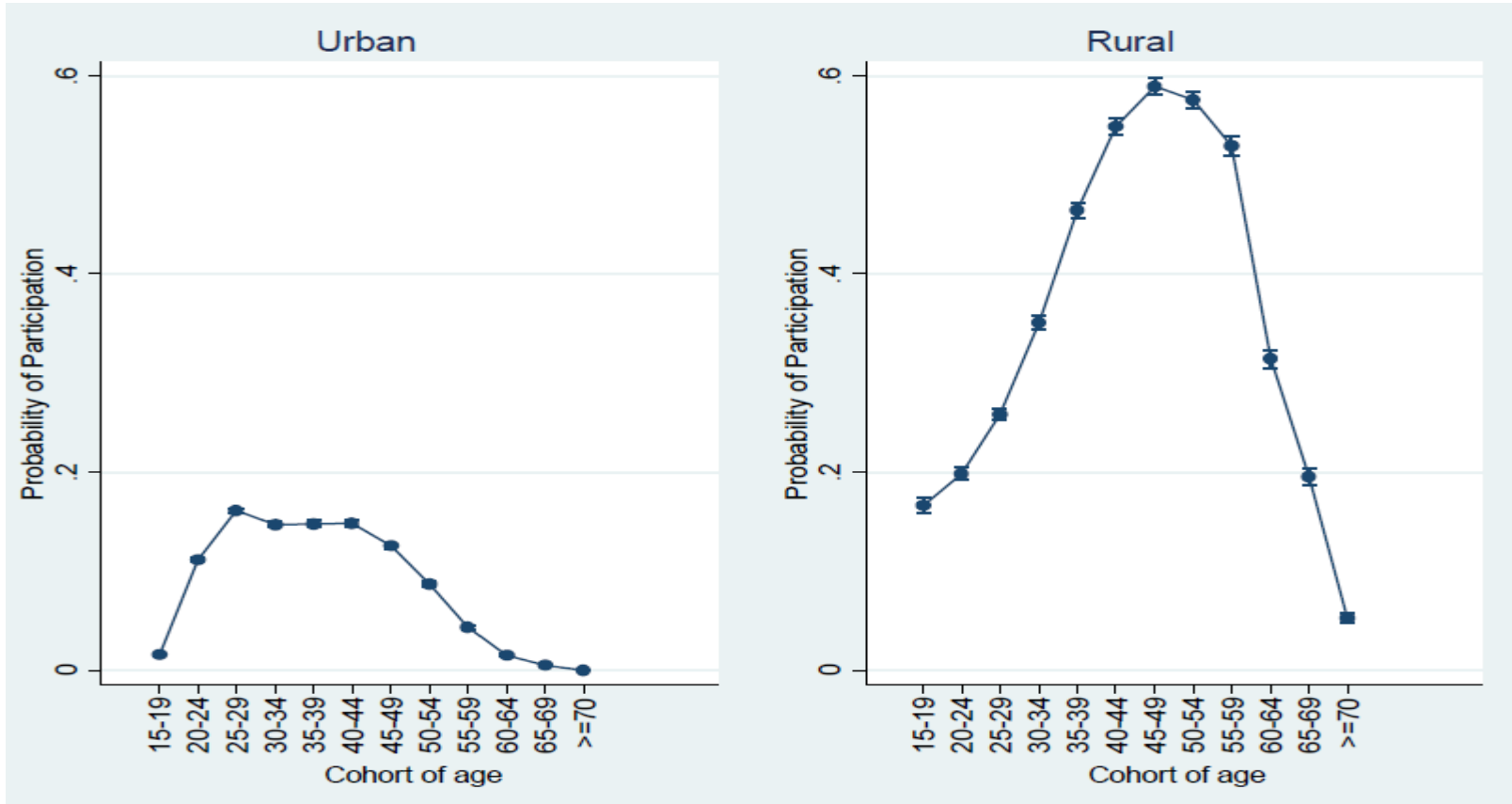
Female Labor Participation

Marriage restricts women's participation in the labor market, especially in urban areas.
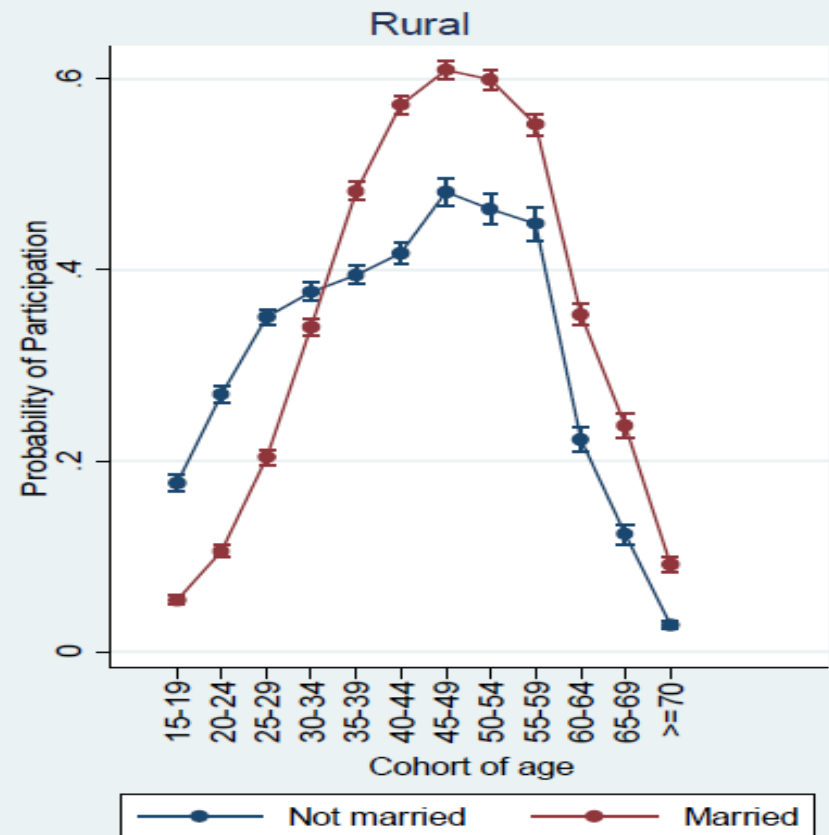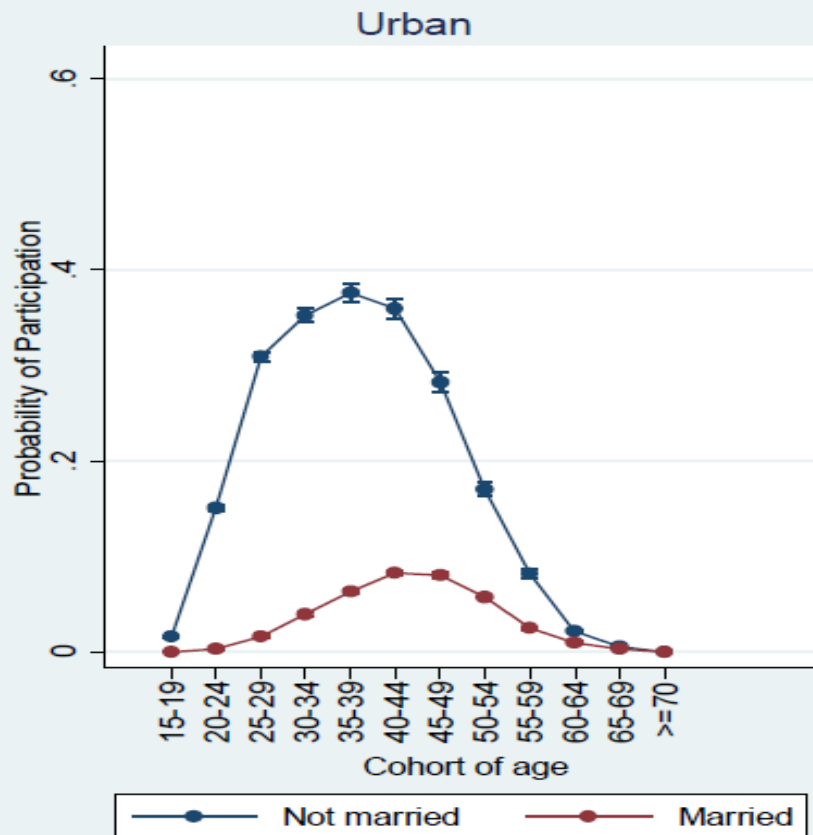
Female Labor Participation

Barriers behind women's participation in the labor market:

➔ Individual factors

➔ Familial Factors

➔ Societal Factors

➔ Economic Facors

IV. DATA & METHODOLOGY

1. **Data**

2. **Variables**

3. **Methodology**

This analysis is focused on investigating gender wage differentials among wage workers (who work for salary). The sample in the analysis is restricted to men and women between 15 and 64 years old and who have permanent and full time job in urban area.

Wages are defined in terms of monthly wage income from main employement, expressed in Moroccan Dirham.

Source of data: Moroccan Labor Force Survey (2012):

- o Sample size: 60000 households (≈250000 individuals)
- o A quarterly and continious survey since 1999
- o Scope of survey: urban and rural area

Variables for wage equations:

› Level of education (5 dummies)
› Potential experience and its square (continous)
› Marital Status (3 dummies)
› Contract (2 dummies)
› Regions (15 dummies)
› Industry (2 dummies)
› Head of HH or not

Variables for probit equations (for Heckman's correction):

› + child06_sum
› + child717_sum

1. **Data**

2. **Variables**

3. **Methodology**

Variable	Obs	Mean	Std. Dev.	Min	Max
lnwage	21073	7.855134	.7214567	2.944439	11.51293
female	21355	.2597518	.4385086	0	1
fondamental	21336	.2694976	.4437092	0	1
secondaire	21336	.0478065	.2133617	0	1
superieur	21336	.113892	.3176875	0	1
techniciens	21336	.119282	.3241276	0	1
qual_speci	21336	.0700694	.2552699	0	1
exppot	21166	19.95337	11.91759	0	56
exppotsq	21166	540.1593	535.1665	0	3136
secteur_se~e	21282	.3146791	.4643988	0	1
secteur_te~e	21282	.6581148	.4743525	0	1
regions_sud	21355	.0302037	.1711514	0	1
souss	21355	.0694919	.2542948	0	1
gharb	21355	.0442519	.2056591	0	1
chaouia	21355	.0420979	.2008171	0	1
haouz	21355	.0775931	.2675364	0	1
oriental	21355	.0696792	.2546116	0	1
rabat	21355	.1262936	.3321877	0	1
doukkala	21355	.0431281	.2031501	0	1
tadla	21355	.0238352	.152539	0	1
meknes	21355	.0502458	.2184569	0	1
fes	21355	.0703816	.2557951	0	1
taza	21355	.0220089	.1467158	0	1
tanger	21355	.0712245	.2572056	0	1
cdd	21148	.0734348	.2608551	0	1
cdi	21148	.3588519	.479675	0	1
verbal	21148	.0350861	.1840017	0	1
marie	21346	.6092476	.4879304	0	1
veuf	21346	.0177082	.1318919	0	1
divorce	21346	.0279209	.1647502	0	1
head_hh	21355	.5428237	.4981744	0	1

1. **Data**

2. **Variables**

3. **Methodology**

Augmented version of Mincer's equations:

$$\overline{\ln w}_m = \hat{\beta}_m x_m + \hat{\theta}_m \hat{\lambda}_{mi}$$

$$\overline{\ln w}_f = \hat{\beta}_f x_f + \hat{\theta}_f \hat{\lambda}_f$$

And the Neumark's decomposition:

$$\overline{\ln w_m} - \overline{\ln w_f} = \underbrace{\hat{\beta}^*(\overline{x_m} - \overline{x_f})}_{\text{Explained\_part} \equiv \text{Endowement}}$$

$$+ \underbrace{\underbrace{(\hat{\beta}_m - \hat{\beta}^*)\overline{x_m}}_{\text{male\_advantage}} + \underbrace{(\hat{\beta}^* - \hat{\beta}_f)\overline{x_f}}_{\text{female\_disadvantage}}}_{\text{Unexplained\_part} \equiv \text{Discrimination}}$$

$$+ \underbrace{(\hat{\theta}_m \hat{\lambda}_m - \hat{\theta}_f \hat{\lambda}_f)}_{\text{Selectivity}}$$

V.   EMPIRICAL RESULTS & DISCUSSION

Mincer's equations (OLS):

1. **Earning determination**

2. **Decomposition of the gender wage gap**

VARIABLES	femmes	hommes	pooled
fondamental	0.2651***	0.1333***	0.1737***
	(13.83)	(15.04)	(20.95)
secondaire	0.6176***	0.4293***	0.4682***
	(20.08)	(23.28)	(29.12)
superieur	1.2091***	1.1386***	1.1353***
	(49.19)	(80.65)	(91.56)
techniciens	0.9225***	0.7460***	0.7823***
	(40.09)	(54.07)	(65.82)
qual_speci	0.4432***	0.4015***	0.4214***
	(12.83)	(27.87)	(30.74)
exppot	0.0178***	0.0193***	0.0175***
	(8.28)	(15.60)	(16.68)
exppotsq	-0.0003***	-0.0003***	-0.0002***
	(-5.60)	(-11.64)	(-11.46)
secteur_secondaire	-0.0747	0.1464***	0.1160***
	(-1.46)	(6.81)	(5.65)
secteur_tertiaire	-0.1060**	0.0900***	0.0523***
	(-2.13)	(4.25)	(2.59)
regions_sud	-0.0035	0.0563***	0.0564***
	(-0.06)	(2.90)	(2.96)
souss	-0.0453	-0.0162	-0.0149
	(-1.49)	(-1.05)	(-1.05)
gharb	-0.2683***	-0.2263***	-0.2361***
	(-8.06)	(-12.81)	(-14.71)
chaouia	-0.1022***	-0.0176	-0.0356**
	(-3.03)	(-0.99)	(-2.19)
haouz	-0.0841***	-0.0271*	-0.0292**
	(-3.27)	(-1.93)	(-2.30)
oriental	-0.1538***	-0.0239*	-0.0238*
	(-4.75)	(-1.69)	(-1.79)
rabat	0.0107	0.0277**	0.0261**
	(0.51)	(2.31)	(2.45)
doukkala	-0.1655***	-0.0296	-0.0596***
	(-5.19)	(-1.63)	(-3.68)
tadla	-0.3130***	-0.1211***	-0.1472***
	(-6.35)	(-5.50)	(-7.08)
meknes	-0.0989***	-0.1137***	-0.1002***
	(-2.94)	(-7.04)	(-6.68)
fes	-0.3046***	-0.0532***	-0.1124***
	(-11.08)	(-3.71)	(-8.59)
taza	-0.1893***	-0.1412***	-0.1361***
	(-3.68)	(-6.22)	(-6.33)
tanger	0.0898***	0.0086	0.0335**
	(3.09)	(0.61)	(2.56)
cdd	0.2236***	0.2348***	0.2193***
	(8.96)	(16.74)	(17.53)
cdi	0.5551***	0.4548***	0.4708***
	(31.67)	(49.00)	(56.13)
verbal	0.2466***	0.1935***	0.1922***
	(7.19)	(10.05)	(11.17)
marie	0.1259***	0.0668***	0.0844***
	(7.68)	(5.29)	(8.87)
veuf	0.0368	-0.0488	-0.2469***
	(1.08)	(-0.69)	(-9.86)
divorce	0.0402	0.0115	-0.1625***
	(1.46)	(0.28)	(-8.11)
head_hh	0.0593***	0.1279***	0.1925***
	(2.62)	(10.58)	(22.72)
Constant	6.9170***	6.9931***	6.9373***
	(128.64)	(280.81)	(300.97)
Observations	5,349	15,303	20,652
R-squared	0.6512	0.6310	0.6244

Mincer's equations (OLS):

1. **Earning determination**

2. Decomposition of the gender wage gap

VARIABLES	Women	men	pooled
fundamental	0.2651***	0.1333***	0.1737***
	(13.83)	(15.04)	(20.95)
secondary	0.6176***	0.4293***	0.4682***
	(20.08)	(23.28)	(29.12)
high school	1.2091***	1.1386***	1.1353***
	(49.19)	(80.65)	(91.56)
technicians	0.9225***	0.7460***	0.7823***
	(40.09)	(54.07)	(65.82)
V.training	0.4432***	0.4015***	0.4214***
	(12.83)	(27.87)	(30.74)
potexp	0.0178***	0.0193***	0.0175***
	(8.28)	(15.60)	(16.68)
potexpsq	-0.0003***	-0.0003***	-0.0002***

Probit model for Heckman's correction:

1. **Earning determination**

2. Decomposition of the gender wage gap

VARIABLES	Women	Men
Age	0.1201***	0.1799***
	(23.23)	(37.00)
Age_sq	-0.0015***	-0.0028***
	(-22.93)	(-48.10)
Fundamental	0.2236***	-0.1094***
	(10.40)	(-5.03)
Secondary	0.7834***	-0.0826*
	(19.16)	(-1.67)
University	1.3805***	0.1777***
	(41.64)	(4.74)
Technicians	1.5658***	0.2035***
	(48.34)	(5.71)
V.training	0.6457***	-0.2491***
	(13.91)	(-7.47)
Maried	-0.7560***	0.8834***
	(-34.46)	(24.01)
Widower	-0.3617***	0.3089**
	(-8.15)	(2.22)
Divorced	0.1757***	0.3549***
	(4.50)	(3.89)
Head_hh	0.4143***	0.6504***
	(13.48)	(17.93)
Child06_sum	-0.1046***	-0.0302
	(-5.54)	(-1.42)
Child717_sum	0.0105	0.0601***
	(1.16)	(6.29)

Probit model for Heckman's correction:

o Education is a key factor determining the probabilit of a women being employed as wage worker;

o Being married plays apposing roles for men and women, while this situation impacts negaltively the female participation, it's considered as a facror encouraging male participation;

o Not surprisingly, having children under 6 years has strong and negative impact on women's probability of being engaged in wage employement. For men, this variable is not significant.

Mincer's equations (Heckman):

For Women:

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]
mills					
lambda	-.5346217	.1435438	-3.72	0.000	-.8159625 -.2532809

○ The sign of lambda coefficient is significant and negative ➔ the need for correction for women's mean wages, which results in an increase in women's mean wages and thus reducing the wage gap.

1. **Earning determination**

2. Decomposition of the gender wage gap

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1. Earning determination

2. Decomposition of the gender wage gap

Mincer's equations (Heckman):

For Men:

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
mills						
lambda	-.1497029	.0866391	-1.73	0.084	-.3195124	.0201067

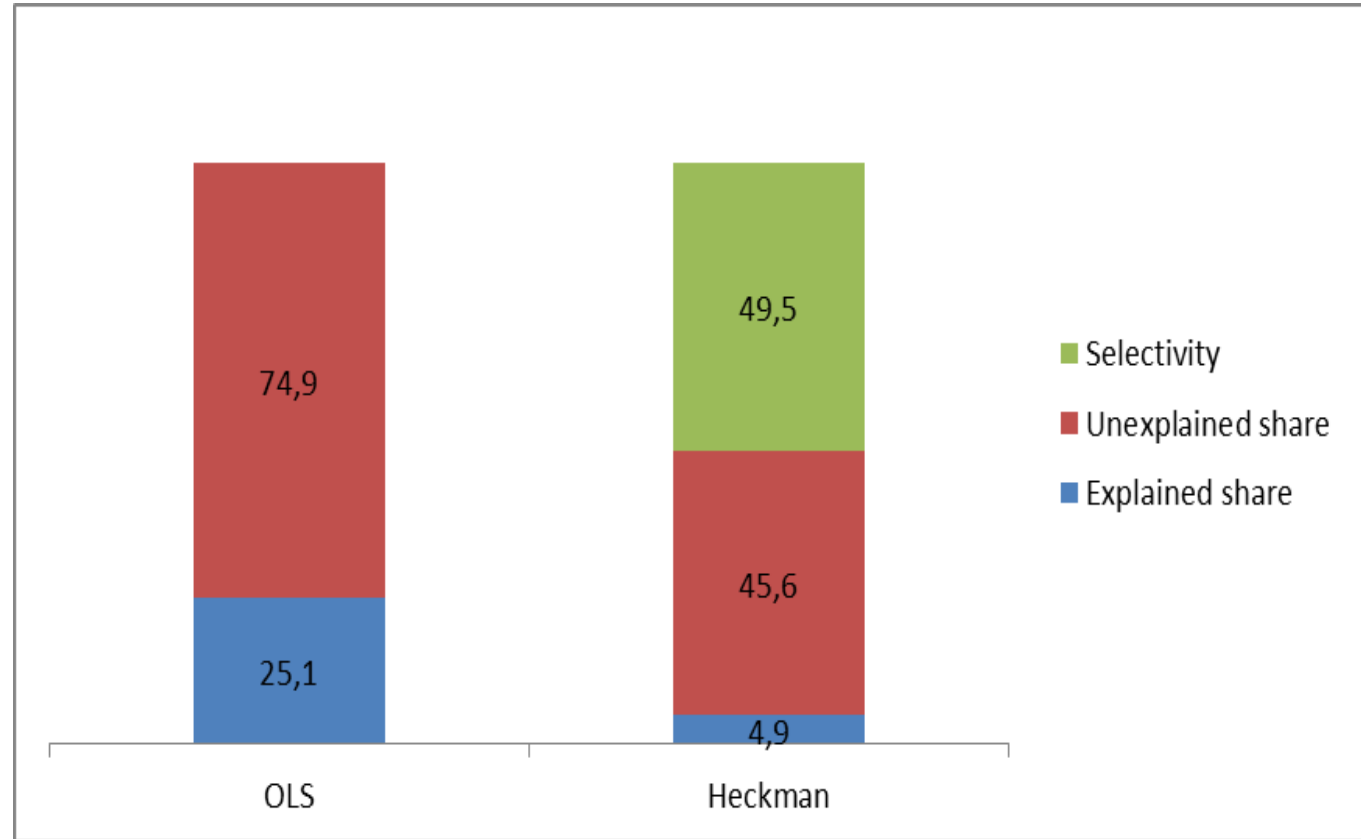o   The lambda's coefficient is not significant, thus we don't need for coorection of men's equation.

Neumark's Decompositions:

2. **Decomposition of the gender wage gap**

1. Earning determination

2. Decomposition of the gender wage gap

o For OLS estimation, the unexplained part (remuneration effect) is very high (74.9%) and the difference in mean wages due to difference in personnal characteristics is estimated at 25.1%.

o In fact, gender wage gap in Moroccan labor market arises because of unequal treatment against women rather than differences in their human capital characteristics.

o Heckman's estimations confirm this result and highlight an important selection effect (49.5%).

o One of the possible sources of gender inequality in the labor market could be that low-qualified women are more discouraged from labor market participation than low-qualified men.

VI. CONCLUSION

o Eliminating inequal pay between men and women requires policies aimed at :

- combating discriminatory practices and gender-based stereotypes;
- Designing effective policies on maternity as well as providing infrastructures for taking care of children and advocacy for better sharing of family responsibilities.

o Many female workers remain out of the labor force for a long time, which inevitabely deteriorates their skills and makes them less employable in a paid job. This requires an adequate policy response in a form of education and retraining to increase women's potential wage and hence their participation.

Thank you for your attention!

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