

*Original Research Article*

# Gender Inequalities of Youth in Education and in Labor Market Participation in Tunisia

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Abstract

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This paper examined the gender inequalities among youth in education and participation in the labour market in Tunisia using data from Tunisia Labor Market Panel Survey (TLMPS 2014) and the World Bank data indicators (2016). Separate regressions were also made to estimate the relationship between education and labor force participation for men and women. Several interesting points are noted. First, in contrast to the literature, regression with time series shows the declining effect of female at all education levels on the participation of women in the labor market. This participation did not improve with the increased education of women. Second, at the individual level, our estimations, including an upward selection bias, indicate that the education level and other socio-economic characteristics (e.g. age, marriage, family size, father's occupation and parents' education level) are the most important factors explaining the variation in the gender participation gap. Reducing this gap should be considered an important goal, for example, by reforming the labor market policies to minimize favoritism towards men and by supporting girls' technical/vocational training.

**JEL Classification:** C35, I2, J16, J24

**Keywords:** Education, Gender gap, Heckprobit, Labor force participation, Youth

## INTRODUCTION

The problem of inequalities in education and in the labor force participation is one of the most vital issues in today's society. Indeed, its consequences are unequivocal. The female who suffers from exclusion and disadvantage in the labor market, encounters more difficulties to obtain the same wages and job opportunities as the male. In recent decades, the female labor force participation (FLFP) rate has been stagnant or declining in some countries despite the significant expansion in the female education.

Tunisia is no exception. Despite educational gains in terms of increasing literacy among women (female enrolment at the tertiary level has grown almost twice as fast as that of men over the last two decades), the labor force participation for women was 22,31% (compared with 46.77% for men, WDI, 2016).

The question, which therefore arises, is why the growth of female labor force participation in Tunisia has decreased, despite rising education levels.

This paper addresses this question by analyzing how the educational attainment levels and other socio-economic factors affect the decision and the ability of women to integrate into the labor market, by considering the gender differences in the different levels of education (below, primary, secondary, post-secondary and university). For the purposes of this study, the term "youth" refers to the age group of 15 to 30 years included.

Theoretically, the emerging gender gap in the labor force may have several explanations. The theory of human capital indicates

that improving the educational attainment would be a possible way to lift the aggregate labor force participation

(Henry, 2003). As to the theory of labor market discrimination, it suggests that employers may have prejudices against women (Becker, 1957). Furthermore, according to Suda (2002), social, cultural and structural barriers may negatively influence the female participation in the labor force. In addition, women started to gain on men and the problem of gender discrimination in the modern educational system does not exist.

Empirically, numerous studies (Klasen's 2002; Chamlou et al., 2011; Esfahani and Shajari, 2010) have found that educational attainment is a consistent and determinant of female labor force participation rate. Bloom et al. (2009) indicate that while education offers the same opportunities for both boys and girls in the labor force participation, its net impact on this participation may be ambiguous.

Other studies do not confirm these results. In Pakistan and some MENA countries, Aboohamidi and Chidmi (2013) show that, the female secondary education enrollment has a negative and statistically significant effect on the rate of the female labor force participation. Similarly, the tertiary education enrollment has a negative but not significant effect.

The contributions made by this study are twofold. First, we attempt to clarify this picture in Tunisia by examining the influence of gender in education on the differential labor force participation of youth. This study uses data from Tunisia Labor Market Panel Survey (TLMPS, 2014) that were supplemented by a series of variables from the World Bank data indicators (2016). Second, the empirical research illustrates the application of a model with instrumental variables, known as Heckman probit (Heckprobit, see Heckman, 1979) taking into account the selection bias. Indeed, the estimation of the effect of education on the labor force participation is complicated due to the existence of unobserved factors correlated with both variables (education and labor force participation) such as preferences for work or decision to continue studies and innate individual ability, which may bias the estimates. We follow the approach of Heckman who estimated earnings equations relative to employed workers, for the existence of jobless people (unemployed or inactive) with different characteristics, for example education. The selection in the non-schooling group can be expected to have a similar impact on the labor force gaps, as the selection in the employment group affects the gender wage gaps (Bičáková, 2014). Similarly, if wages are observed only for those who work, the labor force participation status is observed only for people who were not in school. The observable and unobservable factors that determine how much someone earns when employed are similar to the factors that determine whether a person has a job or pursues education.

The remainder of this paper is organized as follows. Section 2 presents the theoretical and empirical review of the literature on gender discrimination in the labor market. Section 3 provides background information about

the labor market and the gender inequality in education. The empirical specification, the data used in this study and the estimation results are presented in sections 4 and 5. Finally, we conclude in section 6.

### **Gender dimensions of education and labor force participation: literature review**

In this section, we present the theoretical and empirical literature that highlights the effects of the gender dimensions of education in enhancing the labor force participation. We explain the debate about the effects of gender inequality in education and the challenges that education imposes on the labor force participation. We briefly summarize the main findings from this literature.

At the theoretical level, several studies examine the ways in which the educational attainment influences the labor force participation.

One of the explanations is given by the human capital theory, which predicts a higher unemployment for women and men with less human capital. This theory considers schooling (and experience) as mechanisms that can enhance the individuals' ability to make effective decisions in changing circumstances. It relates expected lifetime labor force participation and earnings to differences in schooling and training (Mincer, 1974; Becker, 1991). Schultz (1992) and King and Hill (1993) indicate that women do not benefit enough from their investment in education while men capture a larger fraction of the total returns to education in the labor market. According to Becker (1992), the human capital theory explains why women have traditionally had less incentive to invest in education and training given their shorter expected labor force participation.

Goldin (2006) shows that, increasingly, the education level has allowed women to increase their expected lifetime labor force participation, thus changing their time horizon.

The second explanation for this gap is attributed to the phenomenon of discrimination. This is due to disparities in hiring rates between males and females. Psacharopoulos et al. (1989) argue that supply and demand for labor change during the process of development. Given that the agricultural sector loses its importance as the main employer of women, and that the industries expand slowly compared to the contraction of the agriculture, the result is an initial increase of the female unemployment. Indeed, because of the biological differences or previous discrimination against women that affect their expected returns to educational investments, women's investment in human capital may be lower than men's (Becker, 62).

King and Hill (1993) focus on various reasons why the costs and returns to male and female education may differ from the perspective of parents. In terms of benefits, girls may face lower returns to the human

capital investments because of the labor market discrimination or because of lower time spent in the labor market, thereby reducing the benefits of investing in the education of girls.

Another explanation is linked to economic forces that may have an impact on female labor force participation (FLFP). Because of their higher responsibilities of household tasks, women anticipate shorter periods and/or interrupted periods of employment, which makes them invest differently in human capital than men, in both quantitative and qualitative terms. Parents may also be motivated to invest in children who will be more likely to support them financially in their old age. If the parents expect their sons to be more likely to provide economic support in their old age, they may be more likely to invest in their education levels.

The gender gap in the labor force participation may be due to the different degree of labor market attachment between men and women. Azmat et al. (2006) show that the relatively weak attachment of women to the labor market generates disincentives to acquire the human capital. In addition, organizations that reduce labor turnover or employ on contract basis may increase the gender gap if women have a higher outflow rate from employment than men; with a reduced hiring rate, the gap is magnified. The outflow of women may be explained by family responsibilities such as the care of young or special children.

In summary, the gender disparities in the labor force participation may be explained by the human capital theory, by the theory of labor market discrimination and by social, cultural and structural barriers, (factors could negatively influence female participation in the labor force, Suda, 2002).

At the empirical level, several studies have investigated the relationship between labor force participation and education. The results provided interesting accounts.

Some studies showed that the incidence of labor force participation is highly correlated with the individual's education achievement. As the level of education rises, the probability of participating in the labor force increases (Tansel, 2002). Gündüz-Hoşgör et al. (2007) and Smits (2008) confirm this in the case of five MENA countries—Egypt, Jordan, Morocco, Syria and Tunisia. Using a probit estimation, the findings of Serneels (2007) have a significant positive effect on employment in Urban Ethiopia. The results show that youth with secondary education is more likely to be unemployed compared to youth having tertiary education. In the case of the Netherlands, Wolbers (2000) found that the least educated individuals are more likely to be unemployed than the more educated. The author concludes that the link between education and unemployment is not linear because university graduates have a greater probability to experience unemployment than individuals with higher vocational education. Chiswick et al. (2003), using data

from the Australia Aspects of literacy survey (1996), found that the increase in the literacy and numeracy skills associated with education has a greater impact on labor force participation than that of the attainment of tertiary qualifications.

Other studies have found that the distribution of women's work varies according to the social acceptance of female workers and the gender associated with differences in returns to investment in education. In this case, Gittel et al. (2005) indicate that women tend to be concentrated in low-paying fields of study such as the humanities, and less concentrated in high demand fields such as engineering. In addition, women offer less labor because of gender roles in the family and when their children require more care.

In summary, empirical research generally considers education as a major determinant of the youth labor force participation. However, as pointed out by Bloom et al. (2009), the effect does not seem to be universal and has been difficult to detect at the aggregate level. For example, the education helps to reduce fertility which has a significant positive impact on female labor force participation.

In fact, the application raised two main problems. The first one is that the participation of the individuals in the labor force and their schooling choices depend on many identical factors. But researchers generally observe some of these factors. This, in turn, depends on getting them out of the workplace and sending them to schools. The results of the studies suggest that education often has surprisingly different effects for such groups. Many empirical studies such as Schulz (2001) concluded that the increased schooling of the mother is associated with greater effects on the child health, the schooling and the adult productivity than the increased schooling of the father. In Pakistan, Andrabi et al. (2012) find that children of mothers with some education spend 72 minutes more per day on home education than those with mothers without education, and as a result have better test scores. In Taiwan, Tsai et al. (2011) show that exogenous increases in either mother's or father's schooling increase the likelihood of their child attending one of the top six colleges by 10%. In households where the father is highly educated (college level or above), sons and daughters have roughly the same chances of finishing school. In addition, children of both sexes are much more likely to finish school when both parents have some college education.

The second problem is related to the sample selectivity bias. In this context, Duo (2001) recognizes that schooling may affect the probability that an individual works as an employee. This creates a simultaneity bias, but does not directly deal with the issue. At this stage of the lifecycle, choosing to participate in the labor market highly depends on the financial situation of the individual and other factors such as the education level achieved. A number of studies found that unobserved factors are

significantly associated with the increases in women housework time, marital status and parenthood transitions.

We follow Hill (1983) in recognizing that the underlying selection rule of the labor market consists of three integrated categories, namely: individuals may be out of the labor force, they may enter the labor market or they may still be schooling.

Individuals make choices about how much schooling to complete in ways unrelated to all of the other factors, such as ability, gender, family size, father's income, parental educational level, motivation, and non-cognitive skills not taken into account in the model.

As a result, the estimation method, the Ordinary Least Squares (OLS) regression, which ignores the selection bias, produces biased estimates of the causal effect of schooling. This is because the estimated coefficient of schooling reflects both its causal effect and the selection of more able individuals in higher levels of schooling.

The Heckman selection and correction models are used to control the selection effects due to the presence of unobserved factors which correlate with the decision to have a child, and the subsequent changes in time allocation (Baxter et al. 2008). We deal with the selection in different labor market statuses as this is considered non random. In fact, the correction of this selection bias requires the use of the Heckprobit model.

In order to adapt this analysis to the case of Tunisia, the following section describes some stylized facts about the gender dimensions of education and the labor force participation.

### **Some stylized facts about gender dimensions of education and labor force participation in Tunisia**

The relationship between education and employment attracts the attention of social scientists. In order to examine how education—schooling enrollment affect gender inequality in labor force participation, we first describe the indicators of education and then, the labor market indicators. The data for this analysis come from two main sources: the World Bank (2016) and the Tunisia Labor Market Panel Survey (TLMPS, 2014).

#### **Gender dimensions of education**

This subsection examines the gender differences in education in Tunisia using annual data. We use data on girls and boys enrollment ratios in primary, secondary and higher education. The data set covers the young people aged 15 to 24 for the period 1990-2015.

Youth literacy rates for the population aged 15 to 24 are examined for the period 2004-2014. (For this variable, data is available from 2004). The literacy rates among youth (aged 15 to 24) are good indicators of an

educational system. Coulombe et al. (2004) found that the investment in human capital, that is education and skill training, is three times as important to the economic growth as the investment in physical capital.

Figure 1 shows that, during the period 2004-2014, the literacy of men and women has improved significantly, reflecting the increased access of young generations to schooling. The overall literacy rate of the population aged 15 to 24 increased from 94.34% in 2004 to 96.21% in 2014. This reflects an overall increase of 1.98%. The overall male literacy rate increased from 96.4% in 2004 to 96.61% in 2014, which corresponds to an increase of 0.21%. The overall female literacy rate increased from 92.24% in 2004 to 95.8% in 2014, which represents an increase of 3.85%.

In summary, there is little difference between the literacy rates of boys and girls.

Turning to education, Figure 2 shows the evolution of the education indicators. The results have several noteworthy aspects.

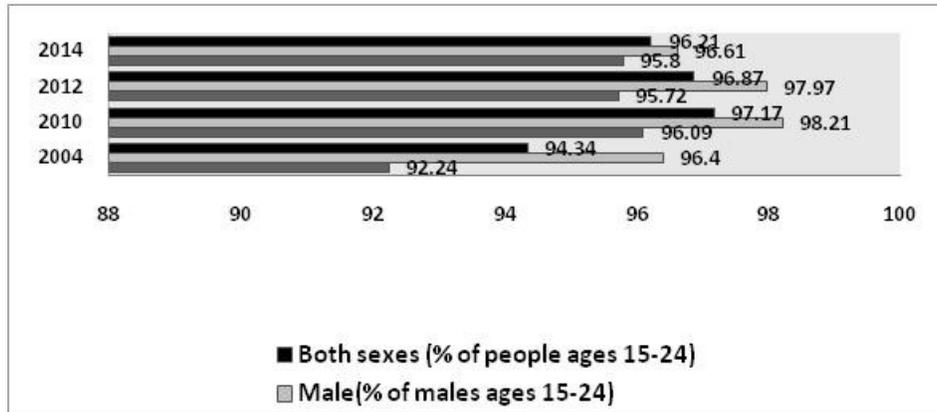
First, since 1990, primary school enrollment has decreased for both males and females while the gender gaps have declined. The situation is not much better in primary education of women. Second, the enrollment in the secondary education has followed a similar pattern of increase for men and women. However, since 2000, the situation has been reserved with more women attaining the secondary education than men in the same age group. Third, although girls are still lagging behind in the primary school enrollment, more women than men are enrolled in the tertiary level on average. Since 2000, however, the number of young women has risen more rapidly than the number of men.

The gender parity index (GPI) is calculated by dividing the female literacy rate by the male literacy rate. This index represents a different way of looking at the relative literacy skills of men and women. A value of less than one indicates differences in favor of boys. Deviations below one can be interpreted as a degree of male advantage in the enrollment measure. Figure 3 shows the results in terms of inequality of enrollments at the primary, secondary and high school levels, between 1990 and 2016.

According to WDI (2016), there was a sharp increase in GPI for the primary, secondary and tertiary schools during 1990 to 2016. Female enrollment was found higher in 2015 with a GPI of 0.97 in the primary schools. However, the GPI values for the secondary and the high classes increase to 1.05 and 1.65 respectively.

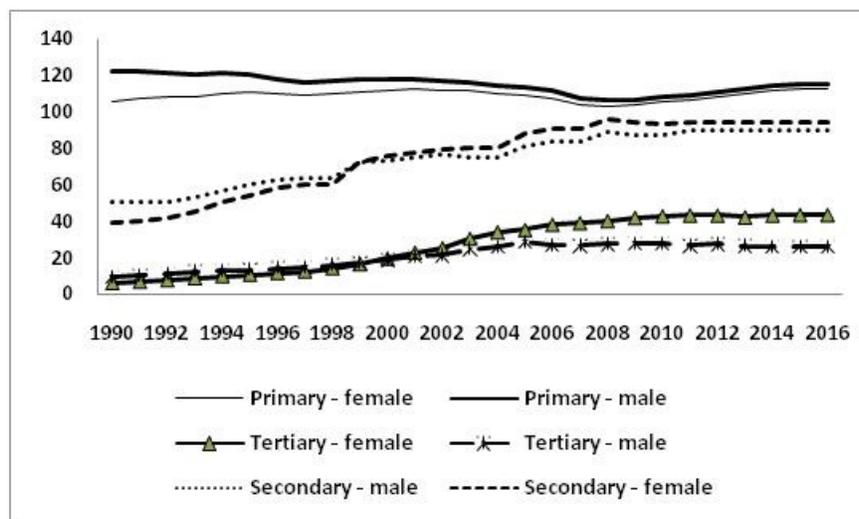
With regard to the gender gap in education, it seems that female dominance in the tertiary level is becoming a global phenomenon. The gender gap generally increases in favor of women at all the levels of education especially in the tertiary level.

In order to reinforce and confirm this result obtained from the World Bank database, we use the data on the labor force participation and on the education trajectories



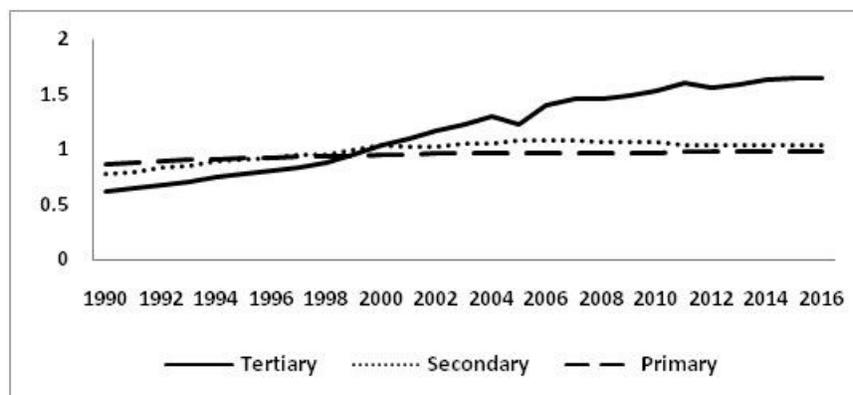
Source: Authors' calculations based on WDI data

Figure 1. Literacy rates of youth (%)



Source: Authors' calculations based on WDI data.

Figure 2. School enrollments in Tunisia (% gross) 1990- 2016



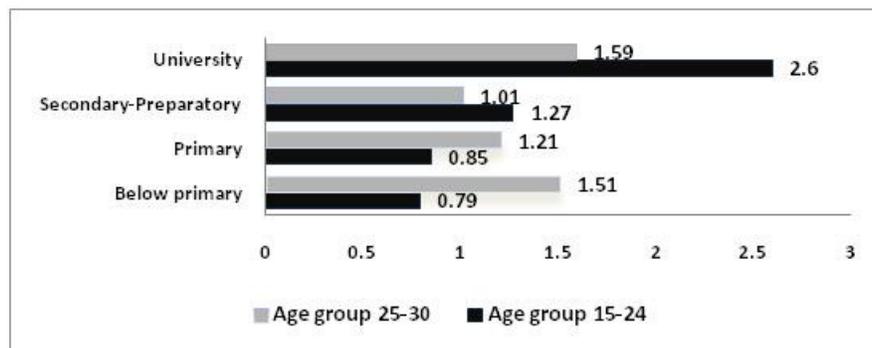
Source: Authors' calculations based on WDI data.

Figure 3. Gender Parity Index (1990-2016)

**Table 1.** Distribution of youth population by level of education, age and gender (%)

	Age group 15-24		Age group 25-30		Gap: Male- Female	
	Male	Female	Gap: Male- Female	Male		Female
Below primary	19.03	14.74	4.29	16.43	19.11	-2.68
Primary	50.12	42.86	7.26	28.53	26.89	1.64
Secondary- Preparatory	27.15	31.29	-4.14	37.18	29.33	7.85
University	3.71	11.11	-7.4	17.87	24.67	-6.8

**Source:** Authors' calculations based on TLMPS (2014).



**Source:** Authors' calculations based on TLMPS (2014)

**Figure 4.** Gender Parity Index by age (GPI: Female/Male: 2014)

available in TLMPS 2014 (Assad et al, 2016). The study presents data concerning more than 2469 individuals.

The education levels used are no post-school qualification, primary level of education, secondary or preparatory level of education and higher qualification (university level of education). Regarding the gender inequality in education, as shown in Table 1, young women are on average more educated than young men. 42.40% of women aged 15 to 24 have an intermediate degree or a higher degree (31.29% and 11.11% respectively), against 30.86% for men (27.15% and 3.71% respectively). 24.67% of women in the age group 25–30 have tertiary education compared to 17.87% of men.

Figure 4 shows relatively large gender gaps in favor of males at the primary school level. At the secondary school level and at the university level, the figure indicates gender gaps favoring females. GPI in higher education is calculated for the age group 15-24. The female to male ratio in higher education measures the progress towards gender equality and the level of learning opportunities available for women compared to those available for men. It is also a significant indicator of the empowerment of women in society.

In summary, with regard to higher education, women have gained gender equality, which means that once they

have access to the secondary education, they tend to complete their studies more often than men.

### Participation rates, employment and unemployment

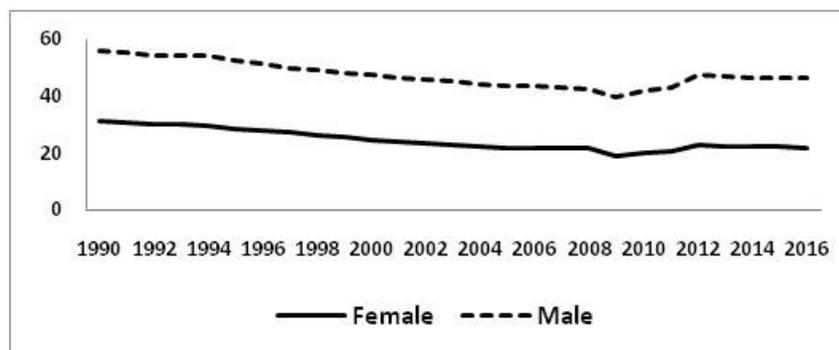
The labor force participation rate (LFPR) being a key determinant of the currently active population, may be related to the rise of the gender gap. Data on male and female LFPRs are used to assess their respective importance in defining the gap.

As illustrated in the figure 5, women are consistently less likely to participate in the labor market than men. In addition, the participation among youth (aged 15 to 24) tended to decrease. The participation rate of men declined from 55.90% in 1990 to 41.99% in 2010, but remained above 46% in 2015.

On the other hand, the female labor force participation (FLFP) rate persistently declined from 26% in 1990 to 20% in 2010, but remained above 22% in 2015.

According to the survey, the unemployment rate increased from 29.74% in 1991 to 36.12% in 2015. This increase was observed for both males and females (Figure 6).

From 2006 to 2015, the increase of unemployment rates was more rapid among women than among men,



Source: Authors' calculations based on WDI data.

Figure 5. Labor force participation rate by gender (%)



Source: Authors' calculations based on WDI data.

Figure 6. Unemployment, youth (percentage) (Ages 15-24)

Table 2. Labor force participation by gender and education, age groups of 15-24 and 25-30 (%)

Gender	Age group 15-24	Below primary	Primary	Secondary-Preparatory	University
Female		27.69	38.09	48.55	75.51
Male		77.31	79.13	80.34	100.00
Gap: Male-Female		49.62	41.04	31.79	24.49
Gender	Age group 25-30	Below primary	Primary	Secondary-Preparatory	University
Female		17.45	32.23	45.45	75.68
Male		85.96	92.93	86.05	85.48
Gap: Male-Female		68.51	60.70	40.60	9.80

Source: Authors' calculations based on TLMPs (2014).

reflecting the difficulty women were having in finding acceptable employment.

As is seen, labor-force participation rates are relatively stable compared to unemployment rates (Figures 5 and 6). To better refine and supplement the analyzes resulting from these views, we continue to analyze these indicators from the survey TLMPs, 2014.

Regarding the relationship between the educational attainment and the labor force participation, as shown in Table 2, this relationship varies markedly by age and sex.

The women participation rate is lower than that of men in all age groups, but the differences in the participation rates have a tendency to decrease with the level of education. This is one of the characteristics of the labor markets in the North Africa region.

For women aged 15 to 24, the labor force participation rate was higher among young in the university, secondary and preparatory classes than below primary and primary youth.

While the labor force participation rate for people with

a high level of education is higher than that of less educated people, the participation gap between men and women is significantly higher, at 24.49%. This indicates that the gap between men and women participation tends to be minimized with increased education levels.

For the age group 25-30, the university education is associated with a high rate of labor force participation (85.48% for men and 75.68% for women). The gap in participation between men and women at the high level of education is significantly lower, and corresponds to 9.8%. This indicates that, for this age group, the educational attainment also plays an important role in the pattern of labor force participation.

To summarize, the gender labor force participation gap varies considerably by age group and educational attainment. Some observations are worth noting.

First, the gender participation gap in favor of men is far more marked for those aged 25-30 years old. Second, the gap between men and women participation rates narrows as the educational attainment increases. The gender participation gap is particularly high for young women with low education.

Third, the larger gender participation gap is associated with a higher share of inactive women. In both age groups 15-24 and 25-30, the lowest female labor force participation was generally explained by the higher incidence of inactivity. When the overall inactivity rates are disaggregated by the level of educational attainment and sex, it has been shown that the highest levels of educational attainment are so associated with lower inactivity rates, both for men (aged 15-24 years old) and women (aged 15-24 and 25-30 years old) (Table A1, in the appendix). Fourth, young men are more likely to be employed than women of the same age and with the same qualifications.

For women, the higher employment rate is associated with a higher level of educational attainment.

The gender differences in participation may be due to the high share of inactive women and a lower employment among young women than young men. This might be a result to their greater care responsibilities compared to young men. In addition, they choose particular fields of studies or stay at home that may result in lower wages when employers use gender differentiated criteria in the recruitment process, such as the criteria of having children, being able to work flexible hour.

In what follows, multivariate analyzes using OLS regression and Heckprobit regression are used to assess the extent to which education and other factors affect the gender gaps in the labor force participation. The first regression is based on WDI data (2016), while the second uses survey data (TLMPS, 2014).

### OLS regression: methodology, data and results

This section provides an overview of the methodology

and data used in this study, which contributes to the literature by testing the effect of the education on youth labor force participation.

### METHODOLOGY

The basic regression equation is:  $Y_t = X_t\beta + U_t$ ,

Where  $Y_t$  is the gender gap in labor force participation at time t

$X_t$  is a vector of variables representing three human capital variables (gender gap in primary schooling, gender gap in secondary schooling, and gender gap in tertiary level) and the gross domestic product (GDP) per capita growth which is used as a proxy for economic development (see Table A1, Appendix).  $U_t$  is the zero mean and constant variance disturbance term.

The data used in the model are annual data for the period 1990-2016.

We present and discuss the regression results even though the available literature is ambiguous as to the impact of education on the labor force participation.

### Empirical results and interpretations

The results of the regression estimated by OLS are shown in Table 3. To ensure that the results are not adversely affected by high collinearity, a correlation matrix has been created.

Correlation is a statistical technique that can show whether pairs of variables are related and how. As indicated in Table A3 in the Appendix, the lowest correlation coefficient (-0.098) was calculated for the gender inequality in the secondary education and the annual GDP per capita growth, and the highest value was reported for the gender gap in the tertiary level and the female to male ratio in labor force participation (-0.971).

Positive correlations were found between the variables gender gap in primary and secondary schooling and gender gap in tertiary level. The relatively high correlation between the three gender gap variables in education attainment makes it difficult to estimate the overall effects of these variables. For the same dependent variable, i.e. the gender gap in labor force participation, the various explanatory variables were included in the regression gradually to distinguish the effect of each of them separately. We analyze the impact of the three variables in separate equations.

Intercept includes all other variables which are not included in the model but affect the dependent variable.

Globally, all models are statistically significant and have high R-squares. The regression model accounts for 93% of the variance (columns 1 and 2) and for 95% of the variance (column 3). The three models yield the

**Table 3.** Explaining gender gap in labor force participation: OLS regression

Specification	(1)	(2)	(3)
Dependant variable: Gender gap in labor force participation			
<i>Independent variables</i>			
Gender gap in primary schooling	-0.799***	-----	-----
Gender gap in secondary schooling	-----	-0.248***	-----
Gender gap in tertiary level	-----	-----	-0.074***
GDP per capita growth annual	0.214**	0.395***	0.094*
_cons	126.24***	75.07***	59.94***
	27	27	27
R-sq	0.937	0.932	0.950
Root mse	0.778	0.809	0.674

Significance level: \*\*\*=0.01; \*\*=0.05; \*=0.1

Source: Authors' calculations based on WDI data (2016)

Gender gap=ratio of female to male of a given indicator (labor force participation, primary secondary and tertiary education enrollment)

following results.

Column 1 reveals that the gender inequalities in primary schooling have negatively influenced the gender inequalities in labor force participation. It appears that the gender education gap (primary schooling) is significantly associated with lower levels of FLFP.

The coefficient of annual GDP per capita growth was found to have a statistically significant positive effect on female labor force participation, in line with the theory of the literature.

Column 2 reveals that economic growth has a significant positive impact on the female to male ratio in the labor force participation. The enrollment rates for girls and boys at the secondary level have negatively influenced the female and male labor force participation rates.

In column 3, the annual GDP per capita growth has the expected positive sign and is statistically significant at the 5% level. It shows that the women and men labor force participation rates increase when GDP increases. The key estimate in this column indicates a smaller negative and statistically significant effect of the enrollment rates at the tertiary level on the participation of girls and boys in the labor market. However, the size of the coefficient indicates that the effect is relatively small.

In summary, the empirical evidence does not support the view that an increase in women's education levels would be associated with higher FLFP.

Several main points were noted. First, the inequality in the primary school level influences the gender gap in labor force participation. The first level of education (primary school) reflects the decisions made by the individual's parents. These decisions depend on a number of factors including infrastructure, culture and the resource availability. As Glick (2008) argues, families invest less in their daughters' education than in their sons'. Parents expect to receive more money in the

future from their sons than from their daughters. Furthermore, families believe that the marginal returns to schooling in the labor market are always higher for boys than for girls. Second, the regressions show surprisingly that the coefficient estimates on education (girl and boy enrollment rates in secondary education and in tertiary education) are generally statistically significant but do not show the expected signs. While the gender gap has reduced at the middle school levels and has reversed at the high school level, gaps of FLFP remain and still exist. When we look at the human capital variable, we can see that the gender gap at the tertiary level is small and the participation gap tends to be small. The size of the coefficient indicates that the effect of the high level of education is relatively small. In contrast, the size of the estimated coefficient for the gap in primary school indicates that this level of education has a greater effect than inequalities in the secondary school.

However, the results show that the relationship between gaps in the primary school and in the labor force participation holds for gender gaps at the secondary and high school levels.

It is expected that these increases in the educational attainment will be accompanied by increases in the female labor supply. It is important to recognize that even if this fact is widely acknowledged in the literature; existing empirical studies are mainly descriptive and do not identify the causal effect of development in educational attainment on FLFP.

In this study, the results indicate that the increased enrollment rates for girls and boys in education do not increase FLFP. The higher level of education tends to reduce the gap in the labor market participation.

Similar findings were obtained by some research. Heckman (1976) found out that the impact of education is not only on earnings but also on employment opportunities. Verme (2014) concludes that female labor

force participation rates have remained stagnant despite the progress in secondary and tertiary education for women in the MENA region.

Ganguli et al. (2014) show that while the gender education gap has reversed in many countries, a labor force participation gap is still present. For example, countries like Argentina, Brazil, Colombia, the Philippines, Panama, and Venezuela, have all reversed the gender education gap, but have labor force participation gaps between 40% and 70%.

Other studies have established a positive link between female education and female labor force participation (Lisaniler and Bhatti, 2005, Ackah et al., 2009, and Bibi and Afzal, 2012). These studies also show that other factors such as age, marital status, gender, work experience, vocational training, wages and place of residence, household income, household assets, migration, change in GDP per capita, etc. are significant for female participation in the labor market. In this case, the educational attainment does not yield any additional benefit in terms of participation and cannot solve the problem of FLFP. Ganguli et al. (2014) indicate that cultural, social and political factors played a significant role in explaining the size of the labor force participation gap.

To better understand how different variables may affect the labor force participation, we also make the estimation with LFPR of each gender as the dependent variable. Due to the lack of a time series for many of macroeconomic fundamentals and education levels, we propose in the following, the Heckprobit regression of the labor market participation in a sample of youth (aged 15 to 30), taking into account the possible selection bias caused by excluding those who are in school. Since education and labor participation decisions are simultaneously determined, a correlation with the error term would give biased and inconsistent estimates of the parameters.

### Heckprobit regression

The empirical strategy adopted in this study is to estimate a Heckprobit model of labor market participation (Table A4, in the Appendix).

### Data and variables

Even though we are interested in modeling a single outcome, there are two dependent variables in the probit sample-selection model. We discuss both the dependent and explanatory variables used in the estimation as well as the expected signs (Table A5 in the Appendix).

The dependent variable of the main equation is a dummy variable that takes the value one if the individual is employed and zero otherwise. This variable is called

employment. The dependent variable of the selection equation takes the value one for the selection in the main equation and zero for the participation in education.

The outcome of interest is success in the labor market, and we suspect that there is a correlation between the unobservables that determine the labor market success and the unobservables that increase the likelihood of employment.

In line with the economic theory, we consider several sets of independent variables, including youth characteristics, parental characteristics and demographic variables. Our data comprise information on the educational level of the parents of all the individuals.

Additional covariates for the selection are the characteristics of the parents. In the selection equation, we are particularly interested in the effects of the educational level of the father and the mother, and the father's occupation (employer, self employed and unemployed) in order to capture the effects of the income on the educational investments.

The educational status of the parent has been divided into two groups- no formal education, primary education - and secondary and tertiary education. The general idea is that parents have an influence on their children's choices and school performance through their income, qualification and time they spend with them. Other external factors can affect the labor status of young people. Among these factors are the characteristics of the neighborhoods in which they live, such as their place of residence. We use the factorial interaction of urban areas and the education level of the parents. This implies a selection in that the young people living in villages with their parents are much more likely to continue studying than young people living in rural areas.

Some previous work has demonstrated that educated parents affect the probability of youth following the qualification process. In particular, it has been found that the education level of the mother generally has a greater impact on child education outcomes, particularly those of girls (Hargrave, 2014). Parents prefer that their children do not work and that they rather use their time for school-related activities. This preference is most evident among highly educated families and those with the highest incomes.

The gender variable was dichotomous with a value of 0 for a female and 1 for a male. We also tested the differences between the female and male pupils at schools. We expected that gender is a significant variable, beyond the central influence of the socio-economic background on the student progress at school.

The education attainment of youth is expected to be strongly and positively related to youth labor force participation. As the level of education increases, the more resources an individual has spent and the more the stock of human capital has accumulated.

Urban residence is believed to be associated with

various factors that help in increasing the participation rate.

To handle the sample-selection problem, we jointly model the two dependent variables. The error terms used in the determination of the selection and the ordinal outcome value may be correlated. We have a simulated dataset containing a sample of 2469 young people aged 15 to 30, grouped in employed and jobless (67.60%) and in education (32.4%). The jobless group includes the unemployed and the inactive (Table A6, in the Appendix). The percentage of women who are studying is slightly higher than that of men (34.15% versus 30.30% respectively). A noticeable difference between the sexes was education.

Another difference between men and women in the sample is that many more men than women were employed: 83.55% of men in the sample took a job, whereas only 44% of women did. In addition, the jobless rate of women (56%) is lower than that of men (16.45%). This clearly indicates that male youths are more likely to be employed than female youths (Table A6, in the Appendix).

Table A7 (in the Appendix) shows the descriptive statistics of all the variables. It is clear that the proportion of youth with secondary education is higher compared to other educational categories (43.9%). Moreover, the average age of school leaving in the sample is 8.6 years. The family size tends to four, which implies that every household is represented by at least four persons (43%).

When we consider the gender, males account for about 45% and the rest are females. There is also evidence that about 15% of the youth selected in the sample are married while 58% of the respondents live in rural areas and the rest live in urban areas.

Table 4 reports the results of three Heckprobit estimates relative to the entire sample (column 1), to men (column 2) and to women (column 3).

## Empirical results

Rho measures the correlation of the residuals in the two equations. If  $\rho = 0$ , the sum of the log likelihoods from these two models will be equal to the log likelihood of the probit sample-selection model; this sum is printed in the iteration log as the comparison log likelihood.

The likelihood-ratio test in the footer indicates that we can reject the null hypothesis that the errors of outcome and selection are uncorrelated. This means that we should use the probit sample-selection model instead of the simple probit model.

The positive estimate for  $\rho$  ( $\rho=0.334$ ) indicates that unobservables that increase employment tend to increase the labor force participation. The likelihood ratio test of the independent equations suggests significant correlations between the two equations. Most of the characteristics of the parents and the households, and

the relationship variables in the selection model are significantly related to the labor force participation and the main explanatory variables of the main equation

## Main Equation

Initially, for the entire sample, column (1) indicates that these explanatory variables have a significant impact on labor force participation. All the entered variables are statistically significant at the critical level of 1%.

This column shows that the coefficient associated with the gender “men” is positive and statistically significant. By keeping constant the effect of other individual and household characteristics, men are more likely to work than women. This indicates that for women, the decision to participate in the labor market is influenced by both religion and culture, among other factors. Traditionally, women are expected to do most of the work at home. This traditional attitude remains an important explanation of the differences in women’s labor force participation (considerably larger than men’s participation) found in different countries especially in Tunisia.

Education is another important determinant of the labor force participations. In order to measure and compare the effects of the educational attainment, three different variables are used. These are primary education, secondary school and university education. The coefficient for the primary school is positive and statistically significant. Similarly, the estimated coefficients for middle and high school graduates are positive but statistically insignificant. Thus, there is clear evidence to conclude that increasing the level of education of the workforce will not ensure the automatic absorption of more skilled workers.

The region is one of the common variables in the models. The east region refers to the population living in the eastern areas (Center East, South East and North East). It is statistically significant at 1% level. Compared to the western regions, people residing in the eastern regions will be much more likely to be employed. The probability of participating in the labor force is significantly higher among youth living in the urban areas where job opportunities are greater than in the rural areas.

Age is an important determinant of the probability of being employed for youth. The profile is concave, as shown by the negative coefficient of the squared term. This suggests that the older the individual is, the higher his probability to be employed, although such probability exhibits decreasing returns.

All other things being equal, single youth have a higher probability to find a job than married youth.

Finally, the family size has a significant effect on the probability of working for the entire sample. The reference of the household size is the number of children exceeding 4. A decrease in the family size increases the probability of working for youth; the estimate is positive

Table 4. Heckprobit estimates of labor force participation (aged 15-30)

Dependent variable: Employment	Main equation		
	Model 1 All	Model 2 Men	Model 3 Women
	Coefficients	Coefficients	Coefficients
Age leaving school	0.154***	0.158***	0.192***
Age leaving school 2	-0.005***	-0.004***	-0.006***
Male (ref female)	0.935***	-----	-----
Family size :number of children less than 4 (ref number of children more than 4)	0.127***	0.241***	0.064***
Married	-0.225***	0.922***	-0.710***
Urban (ref rural)	0.224***	0.063***	0.435***
Region: (ref Greater Tunis)	Ref	ref	Ref
East	0.305***	0.255***	0.305***
West	-0.183***	-0.165**	-0.277*
Level of education: (ref No formal schooling)			
Primary	0.291***	0.350***	0.319***
Secondary	0.045	-0.285***	0.255***
University	0.1	-0.008***	0.344***
_cons	-2.23***	-1.48***	-2.31***
		Selection equation	
	Coefficients	Coefficients	Coefficients
Age leaving school	0.089***	0.051***	0.119***
Age leaving school 2	0.001***	0.003***	-0.0014
Male (ref female)	0.185***	-----	-----
Married	0.170***	1.5***	1.84***
Family size(number of children less than 4) (ref number of children more than 4)	0.288***	0.386***	0.193***
Region: (ref Greater Tunis)			
East	-0.076***	-0.07**	-0.116**
West	-0.137***	-0.15**	-0.237**
Urban (ref rural)	-0.034	-0.089***	-0.027
Level of education: (ref No formal schooling)			
Primary	-0.008***	0.025***	-0.017***
Secondary	-1.49***	-1.39***	-1.63***
University	-1.06***	-1.06***	-1.16***
Father occupation: (ref wage worker)	ref	ref	Ref
Self-employer	-0.076	-0.222***	0.093***
No job	0.220***	0.228***	0.258***
Father's level of education (high): (ref No formal schooling)	-0.595***	-0.666***	-0.467***
Father's level of education (high)*urban	-0.151***	-0.332***	-0.346***
Mother's level of eEducation (high) : (ref less educated)	-0.493***	-0.046	-0.555***
Mother Education (high)*urban	-0.634***	-0.610***	-0.541***
_cons	0.561**	0.774**	0.623***
athrho	0.348*	1.71***	0.068**
Rho	0.335	0.937	0.068
Censored obs	800	338	384
Uncensored obs	1669	778	759
N	2469	1116	1143
	chi2(1) = 2.92 Prob>chi2=0.087	chi2(1) = 18.26 Prob>chi2=0.000	chi2(1) = 4.35 Prob>chi2=0.037

\* p&lt;0.1, \*\* p&lt;0.05, \*\*\* p&lt;0.01

and significant.

We then move on to men (column 2). Our estimation shows that all the variables are statistically significant at a critical level of 1%. Accordingly, the estimated coefficients (i.e. the increased age and family size, being married, residing in the east region and living in the urban area) increase the probability of being employed.

We find that the probability of being employed is negatively influenced by the average and the high level of education. As the education level increases, the probability to find a job declines. Men with a tertiary education and only an upper secondary education are facing difficulties in getting jobs. The relationship between the educational attainment and getting a job may be even more complex.

Finally, for the women sample (column 3) compared to men, the variables defining the levels of education show a growing relationship between education and the probability of working. The reference education level is "no formal schooling". The effect of professional education is strong for women. An explanation for this result is the higher motivation of women with a high level of education compared to their male counterparts despite the existence of a considerable gender gap (Psacharopoulos, 1994). The importance of education for the female labor force participation has been exposed in numerous studies. This finding is an evidence in line with the conclusions of the literature according to which a high level of education offers a much greater chance of finding a job than a lower level.

This effect is significant when estimated for women and men separately. All other things being equal, the coefficients associated with primary, secondary and university education are positive and statistically significant.

Marriage is negatively related to FLFP. Married women tend to participate less in the labor market than single women. This is because marriage is likely to force women to focus on the home labor. Compared with married women, men are more likely to participate in the labor force, holding everything else constant.

For women, a positive relationship between the school-leaving age and the probability of being employed is also observed. The profile is concave, as shown by the negative coefficient of the squared term. This suggests that the older a woman is, the more likely she is to be employed

### Selection equation

In the Heckprobit model, the selection equation should include the same independent variables that are in the main equation plus some additional instrumental variables, which are supposed to affect the dependent variable of the selection equation, but not that of the main equation.

Surprisingly, as the gender coefficient shows, the *ceteris paribus* probability of young men to participate in the labor force is not statistically different from that of women. The variable does not significantly contribute to the labor force participation level in a statistical sense.

Education is negatively related to the youth labor force participation. This negative effect is present at all the education levels, except for less educated women. In part, this is due to the fact that young people with less education begin their transition to work at an earlier age and therefore have a longer exposure to the labor market and more time to find a job or to gain experience.

With regard to marital status, the coefficient is positive and significant. Married men prefer to search a job than to continue investing in education. This result is symmetric with respect to the main equation. Similarly, for women, the marital status coefficient is positive and significant as unexpected. This result contradicts the finding of the main equation which shows a negative relationship between marriage and the probability to find a job. As indicated by Richard (2007), the independence of decision to allocate time between the labor force participation and other non-labor activities of single women gives them a higher probability of finding employment than married women.

Likewise, the household size has a strong positive influence on the labor force participation. The pressure on the financial resources of households comprising more members induces women to participate in earning activities. Similarly, the household wealth coefficient is negative and significant (at the 0.01 level), indicating that the influence of the parental income on the decision to bring their children to school and to continue their education is more pronounced.

The household income decreases the probability of the labor force participation and increases the probability of access to education.

The family size is positively related to the labor force participation. The reference of the household size is the number of children exceeding 4. It is also likely that two or three children in a family are better educated and more successful than children in larger families because their parents have more time and money to invest in them (Blake, 1989).

The urban dummy is negative and insignificant, suggesting higher male participation in the urban labor markets, conditioned by other factors, although the result is not general for female. The coefficients for regional dummies are negative and significant, implying that youth in the two regions (East and West) are less likely to participate in the labor force.

The instrumental variables have the expected sign and are generally statistically significant. Experimenting with variables suggests that the estimated coefficients are robust to changes in the adopted specification.

With respect to the family background, Table 3 shows a positive relationship between the father's occupation

and the probability of participating in the labor force. If a father does not work, youth are more likely to participate in the labor force.

There is an overall positive and significant correlation between the father's occupation and the participation of young men in the labor force. Moreover, this positive correlation is much stronger for women.

The father's occupation is another important factor influencing the decision of men and women to participate in the labor market. The estimation results suggest that if the father worked, women are more likely to expect to work. A working father may also provide a positive role model for his daughter.

As theories on the intergenerational transmission of education stipulate, youth with educated parents are likely to have higher education and career aspirations (Dubow et al., 2009). A more educated parent has a greater chance to improve men's schooling.

With regard to gender differences, few studies have considered whether the influence of the parental education has a gender gradient (Wiik, 2009). Highly educated parents may put more pressure on daughters to delay the family formation and to focus on their careers.

The results indicate that the effect of the father's education is stronger on men's decisions than on women's, and the opposite may be true for the mother's education. Mothers and fathers may also have a different influence on their sons and daughters. Fathers are found to be more involved with sons than with daughters. However, for mothers, the opposite is true.

In summary, there is a little direct evidence that the influence of parental educational attainment on the track choices differs by the gender of the child and the parent. A statistically positive significant coefficient of father's education, combined with urban areas, indicates that both men and women are more likely to participate in the labor force. According to the result, as the education level of the father increases, the probability to participate in the labor market increases. Higher levels of parent educational attainment are strongly associated with positive outcomes for youth in urban areas.

The education of mothers and fathers has broadly similar effects on access to education. The mother's education does not have a statistically significant impact on the probability of men participating in the labor force.

Keeping all other factors constant, urban areas combined with father's education increases the probability of participating in the labor market.

According to the result, as the education level of the parents increases, the probability to participate in the labor market and to accede to education increases. Another important result is the positive impact of the age profile of labor market participation. Since with time passing, young people tend to finish their studies

We find a reasonably strong effect of parental education on girls' education. Mother's education has no effect on men's access to education but increases

women's access to education.

Contrary to expectations, we also observe a statistically significant negative interaction between mother's education and urban areas in the analysis of the labor force participation, indicating a greater impact on youth school performance and preferences.

Only the interaction of father's education and urban areas is significant in the participation equation, showing that youth whose fathers have a high school degree are more likely to enter the labor force.

Regarding the influence of parental education on youth participation decisions, we find that their effects are likely to be different for fathers and mothers. While fathers strongly influence the educational choices of youth, the effect of mother's education is stronger for women than for men. However, in urban areas, youth of educated fathers are more likely to be educated and to participate in the labor market.

The results of the regression analysis indicate that the participation of both men and women in the labor market appears to be influenced by factors such as gender, age, marital status, family size, education, place of residence and region. Our finding shows that these variables do not seem to have the same influence on youth's decision to participate in the labor force and on the probability of being employed. In terms of gender, sex disparity is captured by the male categorical variable. Its coefficient estimate is positive and statistically significant as anticipated earlier. In other words, being a male youth, relative to females, increases labor force participation.

Although employment probabilities are higher for women than for men at every level of education, it is not surprising to find that females lag far behind males in labor force participation and are significantly over-represented among inactive youth. This finding is supported by social norms where males are more likely to be involved in major economic activities in a family than females. Education is a major determinant of women labor market participation

The labor force participation is related to many factors some of which are individual level decisions whereas other factors are beyond the individual's control. In addition to information on gender differences, household characteristics and in particular, the father's occupation and the parent's education seem to affect the probability of participating in the labor force.

## CONCLUSION AND POLICY IMPLICATIONS

The present study is interested in analyzing the impact of the gender inequality in education on labor force participation using descriptive statistics, OLS regression and Heckprobit regression analysis. The literature indicates that gender differences in labor force participation may be explained by various factors from theory. Descriptive statistics show that female labor force

participation has decreased over the last 25 years (1990-2016) while gender gaps in educational attainments have narrowed. Women are less likely to be employed and continue to face numerous barriers in the labor market. Indeed, women have more difficulty getting out of inactivity than men, especially if they have a low education level. Men in the labor force are more favored, especially in terms of employment opportunities once unemployed. The OLS results indicate a negative relationship between the schooling gender gap and the female to male ratio of labor force participation. These results indicate that others factors affecting the ability of women to work. The results of the Heckprobit model estimates show that demographic factors (age, education level, gender and marriage) as well as household characteristics (living in urban areas and regions, size of household, parental wealth, level of education of parents) may impact the process of being educated and the probability of working. In Tunisia, although women are graduating from high school more than in the past, it is more difficult for them to hold higher management positions. We believe that the finding of this study contributes to the literature on female labor force participation. Women face serious cultural and economic barriers to employment. Marriage prospects (Greenwood et al., 2012), women's reproductive role, the traditional gender division of labor in the Tunisian family structure and the family/social pressures of being a housewife, are more important. The quality of work of low-skilled women living in urban areas, low wages, expensive childcare, and the high probability of being employed informally are listed among the economic factors limiting female labor force participation in Tunisia.

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## Appendix

**Table A1:** Distribution of youth population by economic activity, level of education, age and gender (%)

Age group 15-24	Gender	Below primary	Primary	Secondary- Preparatory	University
Inactivity	Female	72,31	61,9	51,45	24,49
	Male	21,95	20,83	19,66	0
Unemployment	Female	15,38	16,4	32,61	55,1
	Male	36,59	26,85	41,03	50
Employment	Female	12,31	21,69	15,94	20,41
	Male	38,2	52,13	39,32	50
Age group 25-30	Gender	Below primary	Primary	Secondary- Preparatory	University
Inactivity	Female	82,56	67,77	54,55	24,32
	Male	14,04	7,07	13,95	14,52
Unemployment	Female	6,98	14,05	21,21	48,65
	Male	21,05	19,19	22,48	40,32
Employment	Female	10,47	18,18	24,24	27,03
	Male	64,91	73,74	63,57	45,16

**Table A2.** Summary statistics: Determinants of the gender gap in LFP

Variable	Obs	Mean	Std. Dev.	Min	Max
Gender gap in labor force participation	27	.514596	.028609	.47476	.5584
Gender gap in primary schooling	27	.942144	.031288	.8643	.97434
Gender gap in secondary schooling	27	.993160	.094810	.77319	1.0857
Gender gap in tertiary level	27	1.17482	.364866	.61402	1.6512
Gdp per capita growth annual	27	2.66317	2.16572	-3.0248	5.6531

**Table A3.** Correlations among variables

	(1)	(2)	(3)	(4)
Gender gap in primary schooling (1)	1			
Gender gap in secondary schooling (2)	0.960	1		
Gender gap in tertiary level (3)	0.915	0.860	1	
Gdp per capita growth annual (4)	-0.248	-0.098	-0.325	1

Table A4: The Heckman probit model

The model of Heckman (1979) was developed within the context of a wage equation. The wage is observed only people in work.

In our case, the dependant variable labor force participation is not observed.

From an analytical point of view, the Heckprobit model assumes the existence of an underlying relationship, also called latent equation:  $y_i = x_i\beta + \varepsilon_i$  (1), such that the binary outcome is observed, which is mirrored by a PROBIT equation:

$$y_i \text{probit} = (y_i^* > 0) \quad (2)$$

In order to capture the relevant effect on the standard probit results, second equation, called selection equation, is introduced.

The selection equation for those who left school in order to entering the labor market might is:

$$s_i = z_i\alpha + u_i \quad (3)$$

$s_i$ : represents invidious who left school,  $z_i$ : is a vector of factors to influence a youth's decision to left school such as (parent's level of education and father's occupation.....) and  $u_i$  is an error term and contains any unmeasured characteristics in this selection equation.

$u_i$  is assumed to be jointly normally distributed with  $\varepsilon_i$

$$\varepsilon_i \rightarrow N(0,1) \text{ and } u_i \rightarrow N(0,1)$$

$$\text{corr}(\varepsilon_i, u_i) = \rho \quad (4)$$

When  $\rho \neq 0$ , i.e. there is correlation between error terms of main equation and selection equation. The Heckprobit procedure instead is intended to correct for selection bias, and to provide consistent, asymptotically efficient estimates for all the parameters in the model.

We observe an indicator variable for the population defined as:  $s = 1$  for  $s_i^* > 0$  and  $s = 0$  for  $s_i^* \leq 0$

$s = 1$  if the young person is not at school.

$$s_i = \begin{cases} 1 & \text{if } s_i^* > 0 \\ 0 & \text{if } s_i^* \leq 0 \end{cases} \quad (5)$$

The dependent variable  $y_i$  is only observed if  $s_i^* > 0$  and  $s_i = 1$

$$\text{such that } y_i \text{ select} = (s_i^* > 0) \quad (6)$$

This binary outcome corresponds to labor force participation and schooling. To capture the relevant effect on the standard PROBIT results the corresponding selection equation is introduced:

$$y_i \text{ is only observed if } s_i^* > 0 \Rightarrow y_i = \begin{cases} y_i^* & \text{if } s_i^* > 0 \\ 0 & \text{if } s_i^* \leq 0 \end{cases} \quad (7)$$

**Table A5:** Definition of variables

Labor force participation status: 1= Employed, 0= Otherwise (Unemployed + inactivity)

**Variables related to the characteristics of the individus**

- Gender: Dummy equals 1 for Males.
- School leaving age: Age reported by the individual, ranging from 15 to 35 years.
- Urban: Dummy equals 1 if respondent lives in an urban area
- Married: Dummy equals 1 if respondent is currently married
- North East, Center East and South East: three regions. For each region we create a separate binary dummy variable.

Level of educational attainment: This variable was categorized as No primary school certificate; Primary school certificate; Secondary/A-levels; and College/University.

**The variables related to the household environment**

- Household or family size was determined by the total number of children: the number ranges from 1 to 10. Dummy equals 1, if number of children is less than 4

Parents' education level: This variable was categorized as No primary school certificate; Primary school certificate; Secondary/A-levels; and College/University.

Father's occupation: parental professional or unprofessional work may influence the outcome of children's education. In this study, the occupation was classified as; Employed (1), self-employed (2) and, not work (3)

**Table A6: Participation and students (in percentage)**

	<b>ALL</b>	<b>Male</b>	<b>Female</b>
Employed/ Jobless	67.60	69.70	65.85
Employed	62.43	83.55	44
Jobless	37.57	16.45	56
Total	100	100	100
Students	32.40	30.30	34.15
Total	100	100	100

**Table A7: Summary statistics**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>Min</b>	<b>Max</b>
Male	2469	.4520049	.497792	0	1
Experience age	2469	8.591738	4.799567	0	24
Experience age2	2469	96.84447	100.1133	0	576
House size	2469	.4309437	.4953086	0	1
Greater Tunis	2469	.1470231	.3542007	0	1
East	2469	.4989874	.5001003	0	1
West	2469	.3539895	.4783028	0	1
Rural	2469	.5808019	.4935278	0	1
Urban	2469	.4191981	.4935278	0	1
Married	2469	.1555286	.3624812	0	1
Level of education					
Primary	2469	.2705549	.4443365	0	1
Secondary	2469	.4398542	.4964699	0	1
University	2469	.1672742	.3732961	0	1
Level of education: father					
No formal- Primary	2469	.8230053	.3817416	0	1
Secondary -University	2469	.1769947	.3817416	0	1
Level of education :					
mother					
No formal- Primary	2469	.9015796	.2979426	0	1
Secondary -University	2469	.0984204	.2979426	0	1
Father occupation					
Wager	2469	.5925476	.4914598	0	1
Self-employer	2469	.1672742	.3917486	0	1
No job	2469	.2401782	.3477214	0	1