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**GENDER AND LABOR MARKETS
IN TUNISIA'S LAGGING REGIONS**

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and Dorte Verner**

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Abstract

There are significant differences between men and women's labor market outcomes Tunisia. The size of these gender gaps shows substantial variation across regions, notably between the richer coastal and eastern regions and the poorer southern and western regions. This Paper uses the 2014 Tunisia Labor Market Panel Survey (TLMPS) to examine the characteristics of male and female labor market participants in the lagging southern, western, and central regions, and in the leading regions. It also discusses the factors that influence monthly wages and the probability of employment for men and women respectively. Our results show that gender plays a huge role in labor market outcomes: women are less likely to participate in the labor force and are more likely to be unemployed and to receive lower wages. Young people and educated women in lagging regions are particularly disadvantaged as they are less likely to find a job and may not have the option to move to places where the prospect of employment is better. Moreover, our results suggest that wage discrimination against women is prevalent outside the leading region in Tunisia.

JEL Classification: J1

Keywords: Labor market; Survey; Gender; Tunisia Labor Market Panel Survey (TLMPS)

ملخص

هناك فروق ذات دلالة إحصائية بين انتاج الرجال والنساء في سوق العمل في تونس. ويظهر حجم هذه الثغرات بين الجنسين تباينا كبيرا بين المناطق، لا سيما بين المناطق الساحلية والشرقية الغنية والمناطق الأفقر الجنوبية والغربية. وتستخدم هذه الورقة المسح التتبعي لسوق العمل التونسي لعام 2014 لدراسة خصائص المشاركين من الذكور والاناث في سوق العمل في المناطق الجنوبية والغربية والوسطى، وفي المناطق الرائدة. كما يناقش العوامل التي تؤثر على الأجر الشهرية واحتمال توظيف الرجل والمرأة على التوالي. وتظهر نتائجنا أن النوع يلعب دورا كبيرا في انتاج سوق العمل: فالنساء أقل احتمالا للمشاركة في القوى العاملة، ومن المرجح أن يكون عاطلات عن العمل ويتلقين أجورا أقل. فالشباب والنساء المتعلقات في المناطق الغير متقدمة محرومات بشكل خاص لأنهن أقل احتمالا لإيجاد وظيفة وقد لا يكون لديهن خيار الانتقال إلى أماكن يكون فيها فرص العمل أفضل. وعلاوة على ذلك، تشير نتائجنا إلى أن التمييز في الأجر ضد المرأة منتشر خارج المنطقة الرائدة في تونس.

1. Introduction

Tunisia has made considerable progress in poverty reduction, human development and gender equality over the past decade. However, this progress has been accompanied by increasing regional disparities. Poverty rates are up to three times higher in the North West and Centre West regions of the country compared to the North East and Greater Tunis regions and extreme poverty has become concentrated in the poorest regions of the country, namely the North West and Center West (World Bank: 2015a).¹ In 2010, interregional inequality explained 62 percent of the total consumption inequality (measured by the Gini index) compared with 50 percent in 2000. Human development indicators are markedly worse in rural, compared to urban areas, including child malnutrition (stunting), access to maternal health care, maternal mortality rates and school attainment. Moreover, levels of unemployment are much higher in the interior regions of the country than the coastal regions (World Bank 2011, 2015b).

The disparities between regions are deeply rooted. Policies since Independence perpetuated already existing spatial divides as industrial and trade policies focused on development in and around the capital city and the coastal areas. Fear of the newly created state falling into interregional conflicts added weight to this policy stance and blocked the development of medium size cities outside these areas (Government of Tunisia, 2011). Inequality in living conditions and access to economic opportunities and jobs between the western regions and the coastal regions and Greater Tunis was one of the factors behind the revolution. Youth from the predominantly rural western regions must migrate to cities to look for jobs and most of them end up with low paying jobs in the informal sector. Women and university graduates living in poor, rural areas find it particularly hard to get jobs (Boughzala and Hamdi, 2016).

The present Government of Tunisia has committed to guaranteeing fairness between regions. A vision for a new regional development path is set out in a *Livre Blanc* (Ministry of Regional Development, 2011).² Policy makers are increasingly concerned about lack of economic opportunities in lagging regions.³ However, presently there is little analytical literature for policy makers to draw on which reflects current conditions and is based on data gathered since the revolution. One notable exception is Boughzala and Hamdi's (2016) study which presents a recent overview of regional and rural inequalities and in-depth studies of two rural governorates in the western, "lagging" regions, Sidi Bouzaid and Le Kef. The authors argue that coherent and holistic strategies, which integrate agricultural development into larger development programs that co-ordinate public and private intervention are needed. If these were designed and implemented Le Kef, Sidi Bouzid and other regions like them could achieve ambitious rural development targets. This paper aims to provide further information and analysis that can inform such policy design. It focuses on inclusive labor market opportunities for all the residents of lagging regions, especially for their young men and women who are a high priority.

As Chapter 1 in Assaad and Boughzala (*forthcoming*) shows, the rapid increase in educational attainment has been one of the most striking features of the evolution of the Tunisian labor supply. In Tunisia between 1990 and 2010, mean years of schooling increased from 3.3 to 6.9 years, growing twice as fast as in the rest of the world (Chapter 1 p12). However, economic opportunities in general and demand from employers for more qualified labor have not kept pace with the supply of labor. High youth unemployment has been a structural problem for

¹ Poverty rates in 2010 are: Greater Tunis: 9.1; North East: 10.3; North West: 25.7; Center West 32.3. The percentage of the extreme poverty living in each region is: Greater Tunis: 6 percent; North East 5 percent; North West: 22 percent; Center East: 8 percent; Center West: 41 percent; South East: 10 percent; and, South West: 8 percent (World Bank: 2015a).

² See for example "Livre Blanc du Développement Régional: Une Nouvelle Vision du Développement Régional, Ministère du Développement Régional, Tunis, Nov. 2011.

³ Integrated Regional Development Plan has been initiated which includes investment projects for jobs and infrastructure for all 24 governorates <http://www.jasmine-foundation.org/en/?p=617>.

some time and the problem is particularly acute for young people holding a university degree, the majority of whom are women.⁴ Unemployment of youth holding tertiary degrees reached 69 percent for women and 54 percent for men in 2012 (Patrick Premand et al, 2016). Overall unemployment rates for whole working population have been high compared to earlier in the decade, reaching 18 percent in 2011 and falling only slightly to 15 percent in the first quarter of 2015 (Chapter 1 in Assaad and Boughzala (*forthcoming*)). Like other countries in the Arab World female labor force participation is low, at 23 percent, compared with 72 percent for men. This is in stark contrast to other middle-income countries where female labor force participation rates were on average 52 percent in 2014.⁵ In fact, despite a history of implementing policies to remove discrimination against women and promote gender equality dating back to the 1960s, women's labor force participation has remained at about 25 percent since the early 2000s (see Rim Ben Ayed Mouelhi and Mohamed Goaid in this volume and ILO (2011)).

The aim of this paper is to explore how the characteristics of Tunisian labor market participation presented in other chapters of in Assaad and Boughzala (*forthcoming*) play out in lagging regions for men and women respectively with a particular focus on youth. Data from the Tunisia Labor Market Panel Survey (TLMPS 2014) provides a valuable source of descriptive data on the current characteristics of labor markets and economic activities nationwide allowing comparisons to be made between lagging and leading regions.

This Paper starts by examining the characteristics of male and female labor market participation covering employment, unemployment and average monthly earnings. It presents regional level data and illustrates the difference between the characteristics of male and female labor market participation in lagging and leading regions. Next, we turn to the factors that influence employment in Tunisia, examining the regional effect while controlling for individual characteristics including gender, age, and education. Finally, we look at the returns to labor, average monthly wages, using quantile regressions to examine how individual characteristics such as education, gender, and location affect the returns to labor for different segments of the income distribution.

2. Population and Labor Force Participation in Lagging and Leading Regions

Tunisia is organized into 24 governorates that can be aggregated into seven administrative regions; Greater Tunis, North East, and Centre East are considered leading regions and North West, Centre West, South East, and South West are considered lagging regions (World Bank, 2015b). Here we compare Greater Tunis and the North East as the leading region with the four lagging regions.

Table 1 shows the composition of the lagging and leading region's population aged 15-64 by gender, age, and location. Compared with the Tunis and the North East the lagging regions have a slightly larger proportion of females between 15 and 64 years old. What is also striking about the population data in Table 1 is that, unlike the Greater Tunis and the North East and the Southern regions, the working age population is predominantly rural in the North and Centre West regions.

Table 2 shows the difference between the male and female shares of the population disaggregated by age group. In the urban areas of lagging regions, the share of young males (15-24 years old) is smaller than in rural areas. The predominance of women in the population of lagging regions reflects gaps between the male and female population shares for the older age cohorts. In the leading region, there is a two-percentage point gap between percentages of

⁴ In 2010, 63 percent of graduates from higher education institutes were women while 37 percent were men (European Parliament, 2012)

⁵ World Bank, World Development Indicators,

males and females of the 25-44 year-old age group in both rural and urban areas. In contrast, in the lagging regions there is a six-percentage point gap between male and female population shares in both rural and urban areas for those aged between 25 and 44 years old and an eight percentage point gap between males and females aged 45 to 64 years old in the rural areas of lagging regions. This predominance of older working age women is consistent with the widely reported outmigration of men from rural areas of the lagging regions to look for work.

Using the broad market labor force definition⁶ Figures 1 and 2 show labor market participation rates. Across all regions, about 50 percent of the 15 to 64 year old age group participate in the labor market and the gap between male and female participation rates is similar in both the leading and the lagging regions (Figure 1). The Center West stands out as having a lower labor force participation rate than the North West, South East, and South West. Labor market participation rates are ten percentage points lower for men and six to eight percentage points lower for women in the Center West compared to the other lagging regions.

In rural areas, labor market participation is often in the form of unpaid work on family farms where women play an important role. So, if subsistence agricultural production is considered in the definition of labor market participation, the TLMPS shows that female labor force participation in lagging regions increases to around 40 percent for women between 30 and 60 years old (see Annex Figures A1 and A2).

Labor market participation rates for youth are lower than those of the economically active population overall (Figure 2). A reason why youth labor market participation rates are lower than those of older people is that some of the youth are still studying. In Tunisia, this is the case as of the majority of youth who do not participate (80 percent in the leading region and 65 percent in the lagging regions). In contrast, only a small proportion of older people (25-64 years old) that do not participate in the labor market, are studying (3 percent in the leading region and 1 percent in the lagging regions). More male youth from lagging regions participate in labor markets than their counterparts in the leading region, but female youth participation rates vary little across the regions, suggesting that constraints to female labor force participation are similar across the country.

3. Employment, Unemployment, and Inactivity in Lagging and Leading Regions

Overall, employment to population ratios using the market and extended definitions are similar in urban areas of the lagging and leading regions (see Table 3). The extended market definition of labor force participation takes into account time spent on subsistence production, a large part of which is working on farms and in agricultural value chains, often as unpaid family labor. In lagging regions, 51 percent of employed women give their primary occupation as an unpaid family worker. Overall, agriculture is an extremely important source of employment in lagging regions because 28 percent of men and women employed are either self-employed in agriculture or work as unpaid family labor on farms.⁷

Once subsistence agricultural work is counted, a very different picture of women's employment in the rural areas of lagging regions emerges. The employment to population ratio in rural areas of lagging regions increases from 13 to 30 percent, once subsistence production is taken into account, considerably higher than the 21 percent female employment to population rate in both rural and urban areas of the leading region. In fact, once subsistence production is considered rural women in lagging regions have substantially higher employment rates than women living

⁶ The Broad Market Labor Force is the sum of those who are either employed for one hour or more during the reference week or those not employed in the reference week but who desire to work in the next 14 days and have actively searched for employment in the past 3 months plus the discouraged unemployed, those who were not employed during the reference week but desire to work, are available to start work within two weeks but have not actively searched for work

⁷ Agricultural sector employment overall accounts for more than 28% and this number excludes those employed as wage workers on farms and in agricultural value chains.

in all urban areas of Tunisia (see Chapter 1 in Assaad and Boughzala (*forthcoming*), urban female employment rates are 20 percent). However, in both lagging and leading regions, whichever definition is used the employment to population ratio is less than 50 percent meaning that less than half of the working age population is working.

Unemployment rates are higher for both men and women in lagging regions than in the Great Tunis and North East area and the gaps between male and female unemployment rates are larger in the lagging regions (Figure 3). There is some difference between regions. The Centre West has highest male unemployment rate (23 percent), compared to the leading regions' 10 percent. In addition, the male unemployment rate in the South (8.4%) is slightly lower than that of the leading region and considerably lower than the unemployment rates in other lagging regions. Mines are large employers in the South and the lower unemployment rates probably reflect job opportunities in this sector. More than one in three women in lagging regions is unemployed compared with approximately one in six women in the leading region. The youth unemployment rate in lagging regions is 44 percent, considerably higher than ILOs modelled estimate of 32 percent.⁸

Educated men and women are more likely to be unemployed in the lagging regions, particularly educated women, as Figure 4 shows. At eighteen percent, unemployment rates for educated males with intermediate level or above education (i.e. upper secondary and above) are nearly twice as high as those for males who have had little or no education (10.2%). In contrast, unemployment rates for women with intermediate and above education are fifty one percent. This figure is more than four times the rates of unemployment for females with little or no education.

As Chapter 1 in Assaad and Boughzala (*forthcoming*) shows, the majority of those with intermediate and above education will be young adults and youth. This high unemployment is not only a waste of skills and resources for the Tunisian economy, but also evidence that young Tunisians are effectively excluded from society (see World Bank, 2014, 2015; OECD 2015). Surveys of Tunisian youth underline that work for these young individuals has importance that goes beyond economic security. With the chronic unemployment, many young people lose their self-worth and dignity and may stop searching for work, dropping out of the labor market and becoming invisible in employment and unemployment data (World Bank 2014).

The discussion above shows that there are significant gaps between women and men in both labor force participation, employment, and unemployment rates. Women are less likely to participate in the labor force than men and those that do participate experience higher unemployment rates than men. We turn next to the reasons behind these low rates of economic activity for females.

Household work is a key reason explaining women's low labor force participation in both lagging and the leading regions (Figure 5). In the leading regions, about two-thirds of the women not in the labor force state that household work is the reason why they do not participate in the labor market in lagging regions. In stark contrast, only 4 percent of men state that household work is a reason for not participating in the labor force.

Furthermore, domestic work seems to act as a brake on women's paid economic activity, particularly in lagging regions. Figure 6 shows the average number of hours per week devoted to household work by men and women. In lagging regions, whether women are employed or out of the labor force, they work over twenty hours a week on household work, compared to seventeen hours a week for unemployed women. In the leading region, employed women carry

⁸ There are only 134 observations for youth unemployment in lagging regions. This small sample may produce poor estimates of the population in this case.

out less household work than those who are unemployed or out of the labor force. Whether they are employed, unemployed or out of the labor force, men dedicate only a small fraction of

4. Wages in lagging and leading regions

The median monthly wage for the primary job is 400 dinars in lagging regions, 20 percent less than in Greater Tunis and the North East (Figure 7). Those working for the government have the highest median monthly wage. In lagging regions, men's median wage is almost 20 percent higher than women's median wages. The gender wage gap is largest in the leading region with men's median earnings nearly 25 percent higher than women's median wage. The South East and South West are the lagging regions with the highest median wage and the smallest gender wage gap. Median wages in these regions are as high as the median monthly wage in Greater Tunis and the North East. In the South East and South West, the proportion of women who work for the government (24 percent) is much higher than that in the North West and Centre West (six percent). This is the most likely reason for gender pay equality in these regions.

Figure 8 compares the median monthly wages received by men and women with different levels of education in leading and lagging regions. Both men and women with intermediate or higher levels of education earn substantially more than those with less education. In addition, the gender wage gap is smallest for the most educated individuals. Median wages for the more educated are higher in lagging regions than in the leading region. This reflects the fact that individuals who are more educated are mostly likely to be employed in government in lagging regions. In the lagging and leading regions, the gender wage gap is largest for those with less than intermediate level of education and median wages paid to these women are just slightly different from those received by women with the least education.

5. The Determinants of Employment in Tunisia

This section and the next one explore the links between gender, employment and wages using multivariate regression analysis. This approach enables us to examine the implications of living in a lagging or a leading region for men and women's prospects of employment and earnings, controlling for individual characteristics including age, marital status, and education.

We use an ordered probit model to examine the link between individual characteristics and the probability of being employed, unemployed, or not in the labor force. Table 4 presents marginal effects or the effect of each variable on the probability of being employed.⁹ Separate models for men and women are estimated to allow for gender-differences in the labor market.¹⁰ Hours spent doing household labor emerged as a likely influence on women's labor market participation in the previous section and thus included as covariate in models (2) and (4). As there may be concerns with endogeneity for this variable,¹¹ we focus on the results of models (1) and (3) in the discussion below (see Annex Table A1 and A2 for model selection). The results from these models corroborate findings of previous sections: there are marked differences in the impact of some individual characteristics and endowments on the likelihood of employment between men and women. In addition, there are also significant regional effects.

Compared with their counterparts living in the leading region, both men and women living in the Center West are significantly less likely to be employed. In contrast, both men and women living in the North West are significantly more likely to be employed compared with men and

⁹ Full estimates are available upon request.

¹⁰ More formally, results of a Wald test showed that the labor force participation models for males and females are statistically different.

¹¹ The endogeneity concern is that the number of hours devoted to housework is the outcome of employment opportunities (time spent in paid employment) and work and leisure preferences and so determined within the model. The underlying assumption for housework to be an exogenous variable would be that social norms, rather than economic incentives, employment opportunities and preferences for work and leisure, determine the amount of time that is allocated to wage employment and unpaid household work by both women and men.

women in the leading region. Men in the South West are more likely to be employed than men in the leading region, but there is a comparable but weaker impact on women's likelihood of employment (0.41 percent for women compared to 13 percent for men). This is consistent with the predominance of employment opportunities in the male-dominated mining sector, as discussed previously. In the Center East, women are more likely to be employed than women in the leading region, but there is no significant difference between employment probabilities for men in the Center East and the leading region. The Center West, thus, stands out as the region where the challenge of finding work is the greatest. Controlling for differences in education, age and household wealth, men and women are less likely to find work in the Center West than those in the leading region. In contrast, in the North West it seems that characteristics other than regional location alone play an important role in explaining the probability of employment. Despite higher unemployment rates than in the leading region (see Figure 3), both men and women are more likely to be employed in this region than in the leading region.

Examining the role of individual characteristics, we see that for both men and women the probability of employment for those aged between 25 and 54 years old is significantly higher than that of youth aged between 16 and 24 years old. Older men (55-64 years old) are less likely to be employed than male youth, but there is no significant difference between the probability of employment of female youth and older women (55-64 years old).

There are marked gender differences in the influence that education has on the likelihood of employment in Tunisia. For women at all levels of education (primary, intermediate, and university), additional education increases the probability of employment. The effects are larger and increasing with the level of education. Women with primary, intermediate and university and above level of education are 5 percent, 15 percent, and 32 percent more likely to be employed, respectively, than women with little or no education.

The results in Table 4 shows the importance of taking into account a number of other factors when examining the relationship between female education and employment. Here, household wealth is an important explanatory variable as results show that living in a wealthier household (quintiles 4 and 5) reduce the employment for females. The TLMPS data show that most educated women are part of wealthier households and only approximately 15% of women who have a university degree belong to households in the low wealth quintiles (quintiles 1 and 2). Educated women who are part of wealthier households are likely to be able to wait for jobs that suit their qualifications and, unlike women in the least wealthy households have less need to find employment to guarantee their household's subsistence. Therefore, once we account for household wealth, then education increases the odds of women's employment.

In contrast, higher levels of education appear to decrease the probability of employment for young men. Interaction terms show that once age is taken into account, older and educated men are more likely to be employed (signs are positive and significant on the interactions between older age cohorts and intermediate and university and above educated males). The young men who are well educated are those who are less likely to be employed compared to young men with little education. This result is consistent with the idea that these young and well-educated men have a reservation wage that is too high for the existing demand for their labor. In contrast, our findings suggest that educated women aged 25 to 54 are more likely to be employed than young women with little or no education. In addition, higher levels of education have no additional effect on the likely to be employed for older women (55 to 64 years) compared to young women with little or no education.

Being married increases the probability of being employed for men but decreases it for women, a finding consistent with the strong social norms surrounding women's labor force participation. This finding is also consistent with other research that suggests women may find it hard to re-enter the labor force after giving birth.

Household wealth has no impact on the probability of employment for men and women living in households in the second and third wealth quintile compared with the poorest households. Nevertheless, males living in wealthier households (the fourth quartile) are more likely to work, which contrasts with the finding that females living in the wealthiest households are less likely to be employed compared with those living in the poorest households.

Models 2 and 4 of Table 4 examines the relationship between hours spent on household work and the probability of employment. Model 2 shows that the number of hours spent doing household work has no significant impact on the probability of employment for men. In contrast, model 4 shows that women who spend more than 40 hours a week doing household work are about 5 percent less likely to be employed compared with those who carry out less than 39 hours of household work per week.

6. The Determinants of Wages in Tunisia

This section examines the determinants of monthly wage incomes of Tunisia workers. Following Verner (2006, 2008), we use quantile regressions with the dependent variable set as the log of wages for quantiles of the wage distribution. Our estimates are conditional on participation in the labor market.¹² Again, we run separate regressions for males and females to take into account different labor market dynamics. Besides having technical advantages (see Verner, op cit.), quantile regressions reveal whether individuals in different parts of the wage distribution receive different rates of return for the same characteristics or attributes, for example, working in a particular sector or education level. This approach allows us to answer a number of questions that shed further light on labor market dynamics for example: does working for the government carry a wage premium for both the lowest and the highest paid workers? Are the returns to education the same at different points in the wage distribution?

Table 5 reports the estimates for men. It shows that living in the North West or Center West reduces monthly income across the whole wage distribution (except for the 90th quantile in the Center West). The effects are largest for the poorest; monthly income is 49.8 and 33.6 percent lower for the 10th quantile in the North West and Center West respectively compared with the 10th quantile in the leading region.¹³ For the other regions, Center East, South East and South West, there is no significant difference between wage incomes in those regions and wage incomes in the Greater Tunis and North East Regions. Age (a proxy for experience) is associated with increased monthly income for those from the 25th through 90th quantiles).

The returns to education are positive for all levels of education across the whole wage distribution. It is worth noting that the poorest workers (10th Quantile) experience the highest returns to primary and intermediate and education (26 and 87 percent respectively, compared to no education). Returns to university and above levels of education are similar across the wage distribution. Marital status only affects the wage income of men in the 25th through 50th quantiles. The location of employment affects monthly wage incomes. Controlling for age, education, and region, compared to jobs in urban areas, jobs in rural areas are associated with lower monthly income for the middle of the wage distribution (25th through 75th Quantile).

Turning now to sectors of employment, wages for those working for the private sector are lower than that of those employed for the government for the middle of the wage distribution (Quantiles 25 through 75). In addition, wages from those working in public enterprise sectors

¹² We estimated a set of Heckit regressions (not reported) to check for potential selection bias. The coefficients on the Mills ratio were statistically insignificant in all regressions for both males and females. Thus, we opted to report and discuss straightforward OLS estimates.

¹³ According to Halvorsen and Palmquist (1980), in a log-linear wage-model, the percentage impact on earnings given the presence of the characteristic/factor represented by a dummy variable must be measured using the following formula: $100 * g = 100 * (\exp(\beta_i) - 1)$ where g is the relative effect on wages and β_i is the coefficient of the dummy variable.

(which includes foreign corporations, NGOs and non-profits) are significantly lower than that of those employed by the government for workers in the 50th through 75th quantiles. Otherwise, there is no significant difference between monthly wage incomes from government work and monthly wage income from public enterprises and other. Private sector jobs located in rural areas (predominantly agricultural sector employment) are associated with lower monthly income for a large part of the wage distribution (Quantiles 25 through 75).

Table 6 reports estimates for women. Controlling for marital status, education, and sector of employment, the results show that women who live in lagging regions receive lower wages compared to women living in the leading region across the whole wage distribution. The effects are largest for the poorest women who live in the North West and Center West (10th Quantile), where monthly income is 66 percent and 41.7 percent lower, respectively, than the monthly income of women in the 10th quantile of the wage distribution in the leading region. Like the results for men, age is associated with increased monthly income for the top 75 percent of the distribution (quantiles 25 through 90). The returns to education are positive for all levels of education across the whole wage distribution. The poorest female workers (10th Quantile) receive the highest returns to primary (42 percent) and intermediate (92 percent) education.

Married women, widowed, or divorced who are in the 10th quantile receives higher wages compared to single women. However, marital status has no significant effect for the rest of the wage distribution for women. In addition, in contrast to men employment in rural as opposed to urban jobs, has no significant effect on women's monthly wage incomes.

The estimates show that there is no wage differential for females working in public enterprises compared to those employed in the government. However, women who are in the 50th through 75th quantiles and are employed in the private sector receive significantly less than women working for the government do. Women who are in the 25th through the 75th wage quantiles and are employed in "other sectors" also earn less than those who work in government.

The estimates and discussion above show that monthly wage income is significantly affected by regional location, educational attainment, and sector of employment. In addition, there are marked differences in these effects for men and women. Men living in lagging regions of the North and Center West earn significantly less than men who live in the leading region, particularly for those at the lowest end of the wage distribution. Women living in all lagging regions earn less than those living in the leading region. This difference is the largest for the poorest workers living in the North and the Center West. For men and women alike, there is a significant positive return to education at all levels, and the effects of primary and intermediate education are strongest for those at the bottom end of the wage distribution (10th Quantile). Employment in urban (as opposed to rural) areas is associated with higher wage incomes for men, but not for women. Government employment is associated with higher wage incomes compared to employment in other sectors for a large part of the male wage distribution (Quantiles 25 to 75), but the effects are less marked for women. More precisely, government employment is associated with a wage premium compared to employment in the other sectors only for the median female worker and at the 75th Quantile of the distribution.

7. Conclusion

This paper uses the TLMPS data collected in 2014 to provide a comprehensive description of the labor market in Tunisia. Our analysis shows that broad market labor participation rates for women remain at around 25 percent, far lower than that of men in Tunisia as well as that of women in other middle-income countries. In addition, the overall labor market participation rates are very similar across lagging and leading regions. However, there are differences between participation rates for male youth. The male youth labor force participation rates in lagging regions, at 50 percent, is considerably higher than the male youth participation rate of 34 percent in the leading region. In contrast, about one in five female youth participate in labor

markets in leading and lagging regions alike, suggesting that constraints to labor market participation faced by young women may be similar nationwide. This finding is consistent with social norms about gender and work being important determinants of female labor participation.

Employment rates for men in lagging and leading regions are similar. Using standard labor market definitions of employment, women's employment rates in the leading and lagging regions are also very similar. However, once subsistence agricultural production is accounted for as work, women's employment rates in rural areas of lagging regions increases from 13 to 30 percent, markedly higher than the 21 percent employment rate of women in rural areas of the leading region. In contrast, there is little difference between male employment ratios in rural areas of lagging regions when subsistence production is taken into account. Unsurprisingly, unemployment rates for both men and women in lagging regions are much higher than those in leading regions. Moreover, youth and educated women in lagging regions are particularly disadvantaged in these labor markets.

Gender plays a large role in shaping labor market options in the lagging regions. Unemployment rates are higher for both men and women in lagging regions compared to unemployment in the leading region and the gaps between male and female unemployment rates are larger in the lagging regions. In lagging regions, more than one in three women are unemployed compared with approximately one in seven men. Many young educated women are trapped in lagging regions unable to find a job and without the option of moving to places where employment prospects are better.

In rural areas, once subsistence production is accounted for, women's labor force employment rates are much higher than in the rest of Tunisia. Much of their time is spent working as unpaid family workers on farms; over half of employed women in lagging regions state that working on as unpaid workers on family farms is their primary occupation. Our data show that it is women in their mid-thirties to mid-fifties whose labor market participation increased the most, once their unpaid work was counted. In the lagging regions, the agricultural sector is a particularly important source of work. Self-employment and unpaid family work alone provide more than a quarter of employment in lagging regions.

Monthly wage income is significantly affected by regional location, educational attainment, and sector of employment. In addition, there are marked differences in these effects for men and women. Men living in lagging regions of the North and Center West earn significantly less than men who live in the leading region, particularly for those at the lowest end of the wage distribution. Women living in all lagging regions earn less than those living in the leading region. This difference is the largest for the poorest workers living in the North and the Center West. These results suggest that wage discrimination against women is prevalent outside the leading region in Tunisia. This may be more related to gender norms than to conditions in lagging regions per se. The regional and gender differences in the determinants of wage labor incomes are likely a contributing factor to the increasing regional disparities in poverty and human development outcomes in Tunisia.

For men in most of the wage distribution, working for government is strongly associated with higher wage incomes. For women government employment is only associated with a higher wage income for those at the upper half of the wage distribution. Finally, our results also suggest that social norms about female gender roles play a strong role in determining employment options for men and women. For women, marriage reduces the likelihood of employment while married men are more likely to be employed. And women spending over 40 hours doing housework are less likely to be employed whereas hours spent doing housework has no significant impact on the probability of employment for men.

Our analysis suggests several implications for policy. Education and skills training in addition to policies to improve the demand for labor will be key to reduce unemployment in Tunisia, particularly in lagging regions. Unsurprisingly, unemployment rates for both men and women in lagging regions are much higher than those in leading regions. Moreover, youth and educated women in lagging regions are particularly disadvantaged in these labor markets. The Center West stands out as the region where the challenge of finding work is greatest. Controlling for differences in education, age and household wealth, both men and women are less likely to find work in the Center West than men and women in the leading region, Greater Tunis and the North East. In the North West and South West, the likelihood of employment for men and women is higher than in the leading region when their individual and household characteristics are taken into account. As unemployment rates are higher in the North West than in Greater Tunis and the North East this suggests that in addition to job creation policies and programs education and skills training may be needed. For women, education at all levels increased their probability of employment compared with women or have little or no education. However, our results show that young educated men (between 16 and 24 years old) are less likely to be employed than older educated men. This implies that their reservation wages may be higher than market wages and that policies geared toward training and skills' development are needed to ensure that their skills fit the existing demand for labor.

Changes in social norms about female gender roles will play a strong role in improving employment options for women. In lagging regions, more than one in three women are unemployed compared with approximately one in seven men. Many young educated women are trapped in lagging regions unable to find a job and without the option of moving to places where employment prospects are better. Our results suggest that social norms about female gender roles play a strong role in determining employment options for men and women. For women, marriage reduces the likelihood of employment while married men are more likely to be employed. And women spending over 40 hours doing housework are less likely to be employed whereas hours spent doing housework has no significant impact on the probability of employment for men.

Policies aimed at increasing productivity for women and men in agricultural value chains and expanding job opportunities are an important part of the solution to the lagging regions' jobs challenge. Self-employment and unpaid family work alone provide more than a quarter of employment in lagging regions. In rural areas, once subsistence production is accounted for, women's labor force participation rates are much higher than in the rest of Tunisia. Much of their time is spent working as unpaid family workers on farms; over half of employed women in lagging regions state that working on as unpaid workers on family farms is their primary occupation, so policy solutions need to address the specific characteristics women's work in agriculture and be designed to reach older women who may have received little education, in order to increase overall productivity.

Policies that increase opportunities for profitable entrepreneurship for young men and women are needed. In addition, training, mentorship and other forms of support to build the skills and abilities needed by entrepreneurs and increasing access to finance for startups, micro and small enterprises, would also seem to be important, given the high reservation wage of more educated young men, high male and female unemployment rates and the jobs challenge in Tunisia. Policies that support male and female entrepreneurs in agricultural value chains will be particularly important in the Center West, where over 60 percent of the population live in rural areas, and other predominantly rural governorates in Tunisia. Encouraging equal participation in training for employment growth areas that require new skills, for example. STEM skills and tech and ICT related skills could provide a way of addressing and changing social norms about work open to women.

Looking towards the future it will be important to factor in the already apparent impacts of climate change on agriculture and to ensure climate smart and diversified development paths are sustainable and incorporate adaption and mitigation measures as appropriate. Tunisia is and will continue be impacted by climate variability and change mainly through the adverse effects resulting from increasing temperatures, reduced and variable precipitation, and sea level rise through, for example, salt water intrusion. Climate change impacts are projected to increase water scarcity, the frequency of droughts and flooding. In Tunisia, global climate change's major impact channel is through changing world food prices, especially since Tunisia is a net importer of many food commodities.

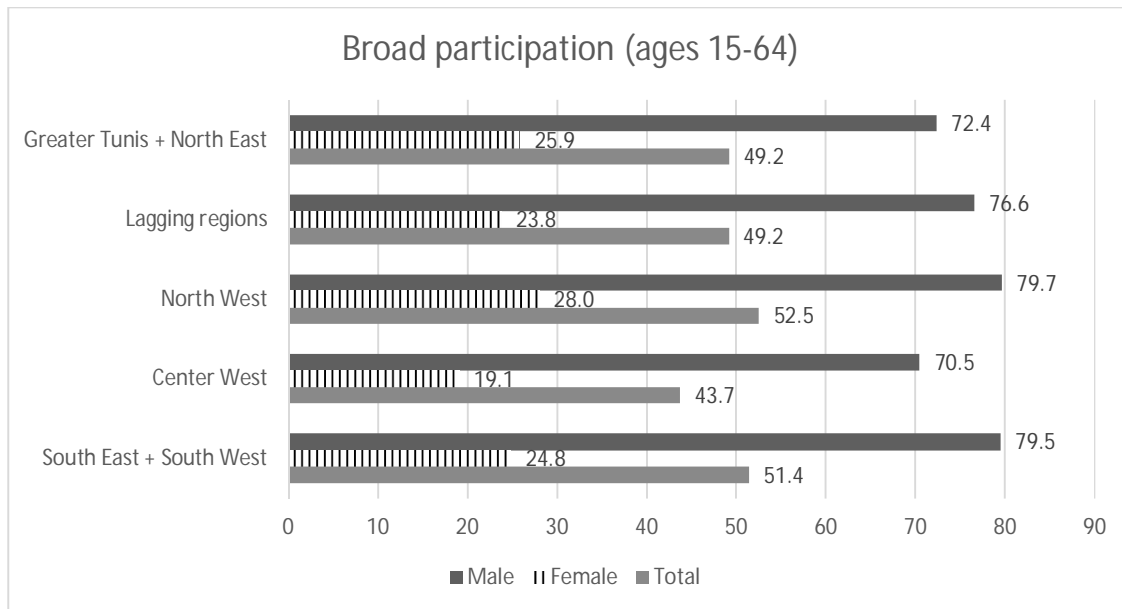
More work is needed to deepen understanding of rural labor markets and the potential sources of employment growth, particularly in agriculture, in order to understand the implications for policy. Currently the skills and employment potential of many people in the lagging regions, especially women and youth, are underutilized and policies needed to address this issue. Looking towards the future it will be important to factor in the already apparent impacts of climate change in the lagging regions and to ensure new development paths are sustainable and incorporate adaption and mitigation measures as appropriate.

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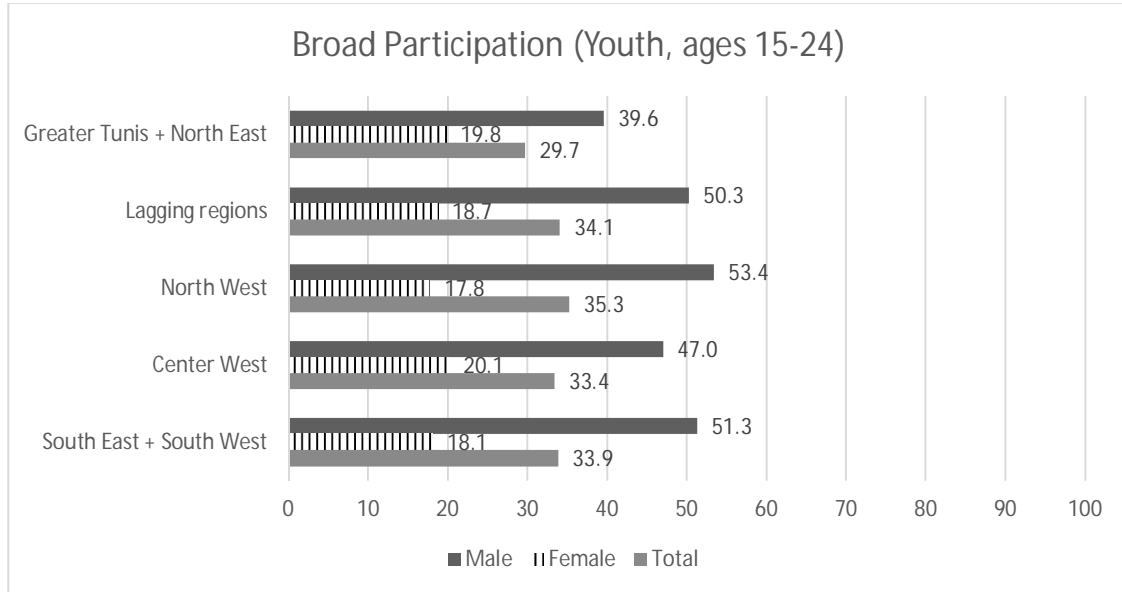
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Figure 1: Labor Market Participation Rates in Lagging and Leading Regions, by Gender in 2014 (broad market labor force definition)



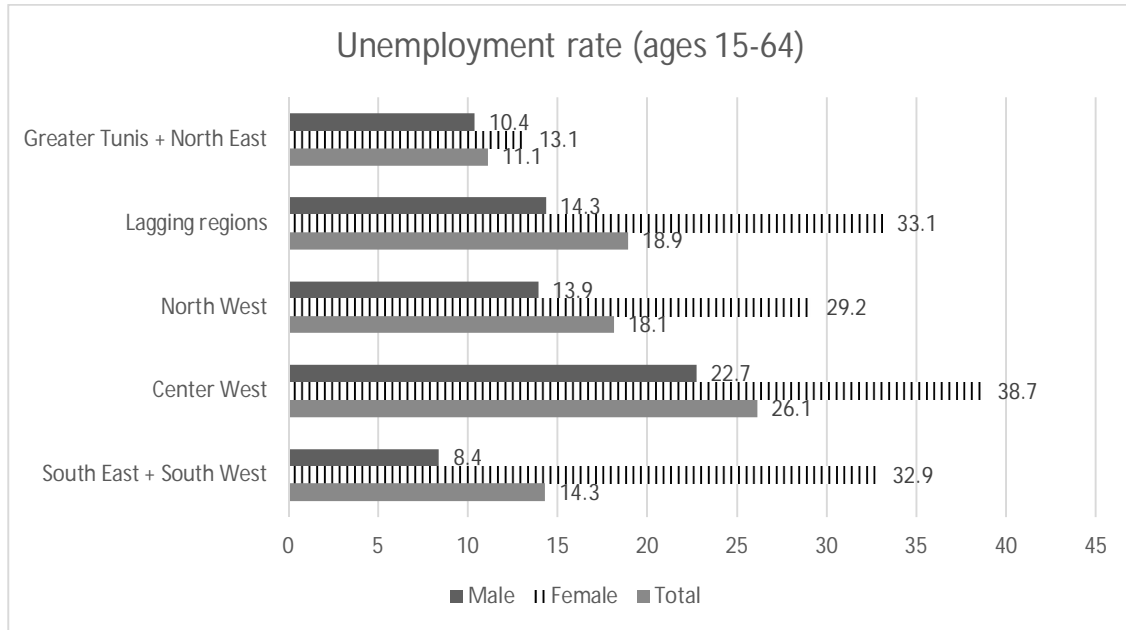
Source: Own calculations based on TLMP5 2014.

Figure 2: Labor Market Participation Rates of Male and Female Youth in Lagging and Leading Regions



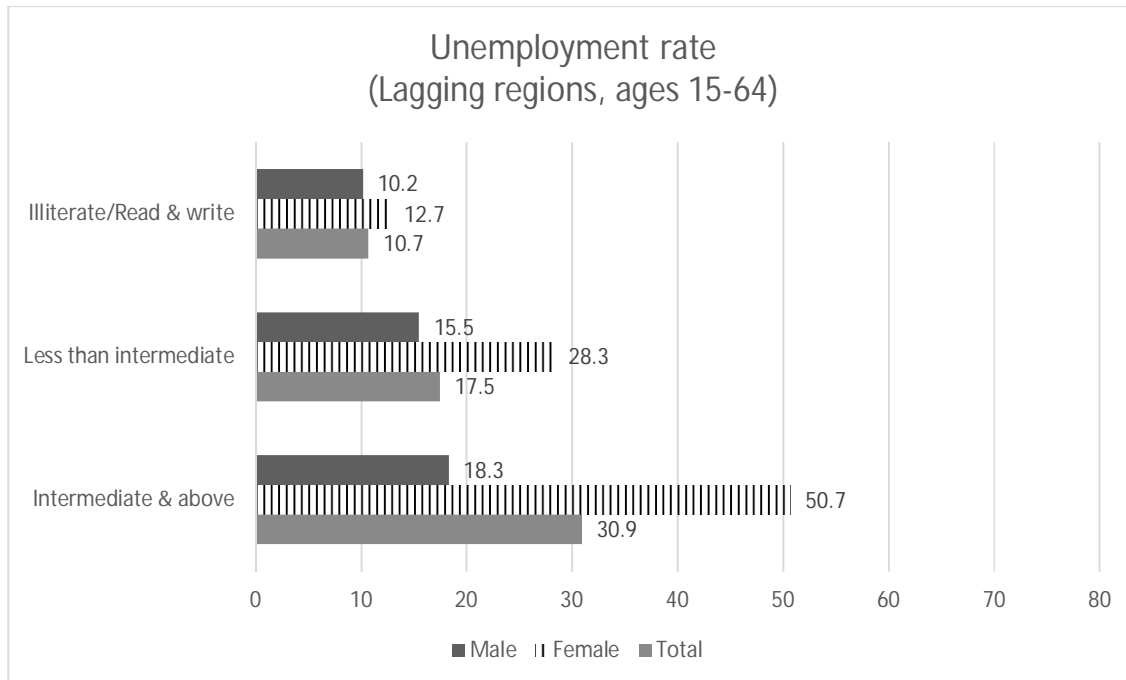
Note: Greater Tunis refers to Greater Tunis and North East. Source: Own calculations based on TLMP5 2014.

Figure 3: Unemployment of Tunisians Age 15-64 in Lagging and Leading Regions, 2014



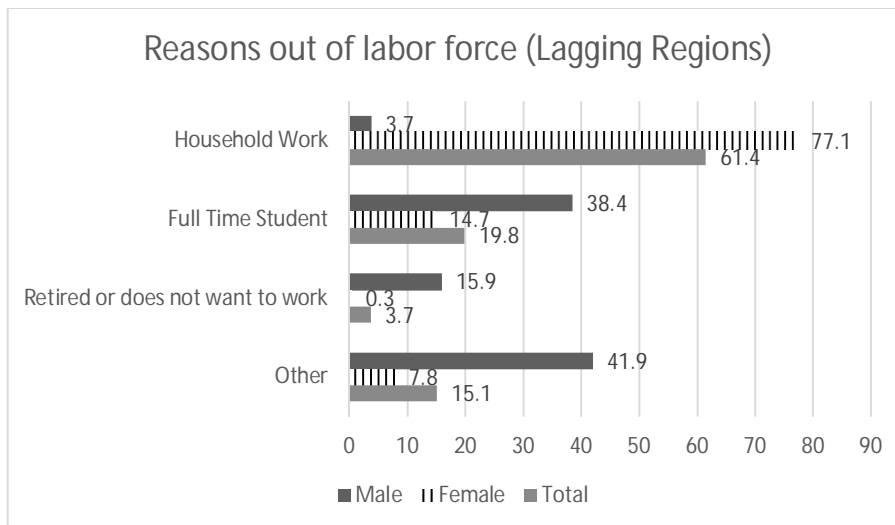
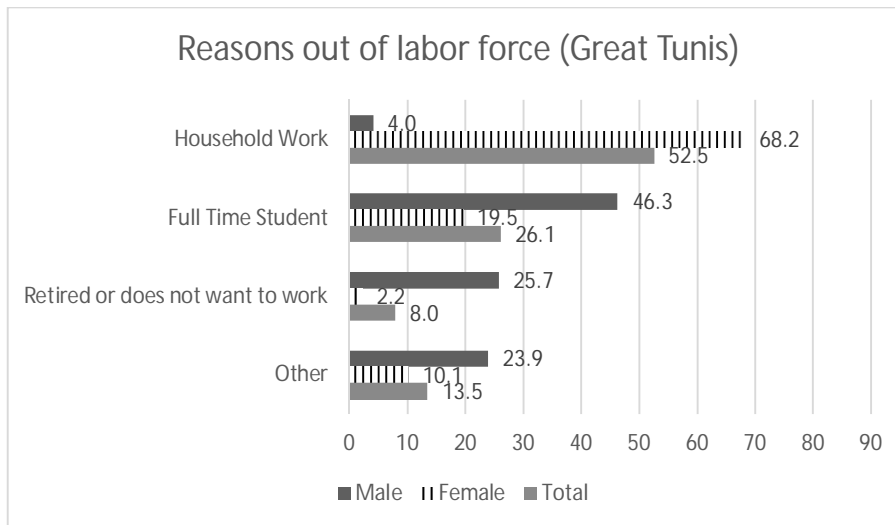
Source: Own calculations based on TLMPS 2014

Figure 4: Unemployment Rates in Lagging Regions by Level of Education and Gender in 2014



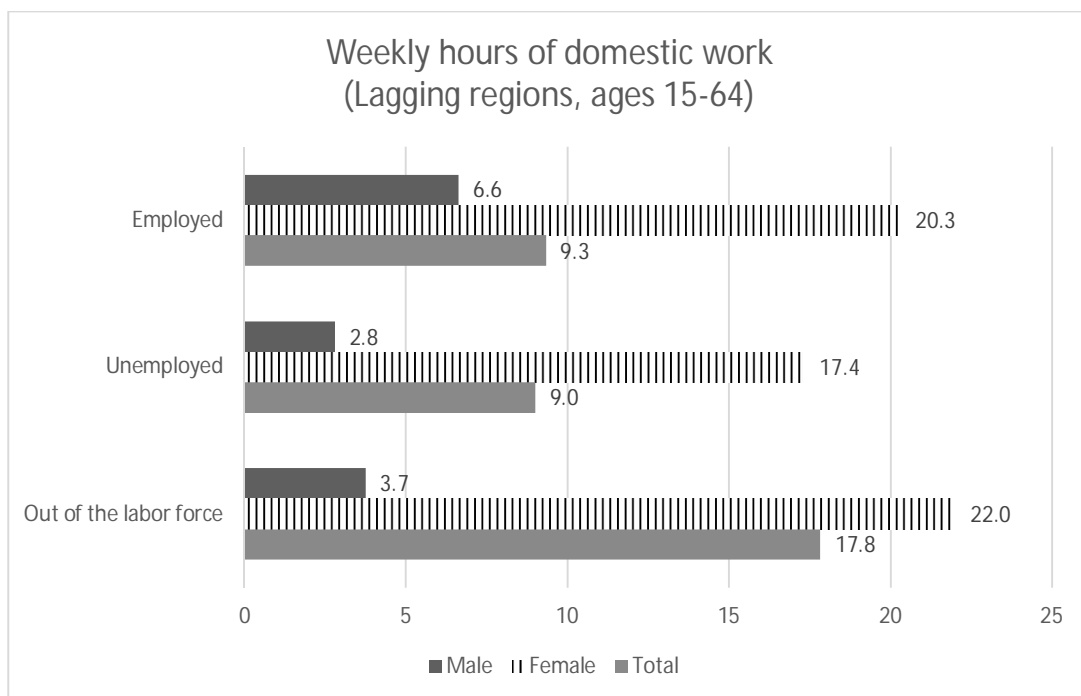
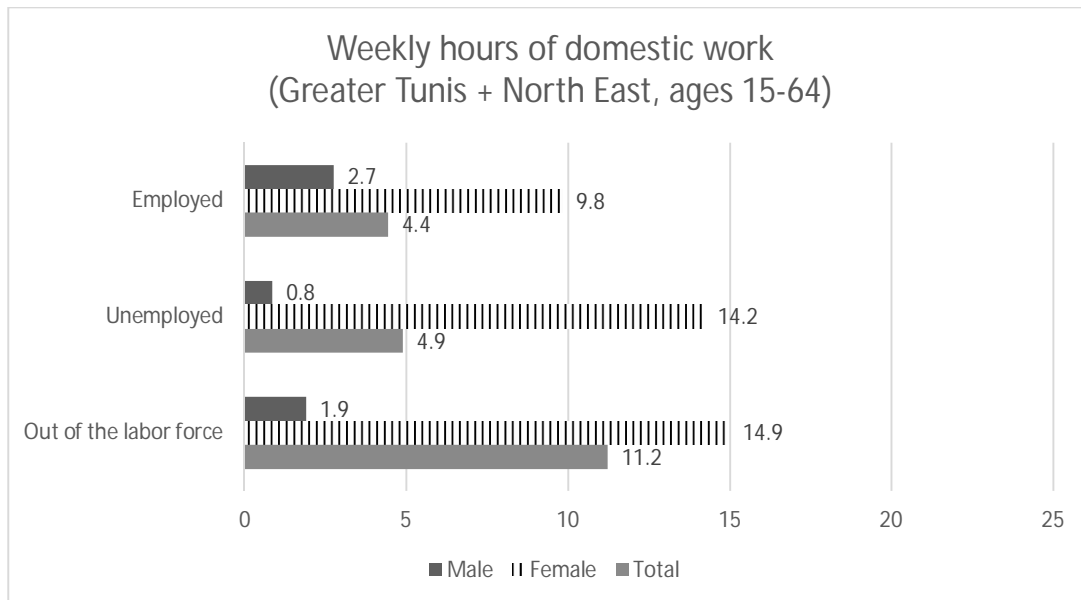
Source: Own calculations based on TLMPS 2014

Figure 5: Reasons for Being Out of The Labor Force in Leading and Lagging Regions, by Gender



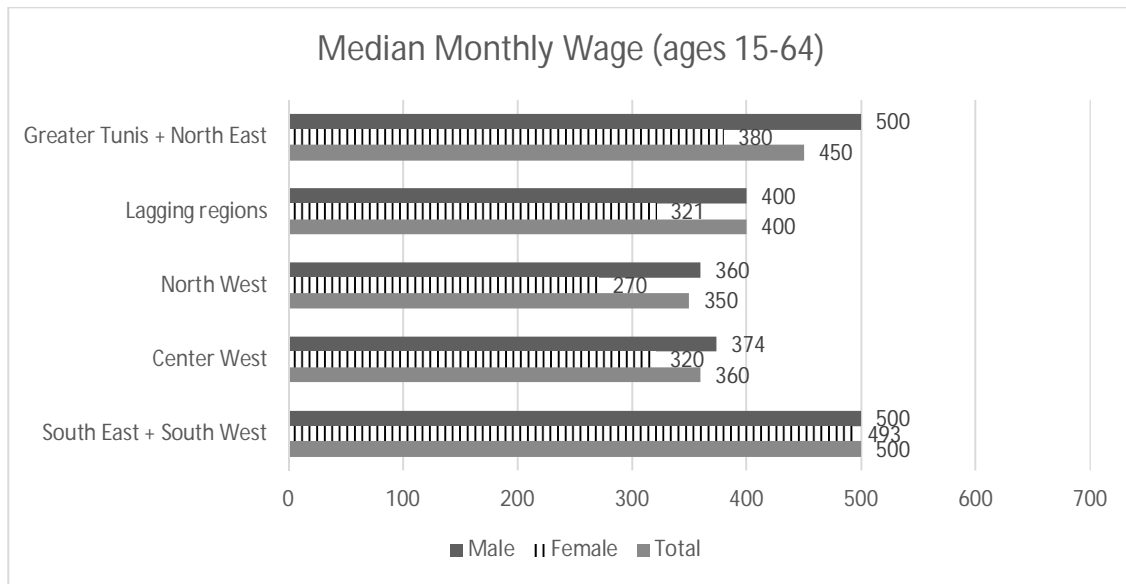
Source: Own calculations based on TLMPS 2014

Figure 6: Weekly Hours of Household Work in Leading And Lagging Regions, by Gender



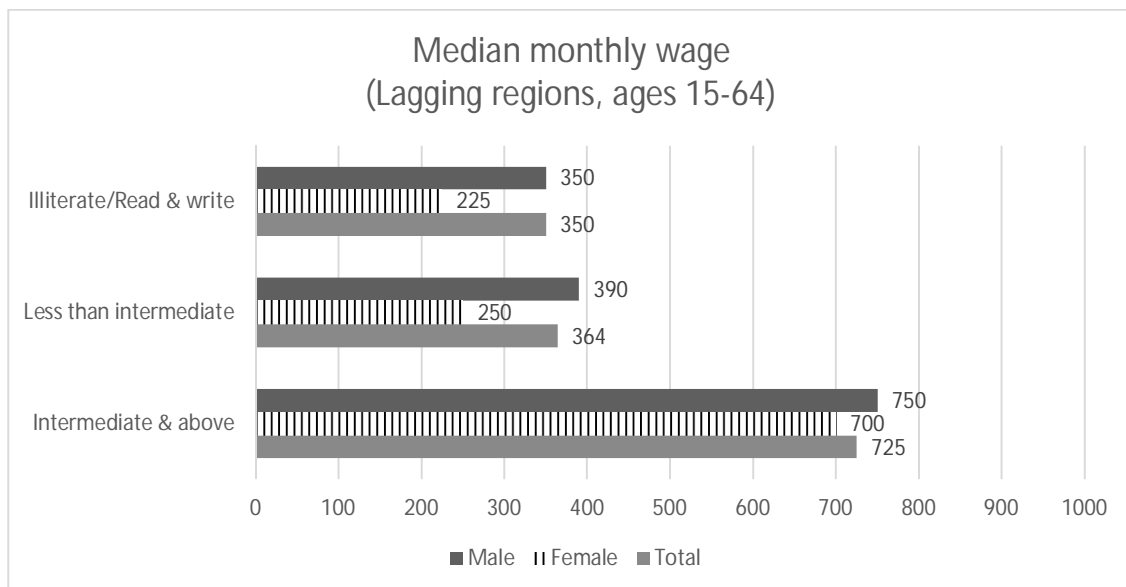
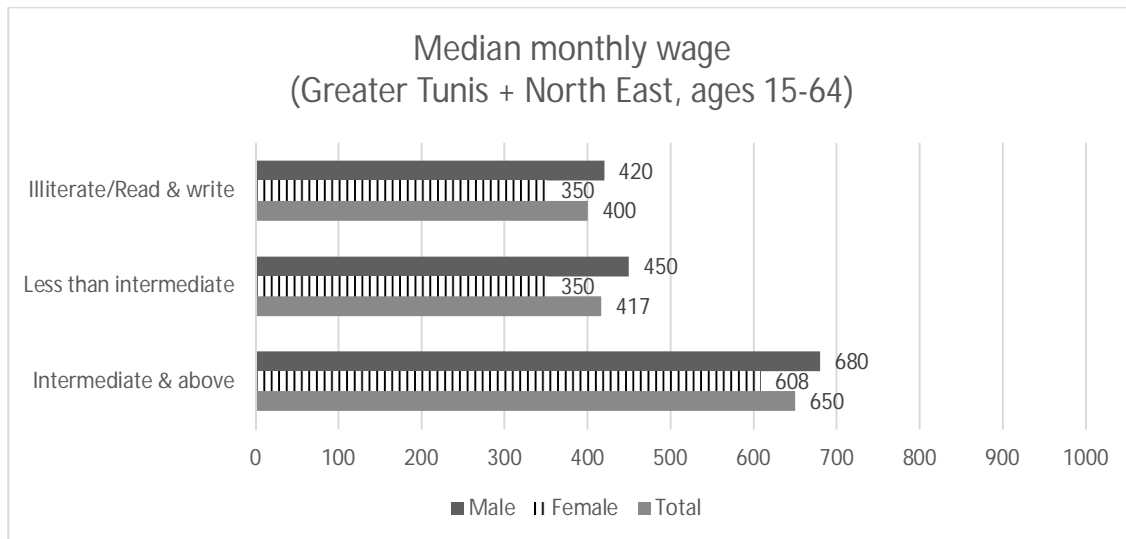
Source: Own calculations based on TLMPS 2014

Figure 7: Median Monthly Wages in Leading And Lagging Regions, by Gender, in Tunisian Dinars



Source: Own calculations based on TLMPs 2014

Figure 8: Median Monthly Wages in Leading and Lagging Regions, by Education and Gender



Source: Own calculations based on TLMPS 2014

Table 1: Lagging and Leading Regions' Population, by Gender, Age and Residence, Ages 15-64

	Male	Female	Total	% Female	Urban	Rural	Total	% Rural
Greater Tunis + North East	1,459,745	1,451,467	2,911,212	49.9%	2,403,329	507,883	2,911,212	17%
Lagging Regions								
North West	376,679	416,607	793,286	52.5%	344,484	448,802	793,286	57%
Center West	455,022	494,191	949,213	52.1%	352,975	596,238	949,213	63%
South East and South West	542,139	572,441	1,114,580	51.4%	812,028	302,552	1,114,580	27%
Non-Youth (25-64)	1,032,476	1,121,754	2,154,230	52.1%	1,159,464	994,766	2,154,230	46%
Youth (15-24)	341,287	361,562	702,849	51.4%	350,023	352,826	702,849	50%

Notes: frequency weights are used to extrapolate the sample to the population. The TLMPs contains several observations for which gender data are missing. The male/female figures were extrapolated using total population estimates together with the share of females obtained from observations for which gender data was available. Source: Own calculations based on TLMPs 2014.

Table 2: Age Distribution of The Male and Female Working Age Populations in Leading and Lagging Regions, by Location

Age		15-24	25 to 44	45 to 64
Greater Tunis and North				
Urban	Male	50.4	48.8	51.2
	Female	49.6	51.2	48.8
Rural	Male	51.0	49.0	52.4
	Female	49.0	51.0	47.6
Lagging Regions				
Urban	Male	47.5	46.8	49.0
	Female	52.5	53.2	51.0
Rural	Male	49.4	47.3	46.0
	Female	50.6	52.7	54.0

Source: Own calculations based on TLMPs 2014.

Table 3: Employment to population Ratio in Lagging and Leading Regions by Gender and Residence, Ages 15-64, 2014

	Leading Region			Lagging regions		
	Male	Female	Total	Male	Female	Total
Urban						
Market employment	60.1	21.2	40.7	63.8	16.1	39.0
Extended employment	58.3	21.4	39.6	63.8	17.9	40.0
Rural						
Market employment	65.6	18.5	42.6	64.7	13.4	37.9
Extended employment	65.6	20.7	43.7	67.4	29.7	47.6
Total						
Market employment	60.5	21.0	40.8	64.3	14.8	38.4
Extended employment	58.9	21.3	39.9	65.5	23.5	43.6

Source: Own calculations based on TLMPs 2014. Notes. Extended employment adds those that are employed in subsistence production to the market employment definition.

Table 4: Determinants of Labor Force Participation (LFP), probability of being employed (standard definition used, marginal effects reported)

Variable	Male		Female	
	(1)	(2)	(3)	(4)
Region				
North West	0.0669 (0.0198)***	0.0665 (0.0209)***	0.0451 (0.0171)***	0.0448 (0.0177)**
Center East	-0.0092 (0.0179)	-0.0191 (0.0187)	0.0396 (0.0147)***	0.0465 (0.0154)***
Center West	-0.0727 (0.0214)***	-0.0808 (0.0228)***	-0.0634 (0.0143)***	-0.0538 (0.0157)***
South East	0.0247 (0.0209)	0.0197 (0.0223)	-0.0363 (0.0151)**	-0.0278 (0.0162)*
South West	0.1261 (0.0282)***	0.1314 (0.0302)***	0.0409 (0.0241)*	0.0540 (0.0264)**
Age Cohort				
25 – 34 years	0.2848 (0.0226)***	0.2825 (0.0232)***	0.1083 (0.0173)***	0.1043 (0.0187)***
35 – 54 years	0.2782 (0.0302)***	0.2864 (0.0309)***	0.1446 (0.0179)***	0.1446 (0.0195)***
55 – 64 years	-0.1754 (0.0347)***	-0.1670 (0.0363)***	-0.0051 (0.0241)	-0.0052 (0.0266)
Education				
< Intermediate	0.0078 (0.0170)	0.0049 (0.0179)	0.0478 (0.0141)***	0.0602 (0.0151)***
Intermediate	-0.0412 (0.0198)**	-0.0383 (0.0208)*	0.1480 (0.0236)***	0.1587 (0.0265)***
University +	-0.0987 (0.0301)***	-0.1045 (0.0313)***	0.3165 (0.0245)***	0.3210 (0.0265)***
Marital Status				
Married	0.2370 (0.0221)***	0.2348 (0.0230)***	-0.0886 (0.0127)***	-0.0681 (0.0138)***
Widowed/Divorced	0.0687 (0.0719)	0.0630 (0.0819)	0.0034 (0.0246)	0.0036 (0.0268)
Household				
Household Size	0.0049 (0.0040)	0.0059 (0.0041)	0.0034 (0.0029)	0.0037 (0.0031)
Household Location (rural)	0.0454 (0.0144)***	0.0452 (0.0152)***	-0.0070 (0.0113)	-0.0087 (0.0121)
Quint. of HH wealth				
2	0.0191 (0.0185)		-0.0146 (0.0146)	
3	0.0158 (0.0207)		-0.0144 (0.0162)	
4	0.0433 (0.0216)**		-0.0388 (0.0165)**	
5	0.0068 (0.0256)		-0.0444 (0.0182)**	
Age cohort: 25 – 34 years interacted with:				
< Intermediate	0.1348 (0.0495)***	0.1561 (0.0509)***	0.0885 (0.0386)**	0.0807 (0.0416)*
Intermediate	0.3661 (0.0557)***	0.3867 (0.0575)***	0.2974 (0.0414)***	0.2997 (0.0441)***
University +	0.2279 (0.0853)***	0.2465 (0.0872)***	0.3178 (0.0560)***	0.3210 (0.0600)***

Table 4 (continued): Determinants of Labor Force Participation (LFP), probability of being employed (standard definition used, marginal effects reported)

Variable	Male		Female	
	(1)	(2)	(3)	(4)
Age cohort: 35 – 54 years				
interacted with:				
< Intermediate	0.1617 (0.0454)***	0.1785 (0.0468)***	0.0955 (0.0350)***	0.1035 (0.0386)***
Intermediate	0.4418 (0.0536)***	0.4881 (0.0544)***	0.3490 (0.0488)***	0.3548 (0.0534)***
University +	0.5489 (0.0805)***	0.5902 (0.0822)***	0.6219 (0.0588)***	0.6270 (0.0650)***
Age cohort: 55 – 64 years				
interacted with:				
< Intermediate	0.0840 (0.0575)	0.1145 (0.0596)*	-0.0001 (0.0463)	-0.0099 (0.0493)
Intermediate	0.1750 (0.0688)**	0.2443 (0.0740)***	0.0728 (0.0873)	0.1041 (0.1035)
University +	0.3024 (0.1245)**	0.3667 (0.1304)***	-0.1297 (0.0402)***	-0.1295 (0.0440)***
Hours of Dom. Work (week)				
20 – 39 hours		0.0197 (0.0348)		0.0046 (0.0135)
>= 40 Hours		0.0561 (0.0586)		-0.0480 (0.0148)***
<i>N</i>	4,043	3,596	4,798	4,201

Source: Own calculations based on TLMPs 2014. Notes: Base categories are: Region: Leading Region (Greater Tunis and North East); Education: illiterate and read and write only; Age: 16-24; Marital status: Single; Household location: urban; wealth quintile: 1 (lowest); household work <20 hours. *** p<0.01, ** p<0.05, * p<0.1.

Table 5: Men: Determinants of Monthly Income for Primary Job (percentage return)

Variable:	OLS	10 th Quantile	25 th Quantile	Median	75 th Quantile	90 th Quantile
Region						
North West	-0.2928 (0.0682)***	-0.6935 (0.1763)***	-0.3258 (0.0834)***	-0.1721 (0.0542)***	-0.2452 (0.0519)***	-0.2308 (0.0551)***
Center East	0.0495 (0.0506)	-0.0573 (0.0917)	0.0316 (0.0542)	0.0289 (0.0375)	0.0494 (0.0551)	0.0967 (0.0584)*
Center West	-0.1447 (0.0563)**	-0.4110 (0.1068)***	-0.2961 (0.0603)***	-0.1320 (0.0697)*	-0.1381 (0.0668)**	-0.0909 (0.0695)
South East	-0.0681 (0.0825)	-0.3842 (0.1959)*	-0.0658 (0.0752)	0.0564 (0.0435)	0.0003 (0.0538)	-0.0826 (0.0567)
South West	-0.0124 (0.0903)	-0.2552 (0.1878)	-0.0047 (0.1310)	0.0864 (0.0836)	-0.0581 (0.0579)	-0.1676 (0.1290)
Age	0.0397 (0.0138)***	0.0365 (0.0280)	0.0369 (0.0144)**	0.0330 (0.0111)***	0.0521 (0.0108)***	0.0482 (0.0144)***
Age Squared	-0.0004 (0.0002)**	-0.0003 (0.0003)	-0.0004 (0.0002)**	-0.0004 (0.0001)***	-0.0005 (0.0001)***	-0.0005 (0.0002)***
Education						
< Intermediate	0.1518 (0.0475)***	0.2332 (0.0846)***	0.1803 (0.0604)***	0.1701 (0.0443)***	0.1480 (0.0394)***	0.1463 (0.0502)***
Intermediate	0.5091 (0.0681)***	0.6284 (0.1219)***	0.5164 (0.0660)***	0.4962 (0.0466)***	0.4882 (0.0472)***	0.4072 (0.0669)***
University +	0.8492 (0.0751)***	0.7973 (0.1771)**	0.7813 (0.1290)***	0.7804 (0.0727)***	0.8172 (0.0918)***	0.8738 (0.1536)***
Married	0.0594 (0.0601)	0.1691 (0.1314)	0.1594 (0.0767)**	0.1167 (0.0587)**	0.0010 (0.0551)	0.0409 (0.0612)
Widowed or Div.	-0.0268 (0.1624)	0.3998 (0.2450)	-0.1222 (0.2421)	0.0254 (0.2081)	-0.1940 (0.1759)	-0.1791 (0.1997)
Location						
Rural Job	-0.1400 (0.0588)**	0.0003 (0.1248)	-0.3112 (0.1043)***	-0.1612 (0.0660)**	-0.1216 (0.0580)**	-0.0708 (0.0808)
Employment						
Pub. Enterprise	-0.0947 (0.0712)	-0.2541 (0.1441)*	-0.1970 (0.1290)	-0.1225 (0.0602)**	-0.0900 (0.0541)*	-0.0233 (0.1005)
Private	-0.1719 (0.0702)**	-0.1451 (0.1079)	-0.1775 (0.0553)***	-0.1772 (0.0368)***	-0.0973 (0.0444)**	-0.1127 (0.0709)
Priv. * Rural Job	0.1010 (0.0749)	-0.0533 (0.1755)	0.1320 (0.1106)	0.0408 (0.0923)	0.1439 (0.0696)**	0.1369 (0.0880)
Other Sectors	-0.0690 (0.0863)	-0.1796 (0.2065)	-0.1113 (0.1032)	-0.1458 (0.1002)	0.0031 (0.1047)	0.0631 (0.1262)
Constant	5.1022 (0.2577)***	4.5449 (0.5473)***	4.9950 (0.2662)***	5.3023 (0.2134)***	5.1442 (0.2033)***	5.3764 (0.2803)***
N	1,061	1,061	1,061	1,061	1,061	1,061

Source: Own calculations based on TLMPS 2014. Notes: Base categories: Education: Illiterate & Read/Write; Sector: Private Sector; Region: Northern Region (Greater Tunis + North East); Employment: Government; Location: Urban. *** p<0.01, ** p<0.05, * p<0.1. Bootstrap standard errors reported in parenthesis (200 replications).

Table 6: Women: Determinants of Monthly Income for Primary Job (percentage return)

Variable:	OLS	10 th Quantile	25 th Quantile	Median	75 th Quantile	90 th Quantile
Region						
North West	-0.5011 (0.1640)***	-1.0800 (0.3495)***	-0.6885 (0.2987)**	-0.3708 (0.1610)**	-0.2349 (0.0799)***	-0.4526 (0.2535)*
Center East	-0.1338 (0.0738)*	-0.3516 (0.1285)***	-0.1234 (0.0779)	-0.0926 (0.0639)	-0.1439 (0.0547)***	-0.1943 (0.1039)*
Center West	-0.3191 (0.1610)**	-0.5437 (0.1966)***	-0.4375 (0.1917)**	-0.4605 (0.2040)**	-0.1207 (0.1623)	-0.2834 (0.1541)*
South East	-0.2470 (0.1321)*	-0.4517 (0.2742)	-0.2193 (0.1979)	-0.3737 (0.1552)**	-0.1344 (0.1057)	-0.2301 (0.1311)*
South West	-0.4577 (0.1371)***	-0.5567 (0.1685)***	-0.6414 (0.1909)***	-0.5704 (0.2074)***	-0.2908 (0.1707)*	-0.3965 (0.1857)**
Age	0.0477 (0.0236)**	0.0010 (0.0365)	0.0476 (0.0240)**	0.0534 (0.0233)**	0.0358 (0.0199)*	0.0689 (0.0305)**
Age Squared	-0.0005 (0.0003)*	0.0000 (0.0005)	-0.0005 (0.0003)	-0.0006 (0.0003)**	-0.0004 (0.0003)	-0.0007 (0.0004)*
Education						
< Intermediate	0.1598 (0.0957)*	0.3498 (0.1798)*	0.2151 (0.1198)*	0.0724 (0.0963)	0.0774 (0.0591)	0.1825 (0.0908)**
Intermediate	0.6015 (0.0946)***	0.6471 (0.1927)***	0.5180 (0.1539)***	0.3978 (0.1226)***	0.4339 (0.1146)***	0.5791 (0.1156)***
University +	0.9640 (0.1488)***	0.7837 (0.2161)***	0.8885 (0.1715)***	0.6294 (0.1327)***	0.6360 (0.1221)***	0.8097 (0.2699)***
Married	0.1759 (0.0933)*	0.4116 (0.1806)**	0.1892 (0.1189)	0.0926 (0.0678)	0.0906 (0.0657)	0.0850 (0.0946)
Widowed or Div.	0.2182 (0.1253)*	0.4963 (0.2024)**	0.2660 (0.2038)	0.0359 (0.1367)	0.0780 (0.1081)	0.0010 (0.1447)
Sector of Employment						
Pub. Enterprise	-0.1131 (0.1505)	-0.4593 (0.5436)	-0.0373 (0.3279)	-0.1981 (0.1914)	0.1247 (0.1533)	0.1103 (0.1430)
Private	-0.1450 (0.1590)	-0.2986 (0.1700)*	-0.1924 (0.1343)	-0.4277 (0.1041)***	-0.3181 (0.1202)***	-0.1565 (0.1287)
Priv. * Rural Job	-0.1267 (0.1495)	0.0692 (0.2981)	-0.0634 (0.2688)	0.0208 (0.1598)	-0.0837 (0.1400)	0.0428 (0.1912)
Other Sectors	-0.2089 (0.1895)	-0.2770 (0.2273)	-0.2899 (0.1501)*	-0.4923 (0.1326)***	-0.4463 (0.1346)***	-0.2846 (0.2482)
Rural Job	-0.0726 (0.1068)	0.0245 (0.1980)	-0.1424 (0.1806)	-0.1592 (0.1080)	-0.1018 (0.0924)	-0.1721 (0.1188)
Constant	4.7470 (0.3490)***	5.1370 (0.6560)***	4.5074 (0.4001)***	5.1328 (0.4395)***	5.5218 (0.3839)***	4.8729 (0.5324)***
<i>N</i>	348	348	348	348	348	348

Source: Own calculations based on TLMPS 2014. Notes: Base categories: Education: Illiterate & Read/Write; Sector: Government; Region: Northern Region (Greater Tunis + North East); Employment: Government; Location: Urban. . *** p<0.01, ** p<0.05, * p<0.1. Bootstrap standard errors reported in parenthesis (200 replications).

Figure A1: Male and Female Labor Market Participation Rates by Age, Market Definition

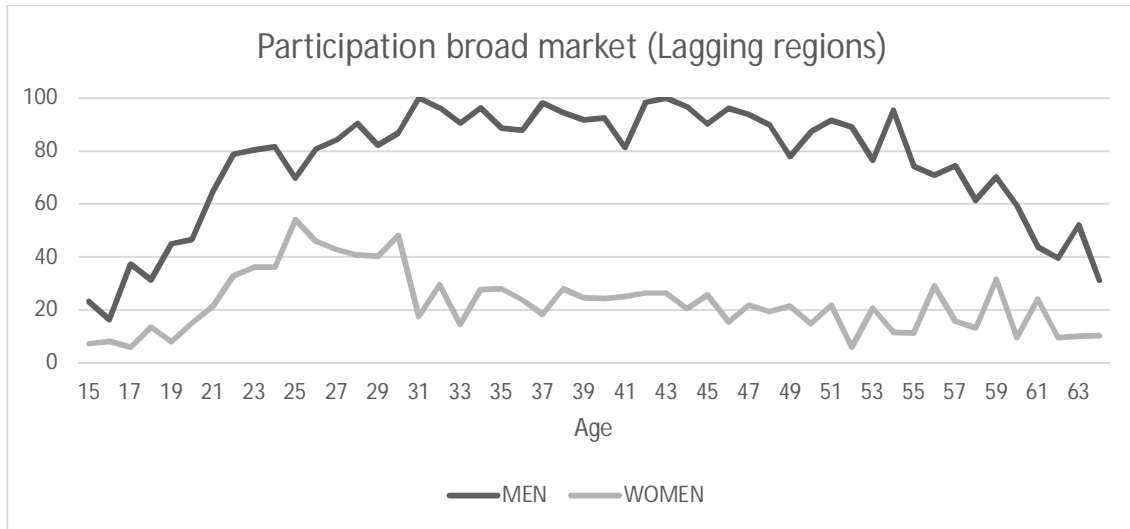


Figure A2: Male and Female Labor Market Participation Rates by Age, Broad Extended Definition

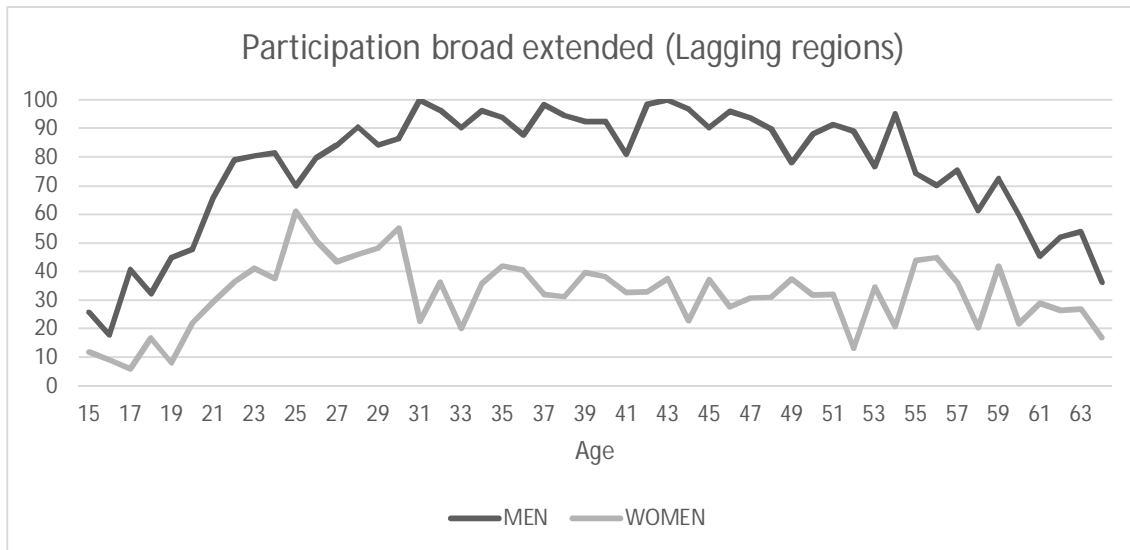


Table A1: Determinants of Employment (standard definition used, marginal effects reported)

Variable:	Male			Female		
Age Cohort	1	2	3	4	5	6
25 – 34 years	0.3224 (0.0225)***	0.2848 (0.0226)***	0.2832 (0.0229)***	0.1413 (0.0128)***	0.1083 (0.0173)***	0.1069 (0.0176)***
35 – 54 years	0.3046 (0.0314)***	0.2782 (0.0302)***	0.2779 (0.0305)***	0.1589 (0.0139)***	0.1446 (0.0179)***	0.1437 (0.0181)***
55 – 64 years	-0.1185 (0.0355)***	-0.1754 (0.0347)***	-0.1731 (0.0349)***	0.0816 (0.0193)***	-0.0051 (0.0241)	-0.0076 (0.0243)
Education						
< Intermediate	0.0360 (0.0162)**	0.0078 (0.0170)	0.0077 (0.0171)	0.0816 (0.0130)***	0.0478 (0.0141)***	0.0455 (0.0141)***
Intermediate	-0.0235 (0.0194)	-0.0412 (0.0198)**	-0.0398 (0.0199)**	0.1367 (0.0183)***	0.1480 (0.0236)***	0.1462 (0.0235)***
University +	-0.1098 (0.0290)***	-0.0987 (0.0301)***	-0.1011 (0.0302)***	0.3196 (0.0286)***	0.3165 (0.0245)***	0.3122 (0.0245)***
Married	0.2345 (0.0221)***	0.2370 (0.0221)***	0.2359 (0.0221)***	-0.0913 (0.0129)***	-0.0886 (0.0127)***	-0.0897 (0.0127)***
Widowed/Divorced	0.0677 (0.0733)	0.0687 (0.0719)	0.0543 (0.0722)	0.0026 (0.0251)	0.0034 (0.0246)	0.0007 (0.0243)
Household Size	0.0045 (0.0040)	0.0049 (0.0040)	0.0042 (0.0040)	0.0029 (0.0030)	0.0034 (0.0029)	0.0025 (0.0029)
Quint. of HH wealth						
2	0.0192 (0.0192)	0.0191 (0.0185)	0.0189 (0.0185)	-0.0196 (0.0151)	-0.0146 (0.0146)	-0.0147 (0.0147)
3	0.0181 (0.0213)	0.0158 (0.0207)	0.0148 (0.0207)	-0.0156 (0.0167)	-0.0144 (0.0162)	-0.0171 (0.0162)
4	0.0429 (0.0221)*	0.0433 (0.0216)**	0.0412 (0.0216)*	-0.0436 (0.0169)***	-0.0388 (0.0165)**	-0.0413 (0.0164)**
5	0.0113 (0.0253)	0.0068 (0.0256)	0.0055 (0.0257)	-0.0432 (0.0187)**	-0.0444 (0.0182)**	-0.0468 (0.0180)***
Rural	0.0476 (0.0146)***	0.0454 (0.0144)***	0.0462 (0.0147)***	-0.0056 (0.0115)	-0.0070 (0.0113)	-0.0121 (0.0118)
Region						
North West	0.0663 (0.0202)***	0.0669 (0.0198)***	0.0605 (0.0213)***	0.0484 (0.0174)***	0.0451 (0.0171)***	0.0381 (0.0176)**
Center East	-0.0086 (0.0180)	-0.0092 (0.0179)	-0.0110 (0.0182)	0.0467 (0.0149)***	0.0396 (0.0147)***	0.0389 (0.0151)***
Center West	-0.0766 (0.0216)***	-0.0727 (0.0214)***	-0.0758 (0.0234)***	-0.0604 (0.0144)***	-0.0634 (0.0143)***	-0.0436 (0.0169)***
South East	0.0331 (0.0211)	0.0247 (0.0209)	0.0183 (0.0218)	-0.0333 (0.0153)**	-0.0363 (0.0151)**	-0.0354 (0.0160)**
South West	0.1300 (0.0277)***	0.1261 (0.0282)***	0.1238 (0.0274)***	0.0517 (0.0244)**	0.0409 (0.0241)*	0.0469 (0.0254)*
Age cohort: 25 – 34 years #						
< Intermediate		0.1348 (0.0495)***			0.0885 (0.0386)**	
Intermediate		0.3661 (0.0557)***			0.2974 (0.0414)***	
University +		0.2279 (0.0853)***			0.3178 (0.0560)***	
Age cohort: 35 – 54 years #						
< Intermediate		0.1617 (0.0454)***			0.0955 (0.0350)***	
Intermediate		0.4418 (0.0536)***			0.3490 (0.0488)***	
University +		0.5489 (0.0805)***			0.6219 (0.0588)***	
Age cohort: 55 – 64 years #						
< Intermediate		0.0840 (0.0575)			-0.0001 (0.0463)	
Intermediate		0.1750 (0.0688)**			0.0728 (0.0873)	
University +		0.3024 (0.1245)**			-0.1297 (0.0402)***	
Rural#Region						
North West			-0.0094 (0.0427)			0.0104 (0.0356)
Center East			-0.0696 (0.0360)*			-0.0390 (0.0301)
Center West			-0.0170			-0.0941

			(0.0481)			(0.0351)***
South East			-0.0505			0.0186
			(0.0420)			(0.0302)
South West			0.1464			0.1247
			(0.0563)***			(0.0478)***
<i>N</i>	4,043	4,043	4,043	4,798	4,798	4,798

Table A2: Determinants of Employment (standard definition used, marginal effects reported), hours of household work included

Variable:	Male			Female		
	1	2	3	4	5	6
Age Cohort						
25 – 34 years	0.3224 (0.0225)***	0.2848 (0.0226)***	0.2825 (0.0232)***	0.1413 (0.0128)***	0.1083 (0.0173)***	0.1043 (0.0187)***
35 – 54 years	0.3046 (0.0314)***	0.2782 (0.0302)***	0.2864 (0.0309)***	0.1589 (0.0139)***	0.1446 (0.0179)***	0.1446 (0.0195)***
55 – 64 years	-0.1185 (0.0355)***	-0.1754 (0.0347)***	-0.1670 (0.0363)***	0.0816 (0.0193)***	-0.0051 (0.0241)	-0.0052 (0.0266)
Education						
< Intermediate	0.0360 (0.0162)**	0.0078 (0.0170)	0.0049 (0.0179)	0.0816 (0.0130)***	0.0478 (0.0141)***	0.0602 (0.0151)***
Intermediate	-0.0235 (0.0194)	-0.0412 (0.0198)**	-0.0383 (0.0208)*	0.1367 (0.0183)***	0.1480 (0.0236)***	0.1587 (0.0265)***
University +	-0.1098 (0.0290)***	-0.0987 (0.0301)***	-0.1045 (0.0313)***	0.3196 (0.0286)***	0.3165 (0.0245)***	0.3210 (0.0265)***
Married	0.2345 (0.0221)***	0.2370 (0.0221)***	0.2348 (0.0230)***	-0.0913 (0.0129)***	-0.0886 (0.0127)***	-0.0681 (0.0138)***
Widowed/Divorced	0.0677 (0.0733)	0.0687 (0.0719)	0.0630 (0.0819)	0.0026 (0.0251)	0.0034 (0.0246)	0.0036 (0.0268)
Household Size	0.0045 (0.0040)	0.0049 (0.0040)	0.0059 (0.0041)	0.0029 (0.0030)	0.0034 (0.0029)	0.0037 (0.0031)
Quint. of HH wealth						
2	0.0192 (0.0192)	0.0191 (0.0185)	0.0181 (0.0195)	-0.0196 (0.0151)	-0.0146 (0.0146)	-0.0163 (0.0157)
3	0.0181 (0.0213)	0.0158 (0.0207)	0.0138 (0.0220)	-0.0156 (0.0167)	-0.0144 (0.0162)	-0.0245 (0.0169)
4	0.0429 (0.0221)*	0.0433 (0.0216)**	0.0521 (0.0227)**	-0.0436 (0.0169)***	-0.0388 (0.0165)**	-0.0407 (0.0175)**
5	0.0113 (0.0253)	0.0068 (0.0256)	0.0032 (0.0272)	-0.0432 (0.0187)**	-0.0444 (0.0182)**	-0.0426 (0.0196)**
Rural	0.0476 (0.0146)***	0.0454 (0.0144)***	0.0452 (0.0152)***	-0.0056 (0.0115)	-0.0070 (0.0113)	-0.0087 (0.0121)
Region						
North West	0.0663 (0.0202)***	0.0669 (0.0198)***	0.0665 (0.0209)***	0.0484 (0.0174)***	0.0451 (0.0171)***	0.0448 (0.0177)**
Center East	-0.0086 (0.0180)	-0.0092 (0.0179)	-0.0191 (0.0187)	0.0467 (0.0149)***	0.0396 (0.0147)***	0.0465 (0.0154)***
Center West	-0.0766 (0.0216)***	-0.0727 (0.0214)***	-0.0808 (0.0228)***	-0.0604 (0.0144)***	-0.0634 (0.0143)***	-0.0538 (0.0157)***
South East	0.0331 (0.0211)	0.0247 (0.0209)	0.0197 (0.0223)	-0.0333 (0.0153)**	-0.0363 (0.0151)**	-0.0278 (0.0162)*
South West	0.1300 (0.0277)***	0.1261 (0.0282)***	0.1314 (0.0302)***	0.0517 (0.0244)**	0.0409 (0.0241)*	0.0540 (0.0264)**
Age cohort: 25–34 yrs						
< Intermediate		0.1348 (0.0495)***	0.1561 (0.0509)***		0.0885 (0.0386)**	0.0807 (0.0416)*
Intermediate		0.3661 (0.0557)***	0.3867 (0.0575)***		0.2974 (0.0414)***	0.2997 (0.0441)***
University +		0.2279 (0.0853)***	0.2465 (0.0872)***		0.3178 (0.0560)***	0.3210 (0.0600)***
Age cohort: 35 – 54 yrs						
< Intermediate		0.1617 (0.0454)***	0.1785 (0.0468)***		0.0955 (0.0350)***	0.1035 (0.0386)***
Intermediate		0.4418 (0.0536)***	0.4881 (0.0544)***		0.3490 (0.0488)***	0.3548 (0.0534)***
University +		0.5489 (0.0805)***	0.5902 (0.0822)***		0.6219 (0.0588)***	0.6270 (0.0650)***
Age cohort: 55 – 64 yrs						
< Intermediate		0.0840 (0.0575)	0.1145 (0.0596)*		-0.0001 (0.0463)	-0.0099 (0.0493)
Intermediate		0.1750 (0.0688)**	0.2443 (0.0740)***		0.0728 (0.0873)	0.1041 (0.1035)
University +		0.3024 (0.1245)**	0.3667 (0.1304)***		-0.1297 (0.0402)***	-0.1295 (0.0440)***
Hrs Dom. Work (week)						
20 – 39 hours			0.0197 (0.0348)			0.0046 (0.0135)
>= 40 Hours			0.0561 (0.0586)			-0.0480 (0.0148)***
N	4,043	4,043	3,596	4,798	4,798	4,201

Table A2: Continued

Variable:	OLS	10 th Quantile	25 th Quantile	Median	75 th Quantile	90 th Quantile
Region						
North West	-0.2928 (0.0682)***	-0.6935 (0.1763)***	-0.3258 (0.0834)***	-0.1721 (0.0542)***	-0.2452 (0.0519)***	-0.2308 (0.0551)***
Center East	0.0495 (0.0506)	-0.0573 (0.0917)	0.0316 (0.0542)	0.0289 (0.0375)	0.0494 (0.0551)	0.0967 (0.0584)*
Center West	-0.1447 (0.0563)**	-0.4110 (0.1068)***	-0.2961 (0.0603)***	-0.1320 (0.0697)*	-0.1381 (0.0668)**	-0.0909 (0.0695)
South East	-0.0681 (0.0825)	-0.3842 (0.1959)*	-0.0658 (0.0752)	0.0564 (0.0435)	0.0003 (0.0538)	-0.0826 (0.0567)
South West	-0.0124 (0.0903)	-0.2552 (0.1878)	-0.0047 (0.1310)	0.0864 (0.0836)	-0.0581 (0.0579)	-0.1676 (0.1290)
Age	0.0397 (0.0138)***	0.0365 (0.0280)	0.0369 (0.0144)**	0.0330 (0.0111)***	0.0521 (0.0108)***	0.0482 (0.0144)***
Age Squared	-0.0004 (0.0002)**	-0.0003 (0.0003)	-0.0004 (0.0002)**	-0.0004 (0.0001)***	-0.0005 (0.0001)***	-0.0005 (0.0002)***
Education						
< Intermediate	0.1518 (0.0475)***	0.2332 (0.0846)***	0.1803 (0.0604)***	0.1701 (0.0443)***	0.1480 (0.0394)***	0.1463 (0.0502)***
Intermediate	0.5091 (0.0681)***	0.6284 (0.1219)***	0.5164 (0.0660)***	0.4962 (0.0466)***	0.4882 (0.0472)***	0.4072 (0.0669)***
University +	0.8492 (0.0751)***	0.7973 (0.1771)***	0.7813 (0.1290)***	0.7804 (0.0727)***	0.8172 (0.0918)***	0.8738 (0.1536)***
Married	0.0594 (0.0601)	0.1691 (0.1314)	0.1594 (0.0767)**	0.1167 (0.0587)**	0.0010 (0.0551)	0.0409 (0.0612)
Widowed or Div.	-0.0268 (0.1624)	0.3998 (0.2450)	-0.1222 (0.2421)	0.0254 (0.2081)	-0.1940 (0.1759)	-0.1791 (0.1997)
Employment						
Pub. Enterprise	-0.0947 (0.0712)	-0.2541 (0.1441)*	-0.1970 (0.1290)	-0.1225 (0.0602)**	-0.0900 (0.0541)*	-0.0233 (0.1005)
Private	-0.1719 (0.0702)**	-0.1451 (0.1079)	-0.1775 (0.0553)***	-0.1772 (0.0368)***	-0.0973 (0.0444)**	-0.1127 (0.0709)
Priv. * Rural Job	0.1010 (0.0749)	-0.0533 (0.1755)	0.1320 (0.1106)	0.0408 (0.0923)	0.1439 (0.0696)**	0.1369 (0.0880)
Other Sectors	-0.0690 (0.0863)	-0.1796 (0.2065)	-0.1113 (0.1032)	-0.1458 (0.1002)	0.0031 (0.1047)	0.0631 (0.1262)
Rural Job	-0.1400 (0.0588)**	0.0003 (0.1248)	-0.3112 (0.1043)***	-0.1612 (0.0660)**	-0.1216 (0.0580)**	-0.0708 (0.0808)
Constant	5.1022 (0.2577)***	4.5449 (0.5473)***	4.9950 (0.2662)***	5.3023 (0.2134)***	5.1442 (0.2033)***	5.3764 (0.2803)***
<i>N</i>	1,061	1,061	1,061	1,061	1,061	1,061