Wage gap between men and women in Tunisia

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Abstract

This paper focuses on estimating wage differences between males and females in Tunisia by using the Oaxaca-Blinder decomposition, a technical that isolates wage gap due to characteristics, from wage gap due to discrimination against women. The data used in the analysis is obtained from the Tunisian Population and Employment Survey 2005. It is estimated that, the gender wage gap is about 19% and the results ascertain that the gender wage gap is mostly attributed to discrimination, especially to underestimation of females’ characteristics on the labor market.

Keywords: Gender wage inequality, Blinder-Oaxaca decomposition technical, linear regression models, R statistical programming language

1 Introduction

Tunisia has always been considered as one of the most advanced Arab countries in terms of women rights, especially owing to its family code enacted in 1956. Indeed, right after independence, the social dimension was indispensable to the creation of a modern and balanced society which prohibits all forms of exclusion and ensures equal opportunities, including the improvement of demographic and health indicators, lengthening life expectancy, the increase in immunization coverage, the decline in infant mortality and reducing poverty and expanding coverage. The country then ratified the Convention on the Elimination of All Forms of Discrimination against Women in 1985 and amended the labor code, the penal code, nationality code, etc. which have strengthened the rights of women in Tunisia. The new Tunisian Constitution of January 2014 seems to be continuing the same tradition and is showing advances in the field women’s rights, especially with two articles (21 and 46) which decide on discrimination, equal opportunities in the positions of responsibility and gender-based violence.

If the adoption of the Personal Status Code in 1956, which took place well before the establishment of the republic, formalized gender equality, the impact of the ensuing education system performance improvement was spectacular. Women’s education has altered their course and social relations in general. Tunisia has undergone major socioeconomic transformations which have upset the traditional patriarchal structure, impacting the status of women in the family and in society. As a result of this State Feminism, Tunisian women benefit from higher status and greater opportunities in education and employment. However, in 2011, with the revolution and the political unrest that followed, we discover a very different reality and perceive a profound social malaise that can easily play in favor of religiosity and probably to the detriment of women. After more than half a century of feminism and political and civil commitments, the situation seems to be weak and could then toggle to the disadvantage of women. So one may wonder whether changes in women’s progress in demographic transition and access to education and maternal health resources have effectively resulted in the integration of women into economic and political activities. This situation can be analyzed from the perspective of the labor market. Girls’ vocational streams are increasingly diversified, as they have more opportunities to access specialties of their choice, even those that are traditionally dominated by men. However, the change has not reflected in the labor market which largely remains influenced by professional male and female stereotypes and continues to offer females training courses and professions perceived as being appropriate to their gender (education, health, social service, etc.). In this market, women are threatened by job insecurity, unemployment, and frequently find themselves in a vicious circle: their chances to find work are relatively small, they become discouraged, and sometimes give up by leaving the

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labor market when it’s difficult to balance work and family life. How can we account for the poor economic integration of women into the labor market? How can we measure the amount of discrimination against them? Why is gender discrimination such an issue, when, since independence, the rights given to women were supposed to be part of a wider policy of development and modernization of the country?

The paper is divided into five sections. The first section introduces the problem of gender wage discrimination in Tunisia. Section II describes the Oaxaca-Blinder decomposition. In section III, we briefly review the data used for the wage equation estimation and the methodology employed. Section IV concerns the empirical model. Finally, section V presents the results and the relevant conclusions.

1- Gender wage discrimination in Tunisia.

Questions on the status of women are not new in Tunisia and women’s rights restoration was the first measure of independent Tunisia. Indeed, the promulgation of the Personal Status Code on 13 August 1965 upset many widely held Tunisian beliefs on several levels (abolition of polygamy, institution of legal divorce, removing the right to impose marriage, fixing the age minimum for marriage at 18 years for girls, subject to his consent and custody given to the mother if the father dies, institution of adoption and guardianship ...). This code was the first important law enacted after independence, even before the proclamation of the republican regime in July 1957.

Consequently, the legislative reforms in women’s rights and gender equality were particularly important in the history of Tunisia after independence. Indeed, assuming that equal participation in all spheres of life is an essential element for development, Bourguiba explained that any objective, which is based on democracy, respect for human rights and sustainable development could be achieved only if it guarantees to all women the full enjoyment of their human rights and ensures that no woman is denied the right to work. These ideas were certainly not new for Tunisia, but Bourguiba had the desire to make reforms. Indeed, in 1857, Mohamed Senoussi wrote a study on women in Islam to discuss women’s rights in Muslim religion. The author focused on and was committed to the education of women, despite the requirements at that time which prohibited them from writing prose or poetry. He shows that education of women is important, not only for the fulfillment of their religious duties, but also for their obligation to bring up children and help their husband. One can also mention Tahar Haddad, who continued this reformist movement. In 1930, 30 years before the promulgation of CSP, he presented his bold and modernist ideas and thus began a courageous fight for the legal and social liberation of women. Tahar Haddad assessed a divided and inert society that lives on the memory of a sublimated past prohibiting any development based on time requirements (see [14]). He criticized traditional Muslim laws such as polygamy, repudiation and forced marriage, which had, according to Haddad, deteriorated the status of Muslim women. In addition, he encouraged a new reading of sacred texts away from a simple exegetical and literalist reading while advocating for the adoption of a new analysis that would search for the goals and higher objectives of Sharia. Between 1980 and 2011, while barricading freedom and weakening the opposition, Ben Ali voluntarily continued the process initiated by his predecessor in women emancipation. A will which he demonstrated through the constitutional amendments of 1993, the creation of a strong institutional framework and the inclusion of the gender approach to the agenda of the five-year development plans since 1991.

Ben Ali was constantly monitored by feminist movements and Tunisian civil society, both of which have been vigilant in questioning the status of women. Paradoxically, the second president, while establishing an authoritarian and autocratic regime, continued the state feminism of his predecessor and promoted the empowerment of women. He nevertheless exploited the theme of women in connection with radical Islam and terrorism to legitimize attacks on freedom of expression.

On a legal level, it should be noted that Tunisia joined CEDAW on 1985, with reservations, which were repealed by Decree Act in August 2011. The new Tunisian Constitution of January 2014 shows positive signs, especially with two Articles (21 and 46) which focus on discrimination, equal opportunities in different senior positions, and gender-based violence.

We therefore find that Tunisian feminist tradition is not new has been a constant goal long before the revolution. But the big question remains: Will one of the most equal codes of personal status in the region actually save women from social and economic vulnerability? Let’s begin with women’s situation in the labor market, where the low status could be approached by wage differentials between the sexes. The situation will be analyzed through three characteristics: Female participation, employment and unemployment.
Two measures have played a major role in improving the status of women in Tunisia and opened the doors to a girl’s salaried work: education and demographic policy. Education is one of the fundamental achievements of the societal project in Tunisia, as young people’s easy access to education has greatly helped the profound social changes affecting the country since the independence. Massive efforts to enroll students have been made, notably through the introduction of compulsory education up to 16 years and equal access to all to education without discrimination of any kind. Today, the enrollment rates of young children stand at nearly identical levels for girls (99%) and boys (98.9%). In higher education, the enrollment rate of girls even exceeds that of boys. Demographic policy, mainly family planning and birth control, has often been presented as a requirement for improving the status of women. Thus, in 40 years, the fertility rate fell from 7% to the level of 2%, avoiding an uncontrollable population explosion. The natural population growth rate decreased from 1.96% in 1990 to 1.09% in 2014 and life expectancy keeps lengthening for both sexes. The structure of the population by age tends toward strengthening active age groups (15-59 years) and an accelerated shrinking of the child population (under 15 years). But apparently, despite increasing enrollment rates and birth control, inequalities between men and women persist, especially in the labor market, where progress often lags. Tunisian women remain pretty inactive and the rate of women’s access to the labor market is relatively slow given the demographic, educational and legal change made in the country.

2.1 Persistence of low activity rate.

On moving from 5.5% in 1966 to 25.7% (against 70.3% for males and around 47% for both sexes) in 2012, the participation of women over 15 years old in the labor market has grown, particularly for young people, but it is too low compared to men’s and to the global average. The progress in training-education has certainly made women more qualified, but it has not had a major effect on parity.

Except for the boom times it experienced in the 70s with the promulgation of a law on export industries, women’s activity has largely been limited to unskilled, low-wage jobs. Once again, the gap between the sexes is in favor of men (table 1). The largest proportion of women employed in 2011 is that of employees, leading with nearly 79.5% (68.6% of employed men are employees), followed by independent workers at 12.5% (28.2% men occupied) and family workers at 8% (3.2% of employed men). Even if the gap is getting narrower, it still persists at levels above those of developed countries. Women’s entry into the labor market resulted in an initial explosion of unemployment and they mostly concentrated on occupations that erect, in one way or another, femininity as a professional quality. Thus, with 80%, salaried employee is the professional category which hosts the most women. On the contrary, men beat them in self-employed category.

| Year | 1966   | 1975   | 1988   | 1994   | 2004   | 2010   | 2011   | 2012   |
|------|--------|--------|--------|--------|--------|--------|--------|--------|
| Male | 83.50% | 81.10% | 78.60% | 73.80% | 67.80% | 69.50% | 70.60% | 70.3%  |
| Female| 5.50%  | 18.90% | 21.80% | 22.90% | 24.20% | 24.80% | 23.70% | 25.70% |
| Whole| 44.90% | 50.20% | 50.50% | 48.40% | 45.80% | 46.90% | 47.80% | 47.70% |

Table 1: Evolution of the activity rate by gender (15 years old and more), Source: National employment survey. Institut National des Statistiques (INS).

2.2 Too few diversified employments

The increasing participation of women in the labor market can be illustrated through the employment rate, whose low levels reflect female sex integration difficulties. Indeed, once again, the rate is well below the developed countries ones. While male employment is diversified across many sectors, 2/3 of employed women are concentrated in three main sectors with high female labor, particularly services (49.4%), manufacturing (26.4%) and agriculture (16.7%); women doing these activities tend to suffer more climatic and economic setbacks. Indeed, girls career choices are increasingly diversified and they possess opportunities to access the specialty of their choice and perform tasks traditionally dominated by men. However, the change has not been reflected in the labor market, which is largely influenced by professional male and female stereotypes. For their part, girls continue to favor training courses and professions perceived as appropriate to their gender, such as education, health and social service. In these areas, women think they will find better employment opportunities and have the ability to reconcile family and working life.
As a result, girls often find themselves employed in areas with the least job security: In 2013, 20% are in technical sciences compared to 72.9% in lettres. In higher education, in a set of 22 sectors, 14 are particularly feminized: social and human sciences, languages, economics, journalism, law, agriculture, services. Girls are relatively less represented in engineering (29%), architect (34.5%), veterinary emergency (35.9%), physical sciences (45.9%), information technology (47.4%), and mathematics and statistics (49.4%). Job creation also benefits men more than women and, during the last five years, women have only received 17% of all new jobs, a third of the average job demand. Even though school enrollment level is the same for boys and girls, or even better for the latter, differences exist in the curricular path followed by each sex. The female segment of the labor market remains poorly diversified and follows a certain sex ratio that limits women’s access to many resources the market provides. Thus, girls are concentrated in unskilled labor sectors, which not only fosters increased competition between women but also results in a devaluation of these sectors.

2.3 High unemployment rates

The increasing participation of women, although it remains very low, has increased pressure on the labor market. The situation was completely different in the middle 80s when men were more likely to be unemployed than women (13.7% against 11%). Tunisian labor market is essentially men’s market and unemployment affects women more than men as shown in table (2). In deed, not only the unemployment rate reduction in recent years has benefited men more than women but also, the gap in overall unemployment rates between both sexes has been growing ever since. Women unemployment decreased seriously between 1966 and 1980, owing to the enactment of Law 72 on the establishment of export industries occupying many of the female population. It then recorded a slight decrease from 19.6% to 16.2% between 1999 and 2003, and resumed its growth in 2003. Today, with a value of 26.9% against a global average of 6.5%, it is among the highest in the world.

Additionally to its high level, unemployment particularly affects graduates of both sexes and it comes as no surprise that women are the first affected. According to the latest data (the fourth quarter of 2013) of the National Institute of Statistics (INS), in 2012, unemployed universities graduates has reached 187.500, whose two-thirds are young women (67%). Female university graduates have to wait more than a year, sometimes even two or three years to be offered a job. At the same period, among young women (25-34 years) only 41% are in the labor market, against 89% of men in the same age group. In 2013, the unemployment is more severe among women (21.9%) than men (12.8%), and affects twice as many women university graduates (41.9%) than male graduates (21.7%). These figures, however, remain underestimations and well below the reality of unemployment among Tunisian women, as they are not present on the formal labor market. In 2011, 66.3% of young women are declared inactive, but only 18% of unskilled women are estimated to be unemployed. Half of young women graduates, are putting much more than a year to find a first job against 32% of their male counterparts. Finally, important pay disparities between men and women persist. There are few studies to identify these differences accurately, the only one, performed on the data of 1999 population employment survey by the INS on a sample of 5976 employees including 1441 women highlights a gender pay gap of 18%. It’s owed to discrimination for a total of 12%, giving a relative contribution of 67.65%. With relative contribution of 32.35%, productive characteristics explain nearly 6% of the gap.

| Year | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  |
|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Male | 12.10%| 11.50%| 11.30%| 11.20%| 11.30%| 10.90%| 15.00%| 14.90%|
| Female| 15.20%| 15.10%| 15.90%| 15.90%| 18.80%| 18.90%| 27.40%| 26.60%|
| Whole| 12.90%| 12.50%| 12.40%| 12.40%| 13.30%| 13.00%| 18.30%| 18.10%|

Table 2: Evolution of the unemployment rate by gender. Source: National employment survey. Institut National des Statistiques (INS)

3 The Oaxaca-Blinder decomposition

In this section, we review the basics of Oaxaca-Blinder decompositions and discuss the alternative choices of counterfactual wage structure. Firstly, we specify that in economics, there is discrimination when two equally qualified and, thus perfect substitute for each other individuals are treated differently solely on the basis of a non-economic characteristic such as their gender, race, ethnicity, disability, etc. Discrimination acknowledgement as a development of the standard representation of the labor market, was followed in the 70s by empirical and experimental methods of measuring discrimination by sex, race or ethnic origins.
The usual procedure is based on the decomposition technique Oaxaca-Blinder, the work coming out of two economists Alan Blinder (see [3]) and Ronald Oaxaca (see [21]), who introduced it in 1973 in the economic literature. The work eventually became the basic tool to study the various forms of discrimination. The idea is based on the residual difference methodology where workers with identical characteristics are equally productive and therefore should expect an identical wage.

The residual difference method decomposes within the average pay gap between two populations, one part expressed by differences in productive characteristics of individuals: the endowments effect, and a second unjustified part related to differences in identical characteristics returns on the labor market between both populations, the residual difference. This unjustified gap is then assimilated to wage discrimination. The authors estimate separate reduced Mincerian wage equations for the two compared groups of workers. Both of the groups are supposed to have the same wage formation process as written in (1).

\[
\log W_m = X_m \alpha_m + \epsilon_m \\
\log W_f = X_f \alpha_f + \epsilon_f
\]

Each of the equations in (1) is an expression of the linear regression models that explains the logarithm of the wage of each category (Female and Male). Indeed, \(W_m\) and \(W_f\) represent respectively the vector of wages of the Males and Females in our Sample. The matrices \(X_m\) and \(X_f\) contain respectively the independent variables of the Male and Female Samples. In both of them, the first column contains only ones, i.e; \(1 = (1, 1, \ldots, 1)\)', and this column represents the intercept in the regression models expressed in (1). The vectors \(\epsilon_m\) and \(\epsilon_f\) are the errors in the models expressend in (1). They are supposed to be random vectors satisfying the following assumptions: zero mean, i.e \(E(\epsilon_m) = E(\epsilon_f) = 0\) and each of them has a diagonal variance matrix with all the diagonal elements are equal to an unknown parameter \(\sigma^2 > 0\). Finally, the parameters \(\alpha_m\) and \(\alpha_f\) are the unknown vectors that will be estimated using the Ordinary Least Squares method (OLS). Their estimators are expressed as follows:

\[
\hat{\alpha}_m = \left( X_m'X_m \right)^{-1} X_m' \log W_m \\
\hat{\alpha}_f = \left( X_f'X_f \right)^{-1} X_f' \log W_f
\]

The estimators computed in (2) will help us to understand how the log of the Wage vary in terms of the characteristics of the sample. We can then write the difference between the mean of the log of the wages as a sum of two parts. A first part can be explained by the difference of the characteristics of the two sample Male and Females. The second part is the unexplained part of this decomposition. Indeed we can express the difference between the mean of the log of the wages as below

\[
\log W_m - \log W_f = \hat{\alpha}_m'X_m - \hat{\alpha}_f'X_f = \hat{\alpha}_m'X_m - \hat{\alpha}_f'X_m + \hat{\alpha}_f'X_m - \hat{\alpha}_f'X_f = \left( \hat{\alpha}_m - \hat{\alpha}_f \right)'X_m + \hat{\alpha}_f'(X_m - X_f)
\]

where \(X_m\) and \(X_f\) are the vector of the means of the independent variables of the models in (1). The explained part in (3) is the shift effect due to group membership discrimination in the labor market. The unexplained part is in (3) is the share attributable to differences in endowments returns. Thus, if the returns were equal, the wage gap can be explained entirely by differences in observable characteristics. If instead characteristics returns were equal, the average income gap is entirely explained by structural effects which may possibly be the consequence of other forms of discrimination.

The decomposition can be sensitive to the used wage structure and the type of hypothesized discrimination: nepotism for favor of men or discrimination against women. In deed, this method raises the question of the choice of weighting. The challenge is to be able to determine a priori a standard non-discriminatory returns of individual characteristics and measure relative to this standard the male advantage, women’s disadvantage, and the share resulting from the difference of characteristics. With wage discrimination hypothesis, men receive competitive salaries and thus they are paid their marginal productivity, but women are underpaid (4). In this case, the rule or non discriminating wage standard would be that of men. Yet it is also possible that we were in a situation of nepotism in favor of men, a situation in which women receive competitive salaries and men are overpaid. In such a situation, the coefficients from the women’s earnings functions provide an estimate of the nondiscriminatory wage structure as in the following Equation (3)

\[
\log W_m - \log W_f = X_f\hat{\alpha}_f - X_m\hat{\alpha}_m = \hat{\alpha}_m'X_m - \hat{\alpha}_m'X_f + \hat{\alpha}_f'X_f - \hat{\alpha}_f'X_f = \left( \hat{\alpha}_m - \hat{\alpha}_f \right)'X_f + \hat{\alpha}_m'(X_m - X_f)
\]
4 Sample characteristics

Our results are based on data of the Survey of population and employment conducted in 2005 by INS, an official statistical agency. The samples contain waged workers of both sexes who are more than 18 years old. Male sample is composed of 29,854 individuals and the size of females sample is 10,482 individuals. For each respondent in the sample, the database provides information, including age, educational attainment, employment status, income, industry and occupation of employment, marital status and the residential location. The average monthly earnings are 382 and 323 TD per month for males and females, respectively.

Men and women are more represented in primary school levels with 64.9% and 35.1% respectively. Among women 20.7% are universities graduates against 12% for men as shown in Fig 1.

![Figure 1: Educational level for both gender](image)

The emergence of new technologies and home appliances has allowed women to develop their role within the family and has enabled them to free themselves from household chores. Before, the role of housewife was always assigned to them and this role takes a lot of time, thus women had little free time to devote to other business or personal education. The evolution begins with the advent of more efficient and therefore less restrictive household tools. Therefore, the working time of women is reduced. Technological developments is mainly beneficial to women, because it eases their tasks and allows them to spend the least possible time. We thus built a new variable that we called the socioeconomic score which provides information on the possession of equipment and appliance. We expect that the effect is greater on women’s income.

We considered the different levels of access to equipments according to gender. We took into account resources such as cars, TV, washers, computers, cookers, fridges, dishwashers, mobiles, access to internet … (more details in appendix). Men and women have different access and control differently the resources depending on their gender, age, Social-Economic group, educational level, ect. Woman’s access to resources is supposed to be delayed and more difficult. From all these variables we have a Multiple Correspondance Analysis to construct an Index that measures a Socio-Economic situation of the respondant (see [10]). These scores take values in $\mathbb{R}$ where high positive values indicate a high level of Socio-Economic situation where live the respondant and negatives values indicate low level for the Social-Economic situtation of the respondant. In Figure 2 we make a brief comparison between gender regarding the Social-Economic score. We can easily note that there’s no difference between Males and Females in our Sample.
In Figure 3 we represent the estimated non linear model used to explain the Monthly Wage according to the Social-Economic Score for both gender. We easily notice that men salary increases gradually with the Social-Economic score. However for women, not only the effect on wage is less important but the relationship is decreasing because of the concavity between levels of Social-Economic score and Monthly remuneration: a better Social-Economic level is worth less and less for women.

Summary statistics for the used variables are detailed in Figure 4.
In Oaxaca-Blinder decomposition, whatever is the non-discriminatory wage structure used, we have one reference group, one for each component: the difference in the endowments taking dominant group, thus men, as the reference group (explained part in equation (3)) and the difference in the way market value the two groups characteristics, with low-paid, thus women, as the reference group (unexplained part in equation (3)).

The reference group may influence the explained and unexplained parts, to overcome this problem some writers on the discrimination litterature re-arange the the mean log-wage equations to transform the simple bipartite decomposition into a
tripartite one: the three-fold decomposition decomposes the difference into three categories difference: endowments effect, returns effect and interaction between these two differences. It uses only one reference group for the endowments and returns components, it is female reference in Equation (5)

\[
\log W_m - \log W_f = \hat{\alpha}_f (X_m - X_f) + (\hat{\alpha}_m - \hat{\alpha}_f)' X_f + (\hat{\alpha}_m - \hat{\alpha}_f)' (X_m - X_f)
\]

(5)

and male reference in the third one as in Equation (6) (see [18])

\[
\log W_m - \log W_f = \hat{\alpha}_m (X_m - X_f) + (\hat{\alpha}_m - \hat{\alpha}_f)' X_m + (\hat{\alpha}_m - \hat{\alpha}_f)' (X_m - X_f)
\]

(6)

As in [15] the considered the outcome variable is real monthly wage, the aim of the decomposition is in this case to explain the difference in mean wages between women and men by the mean values of explanatory variables which denotes the endowment effect, the returns effect and interaction as illustrated in [5].

The outcome variable is explained by the following variables: age, age squared, socioeconomic score, three educational levels (primary, secondary and higher), six regions of residence (North East, North West, East Center, West Center South East, South West), ten activities (mechanical and electrical industry, textile, clothing and leather industry; cottage industry, trade, transport and telecommunications, hotel and catering, banking and insurance, housing activities, socio-cultural services, health administration education services) and the marital status (married, widowed and divorced). In Table 3 we present the results of the estimation of the regression models for both gender.

Regarding the returns of age which may be accounted for by experience and seniority, the later influences positively both wages. The effect is paradoxically much stronger for females than for males as an additional year increases mean wage by 5.971 TD and woman’s by 12.705 TD. However, paradoxically this effect is much stronger for females than for males. As for the quadratic association between age and wages, our estimates show the usual concave shape that highlights the effect of an extra year on salary: wage increases with age, but at a decreasing rate and the effect is stronger for females than for males. The socioeconomic score favours males and females, the effect is however greater for the laters. Indeed, a higher socioeconomic level increases mean earnings of female individual by 129.704 TD and mean earnings of male one by 83.422 TD. The results imply that education favours both females and males since mean wage increase with level of education for both of them. However, finding of women rate of return that generally exceeds that for men is supported by many studies in Côte d’Ivoire with Wim P. M. Vijverberg (see [23]), in India with Geeta Gandhi Kingdon (see [10]) and in fifty six countries with George Psacharopoulos (see [20]). Psacharopoulos who reviewed the rate of return to education and noted that the rate of return for women generally exceeds that for men in fifty-six developed and developing countries. He explained saying the more educated the person is, the more his human capital is important. Table (2) shows education tends to favour females more than males, all levels included. For instance, mean female earnings with tertiary education rise by 328.675 TD relative to one with no education while the mean earnings of male individual with tertiary education level rise by 261.616 TD relative to one with no education. The difference is less pronounced when it comes to primary and secondary levels.

In regards to the activity, the survey provides ten categories. Women benefit from being employed in typical men’s job where the feminization rate is very week such as mecanical and electrical industrie, women’s job have, however, a negative impact in their mean income. For example, being employed in housing activities reduces female wages on average by 2.357 TD. Being employed in banking and insurance is in favor for both of sexes with an increase of 113.424 TD on average for females and 96.399 TD for males.

As for residence results, it was no big surprise to find that working in the capital could be advantageous in terms of remuneration for both sexes, exceptionally for women. Estimates reported in table (4) suggest that employees in Tunis receive, on average, higher salaries than the ones of internal regions. Results show a very significant impact of living in urban area (North East and East Center) relative to rural area for both females and males.

Regarding marital status, being married is a somewhat important factor of the wage for both sexes, it however drops more on males. If men case corroborates with Polachek and Mincer (1974) studies, women’s remains paradoxical. Widowhood is to no
### Table 3: The Estimation of the Regression Models of the Monthly Wage.

| Dependent variable: | Monthly Salary |
|---------------------|----------------|
|                     | Female (1)     | Male (2)          |
| Age                 | 5.971*** (4.147, 7.795) | 12.705*** (11.371, 14.038) |
| Age squared         | −0.048*** (−0.073, −0.024) | −0.126*** (−0.142, −0.111) |
| SE score            | 83.422*** (77.812, 89.031) | 129.704*** (124.824, 134.584) |
| Primary             | 39.882*** (28.323, 51.440) | 48.462*** (37.924, 59.000) |
| Secondary           | 76.872*** (65.277, 88.467) | 109.216*** (98.488, 119.944) |
| Higher              | 261.616*** (248.374, 274.859) | 328.675*** (316.779, 340.572) |
| North East          | −4.573 (−12.829, 3.683) | −2.539 (−9.785, 4.706) |
| North West          | −43.878*** (−53.743, −34.013) | −30.518*** (−38.071, −22.966) |
| East Center         | −7.526** (−14.604, −0.449) | −2.240 (−8.394, 3.914) |
| West Center         | −20.342*** (−33.270, −7.415) | −2.456 (−11.205, 6.292) |
| South East          | −38.610*** (−49.462, −27.758) | −35.444*** (−42.842, −28.046) |
| South West          | −57.098*** (−67.568, −46.629) | −42.706*** (−50.504, −34.909) |
| Mechanical and electrical industry | 8.352 (−13.745, 30.450) | 3.846 (−9.934, 17.625) |
| Textile, clothing and leather industry | 10.839 (−8.956, 30.634) | −3.870 (−17.291, 9.551) |
| Cottage industry    | 0.905 (−26.486, 28.295) | −2.960 (−17.178, 11.258) |
| Trade               | −33.727*** (−55.871, −11.583) | −18.676*** (−30.492, −6.861) |
| Transport and telecommunications | 39.912*** (14.779, 65.044) | 45.401*** (33.140, 57.663) |
| Tourism and catering | 23.785* (−1.168, 48.738) | 20.461*** (8.540, 32.382) |
| Banking and insurance | 96.399*** (67.260, 125.538) | 113.424*** (94.041, 132.806) |
| Housing activities  | −9.726 (−35.189, 15.737) | −2.357 (−17.352, 12.639) |
| Socio-cultural services | −47.011*** (−68.335, −25.687) | −25.706*** (−38.577, −12.836) |
| Health, administration and education services | 84.555*** (64.280, 104.830) | 24.581*** (14.201, 34.962) |
| Married             | 31.481*** (24.916, 38.045) | 24.933*** (18.282, 31.584) |
| Widowed             | −16.530* (−34.262, 1.203) | −2.246 (−39.153, 34.661) |
| Divorced            | 5.747 (−11.500, 22.994) | 4.383 (−26.864, 35.629) |
| Constant            | 23.718 (−14.387, 61.823) | −81.385*** (−109.321, −53.448) |

| Observations | 10.482 | 19.372 |
| R²           | 0.605  | 0.568  |
| Adjusted R²  | 0.604  | 0.567  |
| Residual Std. Error | 129.652 (df = 10456) | 144.671 (df = 19346) |
| F Statistic  | 641.128*** (df = 25; 10456) | 1,017.129*** (df = 25; 19346) |

*Note:* *p < 0.1; **p < 0.05; ***p < 0.01
one’s advantage, the effect is however greater on men’s income which decreases by an average of 16.530TD (against 2.246 TD for women). Divorced men seem to earn on average more than their divorced female counterparts.

6 Oaxaca-Blinder gender wage gap decomposition results

Oaxaca points out the well-known index number problem: It is difficult to say à priori which of the two wage structures (Equations (3) and (4)) is the non-discrimination wage structure, since it is unclear on what basis the salary would be determined if there was no discrimination. If female wage structure is nondiscriminatory, we have pure discrimination where males earn more than they should. On the other hand, male wage structure gives nepotism in which females earn less than they should. The latter seems to be more tangible as we are interested in increasing woman’s wage rather than decreasing man’s. In the following, we use the female wage structure as reference group and assume that all labor market should give anyone with same qualities women wage equation.

6.1 Estimation using the female wage structure as reference group

The results of the estimation of gender wage differentials using the Oaxaca-Blinder decomposition technique with female wage structure as reference point, are illustrated in Table 4. The mean value of real monthly wages amounted to 381.615 Tunisian Dinars for males and 323.029 Tunisian Dinars for females in 2005, the wage gap is therefore about 58.585 Tunisian Dinars. The estimation of the model implies that, without nepotism, men monthly wages should equal 335.427 Tunisian Dinars. This means too that, due to nepotism, females are receiving 46.118 Tunisian Dinars less in their real monthly wages. The value of discrimination represents 14.3\% of the mean value of real monthly wages they are actually receiving.

| Wage decomposition components       | Males   |
|-------------------------------------|---------|
| Mean value of real monthly wages    | 381.615 |
| Overall wage gap                    | 58.585  |
| Due to Characteristics              | 12.397  |
| Due to returns on characteristics   | 46.518  |
| Interaction effect                  | -0.330  |
| Due to Discrimination               | 46.188  |
| Wage without discrimination effect  | 335.427 |

Table 4: Oaxaca-Blinder Wage Decomposition Results (Female as the reference group)

Next, we examine the endowments and coefficients components of the threefold decomposition variable by variable. Figures below show the estimation results for each variable, along with error bars that indicate 95\% confidence intervals. Age return, assimilated to experience and seniority, appears to have significant portion of the male-female wage gap. A less important portion is driven by score returns as shown in bar graph of Figure 6.
Regarding educational level as shown in Figure 7, in the endowments component, primary and secondary levels appear to have a statistically significant influence in favour of men, with the sole exception of tertiary level: women are better endowed than men, but the market undervalues their characteristics. In the coefficients component, the three levels achieve clear statistical significance with most significant portion for tertiary and secondary levels. In this way, a significant gender wage gap is driven by group differences in the proportion of individuals with secondary and high school educations. In other words, individuals with lower diploma tend to earn less.

When we consider region perspective (see Figure 8), the 8th plot graphic shows better endowed women in all regions except North-East and East-Center. Coefficients effect however harms women in all regions whatever are their endowments.
As Figure 9 makes clear, differences in the endowments components in transport and telecommunication, tourism and health, administration and education services account for the decisive portion of the wage gap explained by endowments. Results confirm the greater the proportion of women in an occupation, the lower the characteristics value. The masculine image of an occupation is a good signal for skills and professions. Feminized ones are decommissioned. Effects on coefficients seem to be statistically insignificant or only marginally significant except for health, administration and education services, where despite being less endowed than men, market gives a good estimate to women’s characteristics.
The threefold decomposition by marital status in Figure 10 below shows that a significant portion of the gender wage gap is due by and large to endowment component of marriage. In the coefficients component, widowhood effect is the most significant on gap.
Bar graphs (Fig 1-10) detailing characteristic, Bar graphs (9-15) detailing the effects of characteristics, returns and interaction, could be resumed in the table below (5). We can sum up by saying that the constant that theorists interpret as human capital base salary without any human capital endowment shows an advantage for women in terms of a very important performance effect (more than the double of discrimination). Thus, at the entrance of the labor market, pay inequalities are favorable to women. At job application moment, men and women are supposed to have the same characteristics but the market values better female performance. Experience approximated by the variable age is an important source of wage inequality with an effect five times higher than discrimination. It is, however, softened by the effect of marginal returns: the decreasing marginal returns of experience attenuate the wage gap between men and women and the accumulated experience stock reduces the wage gap. Regarding education, all levels are in favor of men and therefore contribute to wage discrimination. This discrimination is doubled at higher levels because women have better characteristics, but the market understimates their performance. The regional effect is small but always in favor of men. Marriage synonymous with family responsibilities and therefore less clamp to the labor market, is paradoxically favorable to women thanks to its returns' effects.

Married men characteristics are better than women’s, but the trend reverses with coefficients effect. Paradoxically being married is favourable to women contrary to what has been predicted by Polachek and Mincer who explained the considerable influence of the marriage but only on male earnings, and put forward the key role of career breaks, and maternal penalty in the depreciation of human capital and deficit of professional experience especially among married women and mothers. The explanation of such a result could be given by O.Donni S.Ponthieux (see [9]) who wrote that married woman is dedicated to domestic activities and thus accumulates a specific capital to couple life. However, because of divorce and the trend of fluid families, the value of this capital is low and the spouse might be encouraged to over-invest in the labor market and accumulate general capital rather than the specific one. Goldin (see [11]) gave the same explanation writing that with divorce rate increasing constantly, women in couples no longer have a non-market alternative and behave more like single women by anticipating a likely separation. Married women try to maximize their bargaining power by improving their situation in the event of a separation. This would explain their general willingness to invest in their own careers and be financially independent and thus to invest in the market work to the detriment of domestic work. Thus, the university no longer acts as a marriage market for them. By extending Becker’s ideas, Ponthieux and Donni wrote it would be best that one of the two spouses concerns himself to domestic activities and thus accumulates a specific capital to life couple. However, in case of divorce, the value of this capital is low and this is why both spouses might be encouraged to over-invest in the labor market and accumulate general capital rather than specific one.

The wage gap by industry is in favor of women in education, administration and health services. In these three services although women have smaller endowments, the market overestimates characteristics compared with males. I thus recognizes women for qualities they cannot have. The social construction of female identity in occupations continues and the market thinks that women do better in women’s professional fields that are associated with feminine qualities. Finally, if women had the same characteristics as men, on average, their salaries increase by 12,400 TD, whereas it would increase by 46,500 TD if they received men remuneration of these characteristics. The Tunisian labor market pays very poorly the characteristics of women.
| Characteristic Effect | Returns Effect | Interaction Effect | Nepotism |
|-----------------------|----------------|--------------------|----------|
| (Intercept)           | 0.000          | -105.103           | -0.000   | -105.103 |
| Age                   | 35.499         | 217.359            | 40.032   | 257.390  |
| Age squared           | -21.739        | -88.242            | -35.172  | -123.415 |
| SE-score              | -5.164         | 12.745             | -2.865   | 9.880    |

| Education             |                |                    |          |
|-----------------------|----------------|--------------------|----------|
| Primary               | 0.670          | 2.374              | 0.144    | 2.518    |
| Secondary             | 2.219          | 13.676             | 0.934    | 14.609   |
| Higher                | -8.340         | 15.898             | -2.138   | 13.760   |

| Region of residence   |                |                    |          |
|-----------------------|----------------|--------------------|----------|
| North East            | 0.185          | 0.336              | -0.082   | 0.254    |
| North West            | -1.053         | 1.250              | 0.321    | 1.571    |
| East Center           | 0.601          | 1.539              | -0.422   | 1.117    |
| West Center           | -0.625         | 0.829              | 0.549    | 1.378    |
| South East            | -1.873         | 0.220              | 0.154    | 0.374    |
| South West            | -1.329         | 1.111              | 0.355    | 1.446    |

| Nature of the activity|                |                    |          |
|-----------------------|----------------|--------------------|----------|
| Mechanical and electrical industry | -0.087 | -0.246 | 0.047 | -0.199 |
| Textile, clothing and leather industry | -2.927 | -4.726 | 3.972 | -0.754 |
| Cottage industry      | 0.020          | -0.063             | -0.087   | -0.150   |
| Trade                 | -1.256         | 0.807              | 0.560    | 1.367    |
| Transport and telecommunication | 2.051 | 0.136 | 0.282 | 0.418 |
| Tourism and catering | 1.545          | -0.082             | -0.216   | -0.298   |
| Banking and insurance | 0.169          | 0.234              | 0.030    | 0.264    |
| Housing activities    | -0.090         | 0.169              | 0.068    | 0.237    |
| Socio-cultural services | 0.742 | 1.612 | -0.336 | 1.276 |
| Health, administration and education services | 6.903 | -22.543 | -4.896 | -27.439 |

| Status                |                |                    |          |
|-----------------------|----------------|--------------------|----------|
| Married               | 6.025          | -3.098             | -1.253   | -4.352   |
| Widower               | 0.364          | 0.360              | -0.315   | 0.045    |
| Divorced              | -0.111         | -0.032             | 0.026    | -0.006   |
| Overall               | 12.397         | 46.518             | -0.330   | 46.189   |

Table 5: Threefold decomposition variable by variable (female as the reference group)

7 Conclusion

Tunisia is the most experienced country in terms of respect for women’s rights in the region. The Personal Status Code guaranteed the Tunisian women all human rights. Parity is gained in terms of access to health care and schooling. Nevertheless, in the labor market, the situation is not so idyllic. Women represent 26% of the work force and the female unemployment rate is well beyond that of men. Otherwise Tunisian women earn 16% less than male counterparts. It is thus of interest to know the proportion of these wage differentials that is due to differences in endowments and the propotion due to discrimination, that is, the proportion unexplained by caracteristics, and to consider whether the decomposition is depending on the used non-discriminatory wage structure. For this purpose, we have introduced the oaxaca package for the R statistical programming language for linear models to estimate Blinder-Oaxaca threefold decompositions. We have dealt with differences in mean wages across two groups. Doing so, we provided estimates for a detailed, variable-by-variable decomposition and summarized graphically the results of the decompositions. The conclusion is significant: gender wage gap is mostly attributed to discrimination and especially to
underestimation of females’ characteristics.

We find the wage gap attributable to returns is more important in accounting for wage differences than differences attributable to characteristics in both structures. The wage gap is driven largely by greater returns to age accounted for by experience and seniority, it’s squared term, by the group differences in secondary and high school educations and by occupation in health, education and administration occupations. Women’s better position in secondary and higher educations could contribute to narrowing the gender gap, but they are underevaluated by the market. Suprisingly, in education, health and administration services, market, overstimetes women’s characteristics although they are worse. This shows the impact of the development level of mentality, especially the perception of the economic role of women and the keeping of the gendered horizontal segregation and the gendered roles in professional practices. The marriage variable results are also interesting in the sense that the effect of the characteristics confirmed the widespread perception of adverse consequences of marriage on women’s involvement in the productive sphere (traditional division of roles between the sexes, specializing in housework, accumulation of specific human capital and weak attachment to the labor market). Marriage return is however in favor of women. With the help of technology, increased trends of fluid families and salary levels, the specialization model is no more effective. Specializing in housework became rather inefficient and the long term costs of full specialization may outweigh the short term benefits. In the manner of the wife of the Beckerian ”Treatise on the family”, married woman is no more dedicated to domestic activities and prefers accumulating general capital rather than a specific one to guard against the risks of a probable divorce.

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