The Determinants of Long-term Unemployment: A Study Micro-econometrics on Tunisian Data

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Abstract

Based on data from the National Survey on the Budget, Consumption and Standard of Living of households in 2021, this article examines and detects the microeconomic determinants of long-term unemployment duration. The objective of this article is to analyze and detect the microeconomic factors determining the long-term unemployment for the Tunisian population. Another objective that has been raised is to detect which type of unemployed person is the highest risk of finding job for a long time. By exploring a Logit model, the main results of the modeling are that the risk of long-term unemployment increases with the level of education. Wealthier individuals have higher probabilities of long-term unemployment. The risk of long-term unemployment decreases in all regions of the country compared to the Greater Tunis region. Individuals in their thirties find it more difficult to get out of the unemployment situation than the other brackets. It appears that the integration of new applicants into the labour market is a fundamental problem of unemployment in the country. the risk of long-term unemployment increases when the individual is a first job seeker. In this work, the microeconomic determinants of long-term unemployment and long-term unemployment for first-time jobseekers were identified, an issue that has been neglected by several empirical studies. Indeed, several studies such as those by Altindag et al (2022), Himali (2014), Jadouri E, Aziz R (2024) and Bouity C (2024) have looked at the determinants of youth unemployment, but they have not implemented either long-term unemployment or long-term unemployment for first-time jobseekers.

Keywords: Labour market, logit model, long-term unemployment, Tunisia

I. Introduction

Unemployment is a social problem that has been steadily worsening in recent decades.In addition to its economic and social consequences, it is a source of despair for those who suffer from it. This despair is all the more worrying when the unemployment situation persists and lasts for a long time.

The consequences of persistent unemployment are numerous. At the individual level, the first effect concerns the loss of income.The experience of long spells of unemployment alters the ability of individuals to receive high salaries. Indeed, this situation is perceived as a synonym for depreciation of human capital (Mincer and Ofek, 1982). In addition, long-term unemployed people tend / unemployment tends to be in poorer health, to experience physical and mental difficulties family and even loss of self-esteem (Seghiar and Rouag, 2010).

For Partridge and Rickman (1998), long-term unemployment, beyond its psychological (loss of utility) and economic (risk of poverty) effects, admits as a consequence the reduction of research efforts and in some cases the abandonment of the market. At the family level, the extension of search periods affects income, mode and quality of life. It also increases stress and encourages severance and divorce (Ham and Rea, 1997). On the collective level, the increase in unemployment and the extension of the duration of the reasearch in certain regions or neighbourhoods are correlated with higher rates of crime and violence (Montlibert, 2001). Chapman, B, Weatherburn, D., Kapuscinski, C., Chilvers, M. and Roussel, S. 2002, demonstrated the existence of a very strong positive relationship between criminal offences and the extent of unemployment among young men. This is in line with the conclusions of Kapuscinski et al (1998) on the relationship between Unemployment and the trend of homicides in Australia between 1917 and 1987. It also coincides with a decline in public services (education, security, etc.)

Mukoyama and Sahin (2008) noted an increase in the observed average duration of unemployment. They attribute this increase to the decline in the incidence of unemployment as well as to the the increase in wage inequality. The work on determinants has been in agreement the socio-economic and health factors specific to the individual and the family (Lallukka, T., Kerkelä, M., Ristikari, T., Merikukka, M., Hiilamo, H., Virtanen, M.., Gissler, M., and Halonen, J (2019)). In this way, age, sex, family situation, education and training are important factors that influence the length of time it takes to look for a job. There are significant differences between the probability of exiting unemployment by sex or the residential environment (Détange-Dessendre and Gaigné, 2009).

Danacica and Doru (2014) prove a difference in exit from unemployment between urban and rural areas on the Romanian labour market. Tansel and Tasei (2013) confirm that women experience longer durations of unemployment than men. The effects of the various factors are not unanimous in empirical work. Thus Altindag, D.T., Dursun, B. & Filiz, E.S. (2022) highlight two contradictory effects of educational attainment on the duration of the job search. On the one hand, people with a high level of education receive more job offers. They therefore observe shorter durations of unemployment. On the other hand, These people, because of their high degree of demand, refuse more offers and can therefore stay unemployed for longer periods of time.

Himali (2014) specifies that individuals with an educated background, particularly in some developing countries, aspire to jobs in the public sector. This tends to extend the duration of unemployment.

In the case of Tunisia, official figures (INS, 2023) show that the unemployment rate in the country remains high (15.8% in 2023) especially for women (21.1%), higher education graduates (24.6%) and young people aged 15 to 24 (39.1%). However, for years, Ramo (1998) has drawn attention to the existence of problems of labour market inefficiency. Among the explanations for gender differences, Góes, C, Lopez-Acevedo, G and Robertson, R (2023) retain the impact of foreign demand shocks on jobs with high male intensity.

The evolution of the labour market in Tunisia is marked by a significant increase in the number of unemployment rate since 2014. The share of unemployed people in the labour force in Tunisia was about 16.2% in 2021 compared to 14.96% in 2014. Persistence of unemployment rates in Tunisia in particular and in the MENA region in general, is generating a high understanding and an in-depth look at the determinants of this social phenomenon. The statistics of 2021 show that an active person takes about 17 months to be unemployed before finding a job. Ragui, A., Ghazouani, S. and Krafft, C (2017) presented the evolution of unemployment in Tunisia, examining its trends through demographic characteristics in a context of significant increase in the number of years of schooling as well as the number of higher education graduates. In the same vein, in a comparative study between Egypt, Jordan and Tunisia, Ragui and Kraft (2016) show that individuals with a primary level of education, in Tunisia, are more likely to find a job. They also show the stability of evolution of the long-term unemployment rate in Tunisia with the observation of an extension of the duration of the search before the first job. The problem of unemployment is mainly a problem of integration into the labour market for new entrants. This work, explored for the case of Tunisia, has omitted several micro-economic determinants of the unemployed population, such as the family and social environment. It also offers the opportunity to study the determinants of long-term unemployment for individuals searching for their first job. The originality of this article is marked by the simultaneous consideration of individual characteristics, family and social environment and by differentiating individuals into two groups according to the duration of unemployment (long-term and short-term).

This work is part of the perspective of understanding the determinants of long-term unemployment in Tunisia. It also seeks to provide answers to the possible labour market integration problem using recent data from the 2021 National Survey on the Budget, Consumption and Living Standards of Households. The data in this work are based on economic information on expenditure and socio-demographic information on the general characteristics of the inhabitants. The survey is structured around three axes: household spending, access to care and health coverage, debt and household income. The category of involuntarily unemployed persons over 15 years of age, available for work and looking for work) is composed of 3799 individuals.

The objective is to analyse and detect the microeconomic factors determining the long-term unemployment for the Tunisian population. In this work, we tried to explain the values of a binary variable (denoted CLD) taking the value 1 when the individual is long-term unemployed and 0 otherwise. The logit model offers the possibility of differentiating individuals into two groups according to the duration of unemployment (long-term and short-term) and identifying their characteristics. This model makes it possible to respond to this interest by estimating the increase in the probability of being in long-term unemployment by considering the explanatory variables. The explanatory variables used relate to individual characteristics (logarithm age denoted ln_age, sex, level of education, state of health), family environment (level of household expenditure in logarithm denoted ln_dep, level of education of the head of household) and social environment (region and place of residence). The state of health is represented by the variable disease. It is a binary variable that indicates whether the individual suffers from a chronic disease.

An estimated parameter of positive sign (respectively negative) indicates that the associated variable admits a positive (respectively negative) effect on belonging to the category of long-term unemployed.

This work is organized into five sections. After the introduction, the second section will present a review of the theoretical and empirical literature on the functioning of the labour market and the explanatory factors of unemployment. The third section will present the data used and the methodology adopted. The fourth section will be devoted to the results found. The Conclusions will be presented in the last section.

II. Literature Review

The job-search theory has split into two; one qualifies unemployment as voluntary, and the other qualifies it as involuntary. For the former, the standard theory advances that the probability of exiting unemployment depends on the probability of receiving an offer and of accepting it. In this sense, it remains relative to the intensity of research and to the reservation salary. Accepting any wage offer above a certain level reserve salary is a determining factor in getting out of unemployment. In the context of the second approach, several theories have focused on unemployment involuntary theory including the insider-outsider theory (Lindbeck and Snower, 1989, 2001, 2002), the human capital theory (Becker, 1964) and filter theory (Spence, 1973).

The insider-outsider theory asserts that wages are rigid downwards, and that they are in increase, in the presence of significant unemployment. This contradicts the progress of the classical economic theory. The insider-outsider theory suggests that only workers with a job (the insiders) weigh in the wage negotiations, thus excluding the unemployed (outsiders). Indeed, insiders protect themselves by delays or compensation of severance pay, training, etc.

This theory explains this finding by the fact that it is expensive for a company to ensure the labour turnover due to the costs of dismissal, recruitment (advertisements, interview, etc.) and training. It favours higher remuneration for insiders over recruitment of outsiders with a lower

salary. This contributes to creating unemployment and persistent in the economy. The evolution of wage costs would not take into account high unemployment.

This thesis will lead to the deregulation of the labour market, which will allow wages to adjust and take into account the increase in unemployment. Indeed, the deregulation of the labour market takes into account the increase in unemployment through the centralization or coordination of broader wage negotiations in the context of unemployed people and those who are at risk of becoming so. The insider-outsider model is a clarification of the existence of wage standards, involuntary unemployment and the role of the economic development of workers' unions simultaneously (Simar 2003). The theory of human capital refers to the difficulties of access to jobs and wages suitable for the depreciation of skills and knowledge after a period of unemployment. Indeed an employee who has a long period of inactivity is at risk of losing some of his professional skills Employers, in the course of recruitment prefer to hire those who have none (or little) suffered from underemployment. The level of education is only one component among other human capital, in particular experience and know-how (Mincer, 1974). Where the labour market is assumed to be efficient, firms must seek to maximize their profit and have every interest in making the best use of the skills of the people employed. Human capital theory argues that the loss of human capital between the sexes is not the same. Women tend to accumulate less work experience than men due to child-rearing and several other factors (Mincer and Ofek, 1982; Tansel and Tasei, 2004).

From an econometric point of view, the depreciation of human capital is confirmed by the work of Franz (1987). Estimating a Beveridge curve of the Federal Republic of Germany, for the period 1961-83, and using binary variables, he found a shift upwards since the mid-seventies. This displacement explains the growing mismatch between the structure of job vacancies and that of demand. The assumption is that employers tend to reject applications from workers who have suffered from an above-average period of unemployment. Furthermore, an extension of the duration of unemployment will be combined with a higher overall unemployment, thus summarising the translation of the Beveridge curve. The move of this curve should be correlated with the growing share of long-term unemployment.

The filter (Arrow, 1973) and signal (Spence, 1973) theories adopt the framework of imperfect competition where employers do not know the real productivity of the job seekers. The degree received by individuals and the number of years of schooling are then perceived as a signal of the productivity of the worker, which contributes to transparency in a market (Vinokur, 1995; El Aoufi and Hanchane, 2014). Thurow's (1975) theory of the selection of the unemployed (or queue) claims that the probability of finding a job depends on firms' attitudes towards long-term unemployed people . At an equivalent level of qualification, employers consider that the long-term unemployed people are less productive and that the assumption of the rigidity of the reserve wages cannot compensate for the decline in human capital. The duration of unemployment is an important selection criterion.

According to this theory, the increase in the ratio of long-term unemployment over total unemployment, is explained by the increase in the inflow of unemployment and a slower flow of exits for all types of unemployed (at the level of performance).

Theories of dependence on seniority in unemployment have considered several factors to explain the negative impact of the duration of unemployment on the probability of finding a job. A prolonged period of unemployment results in a loss of human capital. The unemployed person is unable to maintain and strengthen his experience and his knowledge. The probability of finding a job becomes lower, especially as the period is longer due to a greater loss of human capital coupled with a minimal drop in reserve wage that cannot compensate for it. One prolonged period of unemployment can also demotivate and discourage the intensity of the search for a job and thus reduce the probability of actually finding a job.

The theory of spatial mobility applied to the labour market (Frank, 1978) notes that potential workers focus their research on the small-sized local market, rather than in the global market due to mobility constraints. Indeed, the job seeker is faced with three choices: to remain unemployed, accept a job as an over-educated person or accept a job in the local market that requires a geographical mobility or travel. Fakih et al. (2020) studied the microeconomic determinants of youth unemployment (from 15 to 29 years) in the MENA region, using a new dataset that provides detailed characteristics of young people in five countries in the region. They demonstrated that being a man and graduating from a public school increases the likelihood of being unemployed

The promotion of gender equality in access to education, in the labour market, work, family and political participation increase the likelihood of finding a job. Taking into consideration socio-economic factors, the institutionnel factors and the facts related to the perception of the Arab Spring, it seems that education, skills mismatch, marriage and belonging to the upper class for men are all negatively and significantly correlated with unemployment. By a regression separated for men and women, they were able to identify that education at the school level and university will have a negative impact on unemployment for women and men.

Kipesha and Msigwa (2013) studied the determinants of unemployment in Tanzania. They have demonstrated that gender, geographic location, education, skills, and status determine youth unemployment in Tanzania. They concluded that men are less likely to be unemployed than women. Individuals residing in urban areas are five times more likely to be unemployed than those living in in rural areas. This work has shown that education and vocational training are negatively correlated with unemployment. According to the results found, it appears that young people who have not completed primary education and those who have completed primary education, but have not continued their education, are less likely to be unemployed because of their involvement in informal employment activities. In addition to these factors, the nature of previous jobs, higher education and training and salary expectations were treated as determining factors in getting out of the unemployment (Baah-Boateng, 2013). Empirical studies have identified the significant impact of socio-economic factors, family factors, training factors and

search behaviour factors over the duration of unemployment. A study carried out on the Spanish population (Lassibille et al, 2001), which compared the probability of finding a job in 6 months and between 6 and 18 months, noted that human capital has a significant impact on exiting unemployment before the first job. Young people with higher education and men have a duration of unemployment less important. This work suggests that family history has no impact on the probability of exiting this situation. Contrary results were presented by Corrales and Rodriguez (2004), via a discrete proportional model on data of 2000 Labour Force Survey for the European Union. They argue that vocational training programs are more advantageous compared to diplomas in the labour market and that family factors have a significant impact.

Unemployed young people with well-educated parents who have had higher qualifications have more opportunity to get out of unemployment with a good job. Nguyen and Taylor (2005) worked on a proportional risk model during the period 1988 to 2000 in order to discern the determinants of the time taken to leave unemployment for young people who have completed secondary education. Participation in a program of vocational training reduces the duration of unemployment. However, the antecedents are not significant. The vocational program reinforces the initial training and improves the contextual knowledge and practical skills of graduates, improves their self-esteem without forgetting their training for integration into social life. Park and Cheon, (2009) noted that young men have a shorter duration of unemployment than young womenbecause of the widespread idea that men perform better on the labour market in terms of productivity and assiduity.

Jung and Cho (2018) focus on the non-cognitive aspects of the skills of young job seekers. They noted that these aspects, such as self-esteem, good mental state reflecting the absence of vulnerability to emotional depression and disorders, require significant development in order to strengthen the skills required by the labour market and facilitate access to employment. In the same context of non-cognitive aspects, a study carried out by Schlozman and Verba (1979), clearly demonstrated that the the financial burden of unemployment and the stress, linked to searching for a new job, decrease the probability of exiting unemployment.

In addition, John (2012) pointed out that unemployment causes significant psychological distress with a negative impact on physical health. By focusing on cognitive and non-cognitive aspects, Holo (2022) detects the determinants of the duration of youth unemployment in Côte d'Ivoire. It adopted an analysis using a Cox proportional risk model, referring to the database of a Policy Improvement SurveyYouth Employment in Francophone Africa (APEAF), for the year 2017. This study concluded that a young person, being a woman, whose father is a manager, does not have any difficulties, who have low self-esteem and who have good or average english skills is slow to get out of unemployment. On the other hand, being a graduate of general education amplifies the probability of getting out of unemployment. Kollman (1994) discussed the duration of unemployment as a signal to recruiters in hiring decision-making. This is because information on the duration of unemployment of jobseekers is readily available, and because workers with long periods of unemployment are generally less employable because they do not meet the professional requirements of a large proportion of firms.

He confirmed that the equilibrium wage presented to the job seekers decreases according to their duration of unemployment. A significant proportion of the unemployed withdraw from the labour market once that they have reached a critical threshold of duration of unemployment. In classical and traditional work on the unemployment rate, there is a distinction between the level of unemployment rate and the average duration spent unemployed. In this sense, Budd, Levine and Smith (1988) found a positive statistical correlation between the unemployment rate and the share of the long-term unemployed in overall unemployment. They have focused on analyzing the mechanisms that block individuals in the state of unemployment. Jackman and Layard (1991) have confirmed that this rate of exit from unemployment is as much as lower if the duration of unemployment is longer. They revealed that 40% of the unemployed get out of the unemployment situation in the first three months. However, after four years this percentage is divided by ten. Di Paola (2000) argued that the apparent dependence the temporal analysis of unemployment exit rates is explained by two concepts. The first concept of heterogeneity is apprehended by specific characteristics of individuals. It leads to different hiring probabilities from one individual to another. In this case, the long-term unemployment has no impact on wage. The second concept is evident in the state dependence linked to the duration of the unemployment episode. Thus, any unemployed person can be a potential long-term unemployed person, which influences wages. A modelling of the processes of exit from unemployment based on the behaviour of aggregate time series (Jackman and Layard, 1991), indicated that the aggregate exit rate of unemployment falls much more sharply than that of new entrants. This observation of proportional variation of the two series in the case of hypothesis of heterogeneity and absence of state dependence is controversial. However, the results found are inconsistent with an explanation based on pure heterogeneity. Several empirical studies have focused on heterogeneity and characteristics of the agents, without worrying about the spatial component of the job search. A study introducing this factor (Kain, 1992) did indeed demonstrate the existence of a spatial mismatch generating an unfavorable situation of some individuals in the labour market (being constrained by their location, the time it takes to access employment areas or proximity to a local employment agency). Rogers (1997) analyzed the impact of transportation costs and the spatial organization of labour markets on the duration of unemployment by focusing on the concept of spatial mismatch. The results found from the no parametric and then parametric estimation of duration models for Pennsylvania, while mobilizing different types of indices of access to jobs, are insignificant and cannot support an observation on the impact of the spatial organization of jobs on the nature of unemployment.

Holzer, Ihlandfeld and Sjoquist (1994) detected, through a static search model on data that the likelihood of receiving an acceptable job offer is an increase function. This function depend on the distance of displacement, the level of qualification and the discriminatory practices. A study that addressed the spatial constraint and the duration of unemployment concluded that the duration of unemployment is shorter when the prospecting distance is stronger. Using a duration model, the authors demonstrated that spatial enlargement makes it possible to increase the search offer, thus covering costs and opportunity of the displacement during the prospecting.

III. Data and Methodology

III.1. *Data Source*

The data used in this work come from the National Budget Survey, Consumption and Household Living Standards 2021. This five-year survey was conducted during the years 2021 and 2022, on a sample of 21600 households. It allows you to collect economic information on household and individual spending. It also provides socio-demographic information on general characteristics of the inhabitants. The survey is structured around three axes: household spending, access to health care and coverage, debt and household income.

For the purposes of this work, we have restricted ourselves to the category of the involuntarily unemployed over the age of 15, available for work and searching for an employment. This approach coincides with the definition of unemployment according to International Labour Office. The constructed sample is composed of 3,799 individuals.

III.2. *Descriptive Statistics*

Observation of the characteristics of the unemployed shows that the population of the unemployed is mainly composed of young, male, of secondary or university levels, living in an urban environment (see Table 1). According to the level of education, unemployment affects differently men and women. The majority of unemployed men are at primary or secondary level, while women are a higher level (Figure 1). The distribution of the unemployed by sex and region of residence, suggests that women are more affected especially in the southern regions (Figure 2).

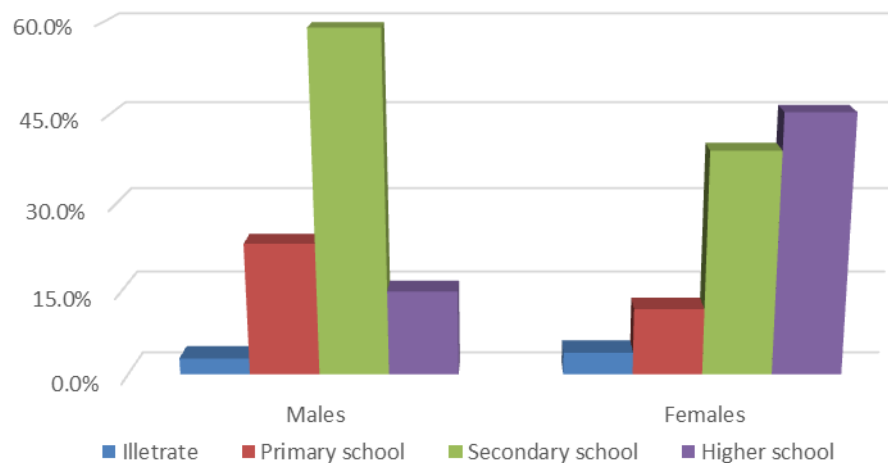Figure 1 - Distribution of the unemployed by sex and level of education

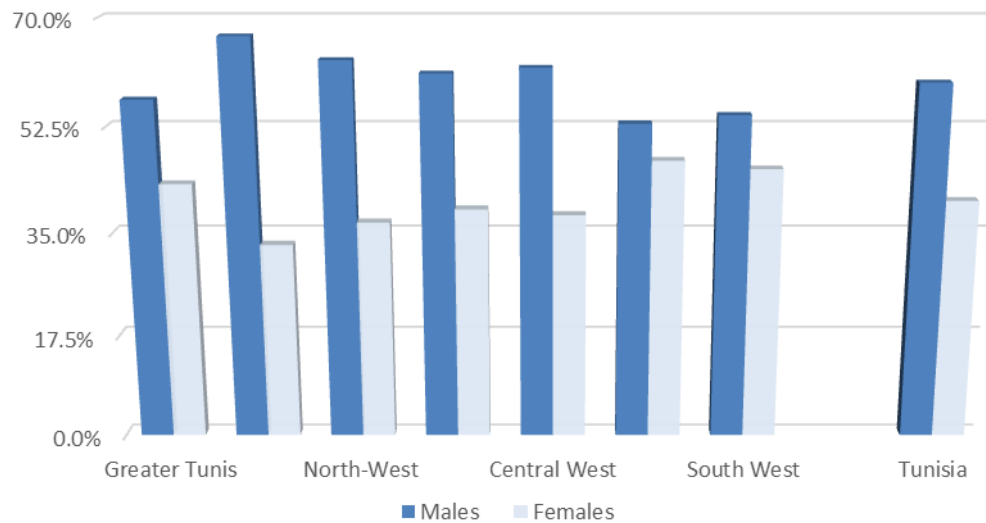Figure 2 - Distribution of the unemployed by sex and region of residence

Table 1. Characteristics of the unemployed population

Characteristics	Frequency (%)	Average duration of unemployment (in months)	Proportion of unemployed long-term (%)
Gender			
men	59.65	15.00	48.05
women	40.35	19.17	57.01
level education			
without level	3.30	9.55	30.04
elementary level	18.52	12.52	38.08
secondary level	51.00	14.92	51.94
highly level	27.18	23.73	62.78
Region of residence			
Greater Tunis	19.53	19.88	64.55
North East	14.53	12.68	48.00
North-West	13.11	10.17	40.96
Central East	12.71	13.15	49.27
Central West	14.9	14.98	45.22
South East	15.35	20.11	55.06
South West	9.87	26.82	53.33
Residential setting			
Urban	62.67	17.82	55.86
Rural	37.33	14.79	44.64
Age group			

[15, 30[	56.65	14.97	53.02
[30, 40[	27.24	21.89	56.42
[40, 50[	11.9	15.12	42.03
[50, 60[	4.21	10.38	30.00

It should also be noted that more than half of the unemployed (51.67%) have looked for a job employment for more than 12 months. This proportion increases in the southern regions and the Greater Tunis (Table 1). This trend is reinforced by the average duration of unemployment depending on the region. Indeed, this duration is more than two years (26 months) in the southern region west. Long-term unemployment is also more prevalent among women. Table 1 shows that almost 57% of unemployed women have been looking for work for more than 12 month. Women are also searching for a job for a longer period of time than men. They have even more difficulty in research a job in the South-West region (on average 33 months).

The duration of unemployment is highly dependent on the gender and level of education of young people. Long-term unemployment affects women more than men, and specifically women with higher education. Whereas for men, the duration of the unemployment is high for secondary school graduates. This results coincide with the advancement of human capital theory, which suggests that the difficulties of accessing to jobs are explained by the depreciation of skills and knowledge after a period of unemployment. Depreciation is greater for women because of their greater involvement in family expenses. Depending on age, it seems that individuals in their thirties have more difficulty getting out of unemployment. The average duration of job search for this age group is higher than the other age groups. In addition, the proportion of long-term unemployed people among this class is 56.42%.

Individuals with higher levels of education have a difficulty to find jobs. Thus 62.78% of unemployed individuals have been searching the work for more than a year. The average of duration of search for this category is 24 months (Table 1). The situation is even more worrisome in the South-West region (average of duration 37 months). The economic situation of this region does not allow us to absorb the demands of these individuals. At the territorial level, the disparities in unemployment rates by region are very alarming. Indeed, for the south-west region, the duration recorded is more than two years with a longer duration for women (33 months). Similarly, for the south-east and greater Tunis regions, the average duration is approximately 20 months.

III.3. _Methodology_

The aim of this paper is to identify the explanatory factors for long term unemployment especially for the most affected categories: women and young people. We seek to explain the values of a binary variable (denoted CLD) taking the value 1 when the individual is long-term unemployed and 0 otherwise. The logit model offers the possibility of differentiating individuals into two groups according to the duration of unemployment (long-term and short-term) and identify their characteristics. It also allows to measure the effect of each characteristic on this

distinction. In dichotomous models, and particularly the logit model, the dependent variable takes two values:

$$\begin{cases} y_i = 1 \ if \ individual \ i \ is \ long-term \ unemployed \\ y_i = 0 \quad otherwise \end{cases}$$

The values of y are conditioned by a set of explanatory variables (vector denoted $= [X_k]_{k=1}^K$).

The model makes it possible to study the probability that the individual is a long term unemployed. $(y = 1|X) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_K X_K = G(z)$

Where : $z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_K X_K$

and $G(z) \in]0; 1[$

In the case of a logistics distribution, this function is written:

$$G(z) = \frac{e^z}{1 + e^z} = (1 + e^{-z})^{-1}$$

The regression model is estimated using the maximum likelihood method. An estimated parameter of positive sign (or negative) indicates that the associated variable admits a positive (or negative) effect on belonging to the category of unemployed long-term. We are then interested in the probability of being in long-term unemployment conditional on the socio-economic and health characteristics of the individual as well as his or her family circle.

The logit model makes it possible to respond to this point by estimating the increase in the probability of being in long-term unemployment given the variables explanatory. The explanatory variables used are relative to the characteristics (log age denoted ln_age, sex, level of education, state of health) as of family environment (level of household expenditure in logarithm denoted ln_dep, level of the head of the household) and the social environment (region and place of residence). The state of health is represented by the variable disease. It is a binary variable that indicates whether the individual suffers from a chronic illness. We will conduct two regressions to detect the change in outcomes for individuals looking for their first job.

IV. Results and Discussions

This section presents the results of the estimates of the different models selected according to the target population. The results are shown in Table 2. Considering the total population, the results of the estimates (regression 1) show that Age has a significant positive effect on long-term unemployment. In addition, the effect of Age is positive and statistically significant. This suggests that the probability of being in long-term unemployment, conditional on age, tends to increase with this variable.

Tableau 2: The results of the estimates

Determinants	Long-term unemployment (CLD)	
	(1) Total	(2) First-time jobseeker
ln_age	.369***	1.586***
	(.141)	(.230)
Sex		
Female	.04	-0.389***
	(.075)	(.104)
Level of education		
primary	.281	-0.191
	(.219)	(.493)
secondary	.643***	-.110
	(.217)	(.477)
higher level	.848***	-.208
	(.221)	(.476)
Chronic illness		
no	-.219	-1.023**
	(.186)	(.249)
Subsequent work		
no	.905***	
	(.078)	

ln_dep	.169**	.136
	(.071)	(.103)
Area of residence		
North East	-.517***	-.525***
	(.123)	(.181)
North west	-.889***	-.932***
	(.128)	(.177)
Center East	-.541***	-.637***
	(.125)	(.181)
Center west	-.578***	-.404***
	(.127)	(.185)
South East	-.37***	-.315*
	(.12)	(.170)
South west	-.619***	-.737***
	(.137)	(.179)
Residential setting		
rural	-.11	-.000833
	(.076)	(.108)
_cons	-4.135***	-4.951***
	(1.253)	(1.844)
Observations	3786	2006
Pseudo R^2	.068	.0466

Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1

The risk is also significantly influenced by the level of education of the individual. It is more important for people with secondary and higher education compared to people with no level of education. The state of health has a negative effect on the probability of being long-term unemployed. However, this effect is not statistically significant. The sex of the individual seems to have no effect on the risk of long-term unemployment. Indeed, the parameter associated with this variable is not significant. The negative sign of the sex variable (female), observed for the regressions conducted on the category of first-time jobseekers (regression 2) indicates that the probability of long-term unemployment is lower for young women. For family characteristics, it seems that the education of the leader of the household has a significant influence on the duration of unemployment. On the other hand, the risk of long-term unemployment increases conditionally with the standard of living of households. The positive sign of variable ln_dep, shows that the risk of long-term unemployment is stronger for individuals belonging to wealthier households.

The results exclude the influence of the place of residence (rural, urban) on the risk of unemployment. However, the differential risk is significant between regions of the country. The negative signs indicate that the reference region (Greater Tunis) presents the highest risk of long-term unemployment compared to other regions. The results obtained are in line with the advancement of the theory of spatial mobility for the Southern region. Job seekers living in the southern regions (especially the South West) have a particularly heavy spatial constraint and a high rigidity to mobility and prospecting. The duration of unemployment is shorter when the distance of prospecting is stronger. This situation lengthens the queue of the unemployed and the over-educated, especially young women in the South region with significant territorial inequalities.

This work supports the existence of a spatial "mismatch" leaving the situation unfavorable for young people in the South-West and South-East on the labour market. They are usually constrained by their location, the time it takes to access employment areas and the proximity of a local employment agency. However, the results found for the Greater Tunis region present a contradiction with the high proportion of the long-term unemployed and the theory of mobility Space. Indeed, an area with high economic potential marked by the presence of large industrial clusters, has a proportion of long-term unemployed of 64%. This observation could be explained by the advancement of the insider-outsider theory. This theory suggests that labour turnover through dismissal and recruitment is very expensive for companies that prefer higher compensation for insiders rather than recruiting outsiders with a lower salary. Similarly, this proportion of long-term unemployed people in the area, can be explained by the theory selection of the unemployed (Thurow, 1975).

Indeed, with a very competitive area and an equivalent level of qualification, employers consider that the long-term unemployed are less productive and that the assumption of the rigidity of reserve wages is not able to compensate for the decline in human capital. Duration unemployment is therefore an important selection criterion for the Greater Tunis region. In

addition, the interest shown by most of its young people in employability in the public sector, keeps the downward rigidity wage of reserve.

Age is another determinant of the duration of unemployment. Individuals in their thirties have a harder time getting out of unemployment (the proportion of unemployed people in the long-term ratio among this class is 56.42) than the other classes.

As unemployment becomes more prolonged, the time and willingness to look for work decreases and the long-term unemployed people tend to become discouraged, low-esteemed workers or passive people. For an age group over 30 years, employers consider a social category to have less cognitive capacity and less efficiency in terms of training assimilation. As a result, they judge a depreciation of human capital.

In addition, the main results detected from this work (table 3) are:

□ A Positive effect of age on the risk of long-term unemployment.

□ The gender of the unemployed person is a risk factor for integration into the labour market.

□ The risk increases for women.

□ The risk of long-term unemployment increases with the level of education.

□ Wealthier individuals have higher probabilities of long-term unemployment.

□ The risk of long-term unemployment decreases in all regions of the country compared to the Greater Tunis region.

Table 3: the main results

Variable	Sign of the effect	
	Total Unemployed	First-time applicants
Age	+ *	
Gender (female)	+	-*
Education level (primary, secondary and tertiary)	+ *	-
Chronic disease	-	-*
Standard of living (expenditure)	+*	+
Region (other than Greater Tunis)	-*	-*
Rural	-	-

This work also offers the opportunity to study the determinants of long-term unemployment for individuals searching for their first job.

For these individuals, the results of the regression (2) indicate that the risk is higher when:
☐ The age of the individual increases;
☐ The individual is male;
☐ The individual suffers from health problems (chronic illness).
☐ The individual resides in the Greater Tunis area.

These results are confirmed by the positive and significant sign of the variable indicates that the risk of long-term unemployment increases when the individual is a first job seeker.

V- Conclusion

Unemployment statistics in Tunisia have remained at high levels for decades. This article proposes a study of the microeconomics determinants of long-term unemployment in Tunisia. On the basis of the data from a survey conducted by the INS on the budget, consumption and level household standard of living in 2021, an analysis using a logit model is carried out. The results show that in 2021, the age of the target population influences long-term unemployment with the exception of men and young women. The gender is a factor determinant of the probability of long-term unemployment. Indeed, this probability is more lower for young women. The risk long-term unemployment rate is higher for male individuals belonging to wealthier households. The results obtained showed that the probability of long-term unemployment depends on the individual's level of education, with a greater risk for those having undergone secondary and higher education. This work also allowed us to explore the situation of first-time job seekers, something that has not been explored in the work of Altindag (2022) , Himali (2014) and Bouity (2024). It appears that the integration of new applicants into the labour market is a fundamental problem of unemployment in the country. This majority of unemployed people (nearly 53%) seem to have the highest risk to find each other researching an employment for more than a year. This work has demonstred that the risk of long-term unemployment increases with the level of education, but it decrease in all regions of the country compared to the Greater Tunis region. This work also demonstrated that Wealthier individuals have higher probabilities of long-term unemployment, hypothesis that has been absent in the reference work. As a result, it has been possible to deduce structural factors explaining long-term unemployment in Tunisia, which should be at the heart of economic policy interest. Indeed, the search for sustainable solutions inevitably requires profound reforms of education and the improvement of the job creation mechanism on the labour market.

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