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Navigating Employment Pathways: A Microeconomic Examination of Job Search Strategies and Their Impact

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Abstract

The current paper aims to determine and evaluate the mechanisms that facilitate the transition of young graduates into the Tunisian labor market. In particular, the study examines the multitude of insertion modes of young graduates to study the efficiency of accessing the first job. We employ a micro econometric analysis to examine the transition modes chosen by job candidates. Our approach considers whether candidates know or disregard the endogenous selection rules governing their entry methods. Given the qualitative nature of our dependent variable, we utilize various econometric models designed for discrete variable estimation, including: Trivariate Probit model and Ordered Probit model. These models allow us to capture the nuanced dynamics of job market entry strategies and their outcomes, providing insights into the complex process of labor market integration for young Tunisian graduates.

Keywords: Choice Of Insertion Modes, Efficiency of Job Prospecting, Endogenous Selection Rule, Trivariate Probit, Ordered Probit.

Introduction

In Tunisia, young graduates have long considered higher education as a protection against unemployment and precarious employment. Over the last two decades, two main stylized facts have been negatively influencing the youth labor market in Tunisia and complicating the process of integrating young graduates into this market. On the one hand, the countries have chronically experienced a shortage of jobs (Kocoglu, 2014). Employment has grown less rapidly than the growth in the labor force. Then, the number of unemployed Tunisian higher education graduates in 2012 reached 174,900 young people, 61.7% of whom were women (Centre d'études et de recherches sur qualification (cereq)2015). On the other hand, the proportion of young higher education graduates has risen sharply. The combination of these two trends has led to a sharp deterioration in the unemployment rate of these young graduates. The Tunisian higher education graduates who are unemployed represent about a quarter of all the unemployed. Their unemployment rate soared from 18.7% in 2007 to 23.3% in 2010 and 33.2% in 2012 (cereq 2015).

Several studies on entry-level employment have highlighted the crucial role of education in accessing employment. However, the most recent studies call for the use of other indicators to better assess the quality of the jobs that young people access.

Beyond the early models of job search (Stigler (1962), Mac-Call (1970), Lippman and Mac-Call

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(1976a, 1976b)), job-search behavior in the prospecting model was considered to be a random rate of employment offers. Job seekers receive no more than one job offer in each time sequence without their behavior having any direct impact on the search process. This equally means a comparison between the offered wage and the reservation wage.

Some extensions have been made to this prospecting model to improve modeling of job search behavior. Indeed, the literature has examined the impact of individual characteristics and, to a more limited extent, the strategies used during the job search process. Mortensen (1986) integrated the search effort used by job seekers. Job seekers should then decide on both the wage they will accept and the effort they will devote to the job search, which determines the job offer input rate. Job seekers may also have to choose between conducting a search in the labor market or in the firm (on-job).

For Mortensen (1986), in endogenous-intensity models, the offer input rate, like search costs, is distinguished according to whether the search is carried out full-time (unemployed searcher) or part-time (employee searcher). These different theoretical extensions allowed for taking into account heterogeneity of job search behavior. This restrictive conception of job prospecting also seems to bear on the econometrics of search models.

The relevant literature has focused on evaluating the effect of individual attributes on access to employment (Ahn, Ugidos-Olazabel, 1995; Bonnal, Fougère 1990), in particular the effects of education and family background. A particular attention is also devoted to the impact of public employment policies. Bonnal, Fougère and Séradon (1999), Saucier and Sofer (1995) have also evaluated the impact of public measures to ensure labor market transition. Meyer (1995), Atkinson and Mick Lewright (1991), Florens, Fougère and Werquin (1990) tried to theoretically test whether unemployment benefits reduce employment access rate by raising individuals' wage claims.

Francesco Pastore (2019) has shown the reasons why the school-to-work transition (SWT) is so slow and difficult in Italy. Francesco Pastore, Claudio Quintano and Antonella Rocca (2021) provides sound, comparative empirical evidence on the duration of the school-to-work-transition (STWT) across 14 European countries.

In other words, (Zacher & Froidevaux, 2021) present that the school-to-work transition helps pave the way for other insertions during a young graduate's life, thus providing an important foundation for the whole of life. This transition therefore represents the first step in a young graduate's journey towards sustainable career development (Akkermans, Blokker, et al., 2021).

Econometrics thus made it possible to enrich the knowledge on the search behavior of individuals, but remained focused on two exclusive employment access modes: search on the supposedly perfectly homogeneous market and search in the job market.

Plotting theory against economic reality reveals a number of limitations of the restrictive assumptions of job search models. Indeed, Clark (1999) has highlighted a plurality of search modes. Similarly, Lindeboom and Van Ours (1997) oppose the so-called market procedures like classified ads, unsolicited applications, and the existence of intermediaries in the labor market. These intermediaries include social intermediaries who focused on the personal (family and friends) and professional relationships between individuals and institutional intermediaries, such as public and private placement services. Indeed, there is a heterogeneity in the use of different search methods in several countries: the United States and Great Britain have less recourse to public intermediaries than other European countries, probably because of institutional

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In addition to this line of research, a few micro-econometric studies have shown that search methods can be integrated into job search models. Bull Ornati and Tedeshi (1987) integrated the effect of a private intermediary into the parameters of a job search model. Fougère, Pradel, and Roger (1996) considered the role of employment agencies in unemployment exit rate. Montgomery (1991) shows the role of social relationships in matching the unemployed to job vacancies. Sabatier (2003) estimates the impact of search strategies (effort and search channels) on unemployment duration.

This panoply of theoretical studies reveals the significant impact of the studied intermediaries (institutional or social) on the process of information prospecting by agents. However, generally speaking, the heterogeneity of the modes of prospecting the labor market is only partially addressed through the integration of a single mode competing with market procedures.

Our paper is organized as follows. Section 2 introduces the data and methodology; in this section we statistically examine first the choice of methods used to find each job. The second we present an analysis of the selection rules of access modes to the first job. Section 3 discusses the empirical results obtained. Finally, the last section concludes.

Data and Methodology

In this section, we present first the database and the conditions of access to the first job. Second, we statistically examine the choice of methods used to find each job, taking into account the attributes of young graduates, as well as an initial assessment of their efficiency.

We present an analysis of the selection rules of access modes to the first job. Because of the impact of individual characteristics and the possibility of combining several research methods, we suspect the presence of a selection bias.

Empirically, we use trivariate probit and ordered probit. Such econometric techniques are standard methods that deal with qualitative variables. We use them to test the hypothesis of exogeneity of the selection rules of access modes and their combination.

Data: Tempus ISLAH 2015

The sample of our database consists of 1535 graduates, taken from a survey on the professional integration of young people carried out among majoring graduates of four Tunisian universities Jendouba, Monastir, Gafsa, and Gabes, for the academic year 2010-2011. This project is carried out by Tempus ISLAH as part of a long collaboration between the leader the AlmaLaurea Consortium and the European and Maghreb partners of the project (Morocco and Tunisia). The project targets 7 Moroccan universities and 4 Tunisian universities.

The drawing method is relatively simple; it is strata-based random drawing. The aim of the ISLAH project is to give partner universities a tool to monitor their Bachelor graduates. As common sense, we decided to carry out a representative sampling by university while respecting the stratification rule. We retained the following four stratification variables: the type of establishment within the university, the type of course, the specialty and gender.

Distribution of prospecting methods for access to the first job

[Insert Graph 1 and Table 1 about here]

Graph 1 shows the distribution of the use of research modes when accessing the first job, used

by 1535 graduates surveyed in the four Tunisian universities. Indeed, this graph shows that 49.7% of these graduates used market procedure (used a combination of competition candidatures, spontaneous candidatures, and short ads). Similarly, 40.8% used their network (use of different types of relationships). Finally, 13.7% of young graduates used an intermediary (have in fact combined several institutional intermediaries).

Young graduates seem to favor the single-mode research. It is necessary to simultaneously determine the type of modality and the number of modes used by job seekers. To this end, out of the three main prospecting methods, we define six independent and exclusive strategies that take into account the nature and number of modes chosen:

[Insert Graph 2 and Table 2 about here]

Table 2 and Graph 2 show the distribution of search strategies used to access the first job. The frequencies of recourse to these competing strategies are quite heterogeneous. To look for their first job, the surveyed young graduates seem to favor three main strategies, with the use of market procedures and networks being the two most favored strategies.

Regarding the influence of job search strategies on average unemployment duration, Table 2 above clearly shows average duration differs according to the used search strategies.

These results cannot directly conclude to the presence of a causal link between search strategies and unemployment duration. To determine this causal, in what follows we will statistically analyze the database in view of determining the discriminating effect of individual characteristics on the frequency of choosing job search methods.

Search Methods, Integration Conditions and Characteristics of the Jobs Found

A statistical analysis of the ISLAH 2015 survey database carried out on young graduates from four Tunisian universities, Jendouba, Monastir, Gafsa and Gabes, on professional integration, highlights the possible link between integration methods and access to employment (unemployment duration before obtaining a job, the type of job found, in terms of contract in particular or the salary obtained).

[Insert Table 3 about here]

Table 3 shows the heterogeneity of individual characteristics on access to first job for all young graduates of four Tunisian universities.

Thus, Table 3 shows the low impact of research methods on unemployment duration than on the characteristics of the latter (access to employment).

For those who have chosen the network mode, they spend around 10 months as an average unemployment duration, while this duration seems to be smaller when young graduates use institutional intermediaries.

The type of diploma plays an important role in access modes choice. Moreover, most young literature and science graduates use different modes in their job search, while young engineering graduates are the exception. Such a finding can be explained by the duration of studies for the engineering degree cycle.

Table 3 seems to conclude that the weak effect of modes on the obtained jobs (civil servant of the public sector; independent) can however result from not taking into account the impact of individual attributes on the frequencies of choosing the prospecting methods.

[Insert Table 4 about here]

Table 4 shows the impact of the number of modes used by the young graduates of the four Tunisian universities (Jendouba, Monastir, Gafsa and Gabes) on the individual characteristics of access to first job.

Moreover, young graduates who used a single research mode seem to experience longer unemployment duration, while the use of two modes seems to be linked with faster (shorter) placements.

The Theoretical Problems of the Search Mode Selection Rule

The Presence of Selection Bias

Our initial statistical analysis of the ISLAH 2015 survey shows that some personal attributes discriminatingly affected the frequency of choosing search modes. One can then speculate that there is a particular selection rule for insertion modalities of young people.

[Insert Table 1+2 about here]

This choice procedure is highlighted by several studies (Jean-Yves Lesueur, Mareva Sabatier (2008), Kahn, Low, 1990) which establish that the modes are chosen by job seekers according to their information needs and thus their individual characteristics. In this case, the choice of modes is a matter of self-selection, which calls into question the exogenous nature of the choice procedure. However, not taking this selectivity into account can lead to significant biases when estimating the efficiency of search modes. Indeed, if the criteria for choosing search modes are not random, the result of the estimation of the efficiency of these modes captures not only the real effect of the search mode on unemployment duration, but also the selection effect.

A simple model can be used to show the importance of selection bias. Let us consider an unemployment duration that depends on exogenous variables and on the choice of a search mode (in simple terms, it is assumed that there is only one search mode), which choice may be endogenous.

Let:

$$Y_{i} = \beta^{*} X + \alpha P_{i} + \varepsilon_{i} \qquad (1)$$

$$P_{i}^{*} = \gamma Z_{i} + \mu_{i} \qquad (2)$$

$$\begin{cases}
P_{i} = 1 & \begin{cases}
P_{i}^{*} \succ 0 \\
P_{i} = 0 & \text{if} \end{cases} \quad \begin{cases}
P_{i}^{*} \succeq 0 \\
P_{i}^{*} \leq 0 \end{cases}$$

With:

(1) \mathcal{E}_i : denotes an error term

- lpha : presents the impact of the search mode
- (2) Z_i : is the set of exogenous individual characteristics having an influence on the choice of

search mode (some of these variables may be identical to those of X_i).

(3) μ_i : error term

- If $E(P_i, \varepsilon_i) = 0$, there is no endogeneity bias and an unbiased estimator of α can be obtained by directly estimating equation (1).

- On the other hand, if $E(P_i, \varepsilon_i) \neq 0$, there are endogeneity biases. These biases can rsult from two sources: a correlation between Z_i and ε_i or a correlation between μ_i and ε_i .

- If $E(Z_i, \varepsilon_i) \neq 0$ and $E(\mu_i, \varepsilon_i) = 0$, the selection mode is based on observable criteria.

- If $E(Z_i, \varepsilon_i) = 0$ and $E(\mu_i, \varepsilon_i) \neq 0$, the selection is made on unobservable criteria.

The basic principle for evaluating the impact of the search mode on the variable of interest without bias is to compare young graduates who have chosen this prospecting mode to those who have not. The statistical analysis conducted on this database allows for such a comparison and concludes that young graduates who have chosen this search mode do not have the same characteristics like those who have not chosen it. It is possible that there are many endogenous biases that need to be corrected.

Methods for Correcting Endogeneity Bias

Two non-experimental approaches to correct endogeneity bias are possible. The first is to correct the observations by constructing a comparison group that has characteristics close to those using the search mode. The second method is to statistically correct endogeneity bias. The statistical correction of biases is adopted here and can be done by:

Instrumental Variable Method (Heckman, Robb, 1985)

This method involves estimating equation (2) by a probit and using this estimate to construct an

instrument such that P_i is not correlated with ε_i . This instrument is the estimated probability of using the search mode:

 $\hat{P}_i = \hat{\gamma} Z_i$ which is then introduced instead of P_i in equation (1) to obtain:

$$Y_i = \beta' X_i + \alpha \hat{P}_i + \varepsilon_i \tag{3}$$

Estimation of equation (3) then yields an unbiased estimate of the effect of the search mode on the outcome variable.

The methods for correcting endogeneity bias are statistically equivalent. However, they differ from an economics point of view.

Heckman's (1979) method is mainly used to correct for selection bias (when the presence in the

sample is not exogenous) and does not really take variable P_i into consideration.

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In the method of Barnow, Cain and Golgberger (1981), the mode choice variable is used in a dichotomous way. This means that young graduates choose this search mode, not because it provides better labor market opportunities for them, but because it is the only choice they have. Therefore, using the search mode, which affects the outcome variable, is particularly important.

In the method of instrumental variables, the variable of choice of search mode intervenes in a continuous way. This leads to considering it as an endogenous variable in the model. This method assumes that the individual decision to choose the search mode depends on the expected future gains resulting from switching to that mode. Job seekers would choose this mode because they anticipate that it offers them better opportunities in terms of access to employment or wages.

The possible effect of individual characteristics on the choice of search modes therefore imposes the analysis of this choice before proceeding with any evaluation of the efficiency of the modes. We chose to adopt *the method of correction by instrumental variables (Heckman, Robb, 1985)* because the interest of this study is first to estimate the individual probabilities of choice of modes and thus to analyze the choice behavior of job seekers. Second, this study estimates the efficiency of this choice by considering the choice of search modes as an endogenous variable in the model.

Using econometric techniques of qualitative variables is the proper way to estimate such choices. Several techniques are then available (Maddala, 1983). The choice of search modes can be estimated using three binary probits; choice of effort by an ordered probit and choice of strategies by a multinominal logit. However, the possibilities of combining the modes put forward in the statistical analysis impose some restrictions that should be adopted.

Challenging the Hypothesis of Independence of Irrelevant Alternatives

Young graduates may consider that the combination of several modes generates more information on job offers and can therefore accelerate access to employment.

[Insert Table 2 about here]

In this case, the choice of a mode may depend both on individual characteristics and on the presence of other alternatives in the market, which would call into question the hypothesis, commonly adopted in econometric estimates, independence of irrelevant alternatives.

This hypothesis derives from the postulate of preference invariance that underpins choice theory in economics. This postulate assumes that preferences depend only on the attributes inherent in choices and not on the contextual factors in which those choices are made. These factors include, on the one hand, the presence of alternative choices in the market and the way in which these are described. Independence of irrelevant alternatives hypothesis illustrates the first part of the postulate that "when an agent compares two choice options with each other, this comparison is not influenced by the other available options, regardless of their characteristics or number" (Willinger, 1996).

In a more formal way, we define X and Y as different sets of possible choice alternatives. A and B are choice alternatives belonging to X and \succeq a preference relationship. A preference relationship is context-independent if the following property is satisfied:

Let $A, B \in X$ and $A, B \in Y$, we obtain : $A \succ B$ for X if only if $A \succ B$ for Y.

This property means that whatever the sets of preferences, the preferences do not change.

Therefore, the addition or contraction of a choice option should not change the preferences between the initially available alternatives.

Independence of irrelevant alternatives hypothesis has been questioned in several studies of experimental economics. Simon and Tversky (1992) point out that individuals' preferences for a choice option depend on the options otherwise available. This so-called *contrast effect* may mainly result from two causes: a memory effect, with individuals comparing current choice alternatives to those encountered in the past, and a local contrast effect linked to the presence of other options in the current set of choices. This *contrast effect* is often the explanation put forward to justify violation of the independence of irrelevant alternatives hypothesis. It has also been validated in the labor market, particularly with respect to job choices that have two components: wages and the interest of the job (Mousseau, 1995).

However, although they question the independence of irrelevant alternatives hypothesis, the experiments conducted by Willinger (1996) contradict *the contrast effect*. There are then other causes for the failure to respect the hypothesis of independence with respect to context, in particular the non-neutral impact on preferences of adding or removing a choice option from the initial set.

Because of the possible violation of the independence of irrelevant alternatives hypothesis, specific econometric techniques should be applied.

Indeed, if the treatment of endogeneity bias requires the estimation of the choice of each mode by a binary probit, this estimation procedure cannot be adopted because it assumes that the choice of a mode is not influenced by the presence of other modes in the market and thus leads to accepting the assumption of independence from context. The use of binary probit to estimate each choice of mode or multinominal logit to estimate the choice of strategies cannot therefore be made here. To estimate interdependent binary choices, a multivariate probit can be used. It involves jointly estimating three choice equations and thus allows for dependence between equations errors.

One can also reason in terms of search strategies, i.e. by combining the type of mode and the number of modes used. Choice estimation requires the application of a multiple choice technique. A multinominal logit could be estimated given that the established prospecting strategies are exclusive and independent. However, a study of the strategies shows that they can be ordered because of the associated search costs. Therefore, an ordered probit is used.

Estimating the Choice of Modes of Access to the First Job

The data are from a survey conducted in 2011 by Tempus ISLAH 2015 on a sample of young graduates, majoring from four Tunisian universities (Jendouba, Monastir, Gafsa and Gabes) on professional insertion. A Licence degree in Tunisia is obtained after two or three-year university education.

The econometric estimation of the choice of search modes is made necessary by the probable influence of personal attributes. Moreover, the possibility of combining modes makes it necessary to use estimation procedures that take into account the interdependence of the different alternatives. This section focuses on examining the determinants of the choice of modes for first-time employment. The choice of modes to find the first job is analyzed by distinguishing choice of modes from prospecting efforts.

3390 Navigating Employment Pathways: A Microeconomic **The Choice of Search Modes**

First, we examine the choice behavior of job seekers faced with three mode options: Using institutional intermediaries, using social networks, and using market procedures. Knowing that young graduates can combine search modes, the estimation of the choice of each mode cannot be made using successive binary probit but using a trivariate probit.

Presentation of the Trivariate Probit

As in binary probit and for each choice m (m=3) of search mode (m=1: use market procedures, m=2: use institutional intermediaries, m=3: use social networks, m=4: use other), there is an unobserved latent variable and a vector of independent variables such as:

$$y_i^*(m) = \beta_i(m) X_i(m) + \varepsilon_i(m)$$
(4)

The vectors X_i (i = 1, 2, 3, 4) contain the exogenous factors that can represent the vector of individual characteristics influencing the choice of modes.

 \mathcal{E}_i : are the error terms that are jointly normally distributed, such as:

$$\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \end{pmatrix} \rightarrow N \begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \dots & \rho_{14} \\ \vdots & \ddots & \vdots \\ \rho_{41} & \cdots & 1 \end{bmatrix}$$

The coefficients ρ_{ij} (with $i \neq j$) reflect correlation between the errors of the three choice equations. If the choices of search modes are independent, these coefficients are zero. On the other hand, (ρ_{ij}) are significantly different from zero, i.e. the errors correlate if the choices of the modes are dependent on each other. The variable y_i^* is unobservable. Only the choices made by young graduates are observed:

$$y_i(m) = 1$$
 Si $y_i^*(m) \succ 0$
= 0 Si non (5)

Some model identification constraints should be imposed in order to estimate all parameters. The first constraint is to normalize variances to 1 (i.e.: $\sigma_1^2 = \sigma_2^2 = \sigma_3^2 = \sigma_4^2$). Because of the recursiveness of the model, the residuals of the three latent equations not being independent, the parameters of the model cannot be identified if the independent variables of the different equations are identical (Maddala, 1983,). The vectors X_i (i = 1, 2, 3, 4) are not exactly the same in each of the equations.

The distribution function of the trivariate probit is written as follows:

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$$Prob(X_{1} \prec x_{1}, X_{2} \prec x_{2}, X_{4} \prec x_{4}) = \int_{-\infty}^{x_{1}} \int_{-\infty}^{x_{2}} \int_{-\infty}^{x_{3}} \int_{-\infty}^{x_{4}} \phi(z_{1}, z_{2}, z_{3}, z_{4}, \rho_{12}, \rho_{13}, \rho_{23}, \rho_{34}) dx_{1} dx_{2} dx_{3} dx_{4}$$
(6)

Or ϕ represents the trivariate normal density function.

If we note $X = (X_1, X_2, X_3, X_4)'$ the vector of the m vectors of independent variables, μ their mean vector and Σ , their covariance matrix, the trivariate normal density function is written:

$$\phi = (2\pi)^{-\frac{m}{2}} \left|\Sigma\right|^{-1} e^{(-\frac{1}{2})(X-\mu)'\Sigma^{-1}(X-\mu)}$$

(7)

Choice of the modes of characteristics that include gender (HOM), family situation (CEL), parental status (mempl or Pempl), the nature of the field (applied), and the nature of the degree (Humanities, Science, and Engineering).

Choice of Search Effort

The second choice procedure relates to the choice of research effort, i.e. the choice of the number of modes used. Young graduates of the four Tunisian universities can use one, two or three modes during their search.

[Insert Figure 1+ 2 about here]

The choice variable to be explained is therefore discrete but also ordered. Estimating the choice of intensity requires the application of an ordered probit (Greene, 1997).

Analysis of Econometric Results

Econometric Results: Estimation of Trivariate Probit

Table 5 shows the econometric results of the multivariate probit modeling. We found a significant effect of several individual characteristics on mode choices of access to the first job.

Single candidates seem to prefer searching through market procedures or social networks over intermediaries. Moreover, males seem to be more likely to use all job-search methods compared to females. This is confirmed by Degenne and Forsé (1994), who pointed out that males are more active in job search than females.

In addition to these individual characteristics, Table 5 takes into account the effect of higher education specialties and types (Applied or Research) on the choice of mode to access the first job. Graduates of Applied degrees opt somewhat for the market procedure, whereas the impact of the graduates' specialty on the choice of job search mode depends on the nature of each degree. For example, graduates in the humanities and sciences prefer to use the market procedure or social networks rather than institutional intermediaries in their choice. Meanwhile, the probability of using intermediaries is higher among graduates with engineering specialties. This can explain why these graduates continue their studies in private or public universities (and even register in employment offices).

3392 Navigating Employment Pathways: A Microeconomic [Insert Table 5 about here]

The econometric results in Table 5 conclude that the choices of search modes depend not only on the characteristics of these choices, but also on the presence of other alternatives. Therefore, the correlation coefficients of errors (Trivariate-Probit) are significantly different from zero, which explains interdependence of the choices, and consequently the independence of irrelevant alternatives hypothesis is rejected.

Choices of job search modes depend not only on the characteristics specific to each mode but also, on the presence of other alternative choices on the market.

Econometric Results: Estimation of Ordinate-Probit

To estimate coefficients in this type of model, the marginal effect of the variables on choice should be calculated .

[Insert Table 6 +7 about here]

Calculation of the marginal effects (Table 7) of each variable having a significant effect on choice of search intensity shows that males increase the probability of using several prospecting methods and subsequently, they can adopt more costly search. modes, consisting in multiplying the information channels.

Therefore, the applied sector has a significant effect. Indeed, being a graduate of an applied field of study increases the probability of using several search methods. This effect may come from the fact that these graduates incur a significant opportunity cost during their unemployment period. Then, they risk seeing their human capital deteriorate. For this reason, young graduates show an interest in leaving unemployment quickly and, to do so, they should adopt a higher search intensity.

Conclusion

This paper has highlighted the presence of a plurality of job search modes, which are found to have a significant effect on unemployment exit rates. A two-step estimation method was adopted in this paper to correct for endogeneity of the search mode choices. Trivariate then ordered probit modeling were carried out to test the hypothesis of exogeneity of the selection rule of mode choices and their combination. This hypothesis is rejected and the significant impact of individual characteristics, in particular the type of degree, on the choice of effort and search methods is highlighted.

In order to correct for selection bias, instrumental variables will be adopted in a future paper, to introduce the probabilities predicted by the trivariate and ordered probit models of mode choice as an instrument instead of the binary choice variables of the three modes. We also consider integrating young graduates of the four Tunisian universities in the estimation of the duration of access to the first job.

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References

Ahn, N., Ugidos-Olazabal, A. 1995. Duration of Unemployment in Spain: Relative Effects of Unemployment Benefit and Family Characteristics, Oxford Bulletin ofEconomics and Statistics, Vol.

57, n°2, pp.249-264.

- Atkinson, A., Micklewright, J. 1991. Unemployment Benefits and Unemployment Duration: A Study of Men in the United Kingdom in the 1970, London School of Economics, 282p.
- Akkermans, J., Blokker, R., Buers, C., Van der Heijden, B. I. J. M., & De Vos, A. (2021). Ready, set, go! In A. Marshall & J. Symonds (Eds.), Adult development at the school-to-work transition: International pathways and processes (pp. 77–103). Oxford University Press. https://doi.org/10.1093/oso/9780190941512.003.0004
- Bonnal, L., Fougère, D., Sérandon, A. (1999). Une modélisation du processus de recherche d'emploi en présence de mesures publiques pour les jeunes, Revue Économique, Vol.46, n°3, pp.537-547.
- Bonnal, L., Fougère, D. 1990, les déterminants de la durée du chômage, Economie et prévision, Vol. 96. n°5 : pp.45-82.
- Bull, C., Ornati, O., Tedeschi, P. 1987. Search, Hiring Strategies, and Labor Market Intermediaries, journal of Labor Economics, Vol.5, n°4, pp. S1-S17.
- Clark, A. 1999.Les Méthodes de recherche d'Emploi des Chômeurs dans les Pays de l'OCDE, rapport OCDE, 40p.
- Florens, J.P. Gerard-Varet, L.A. et Werqin, P. 1990. The Duration of Current and Complete Unemployment Spells Between 1984 and 1986 in France in Contributions to Applied Microeconometrics.
- Fougère, D., Pradel J., M. Roger. 1996.Intensité de Recherche d'Emploi et Taux de Sortie de Chomage: Une Analyse Econométrique sur Données Individuelles, Communication aux Journées de Microéconomie Appliquée, Liège.
- Francesco, P. 2019. Why So Slow? The School-to-Work Transition in Italy Studies in Higher Education, 44 (8), 1358-1371
- Francesco, P., Claudio, Q., Antonella, R. 2021. Some young people have all the luck! The duration dependence of the school-to-work transition in Europe Labour Economics, 2021, vol. 70.
- Heckman, J., Robb, R. 1985. Alternative Methods for Evaluating the Impact of Interventions: An Overview, Journal of Econometrics, Vol.30, n°1-2, pp.239-267.
- Heckman, J. 1979. Sample Selection Bias as a specification Error, Econometrica, Vol. 47 n°1: pp. 153-161.
- Kahn, L., Low, S. 1990. The Demand of Labor Market Information, Southern Economic Journal, Vol. 56, n°4, pp.1044-1058.
- Kocoglu, Y. 2014.Formation et emploi des jeunes dans les pays méditerranéens, Etude OCEMO, MedNC, décembre.
- Lesueur J, Sabatier M. 2008. Microéconomie de l'emploi : Théories et applications ED. De Boeck Supérieur Paris.
- Lindeboom, M., Van Ours, J. 1997. An Empirical Analysis of Effectiveness of Search Channels for Employed and Unemployed Workers, Jobs, Wages and Poverty, ed. P. Gregg, Centre for Economic Performance, L.S.E, London.
- Lippmann, S., Mac-Call, J. 1976a. The Economics of Job Search: A survey I, Economic Inquiry, Vol. 14, pp. 155-189.
- Lippmann, S., Mac-Call, J. 1976b. The Economics of Job Search: A survey II, Economic Inquiry, Vol. 14, pp. 347-368.
- Mac-Call, J. 1970. Economics of Information and Job Search, The Quarterly Journal of Economics, Vol. 84, n°1, pp. 113-126.

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- Meyer, B. D. 1995. Lessons from the U.S Unemployment Insurance Experiments, Journal of Economic Literature, Vol. 33 n°1: pp. 91-131.
- Montgomery J. D. 1991. Social network and labor market outcomes, American Economic Review, 81, p. 1408-1418.
- Mortensen, D.T. 1986. Job Search and Labor Market Analysis, Handbook of Labor Economics, Vol.2, Chap.15, Ashenfelter O. And Layard R. Ed.
- Sabatier, M. 2003. Stratégie d'insertion et durée d'accès au premier emploi, Revue d'Économique Politique, Vol. 113, n°5, pp. 671-696, 2003.
- Saucier, P., Sofer, C. 1995. L'accès des jeunes aux politiques d'insertion et à l'emploi : Une analyse à partir des enquêtes du Céreq, Revue Economique, Vol. 46, n°3, pp. 561-571.
- Stigler, G. J. 1962. Information in the Labor Market, The Journal of political Economy, Vol. 70, n°5, pp. 94-105.
- Zacher, H., & Froidevaux, A. 2021. Life stage, lifespan, and life course perspectives on vocational behavior and development: a theoretical framework, review, and research agenda. Journal of Vocational Behavior, 126, 103476. https://doi.org/10.1016/j.jvb.2020.103476.
- www.aqu.cat/doc/doc: 2015 . Rapport d'enquête sur l'insertion professionnelle des diplômés de licence 2010/2011 des universités de Gabes, Gafsa, Jendouba et Monastir, Centre d'études et de recherches sur cereq Octobre 2015.



	First employment (%)
One single mode used	94,13
Two modes used	5,76
Three modes used	0,11

Table 1 : Search Modes Combinations(%)



Graph 2: First job access search strategies distribution

- **1.** Use only commercial procedures
- 2. Use only institutional intermediaries
- **3.** Using the social network
- 4. Combining market procedures and network
- 5. Associate the social network and market procedures
- 6. Combining institutional intermediaries and the social network

	S_1	S_2	S ₃	S_4	S_5	S ₆
First employment(%)	44.68	11.31	38.14	3,10	2.55	0.22
unemployment duration average (month)	10,24	12,50	10,53	5,39	14,65	3

Table 2: Search Strategies Distribution And Unemployment Duration Average

In (%)	Merchant procedures	Institutional intermediaries	Social network	Others
DCHOM : Unemployment	10,17	12,59	10,12	11,57
duration (months)				
DEMPL : Employment	16,02	15,08	16.6	18,57
duration (months)				
SAL : Salary (tunisien dinars)	391,485	437,68	413,545	478,665

Jendouba university	28,64	18,45	26,78	28,57
Monastir university	25,49	21,36	25, 35	28,57
Gafsa university	24,27	33,01	23,93	21,43
Gabes university	21,60	27,18	23,93	21,43
Applied license	66,02	70,87	62,39	50,0
Fundamental licence	33,98	29,13	37,61	50,0
Letters : Have a degree in Letters	49,75	62,13	46,44	35,71
Sciences : Have a degree in Sciences	30,59	23,30	38,75	50,0
Engineering : Have a degree in Engineering	4,85	00,97	2,56	14,29
CDI : Have a permanent contract	5,29	7,02	5,11	14,29
CDD: Have a fixed-term contract	39,42	36,84	39,42	42,86
No contract	14,90	17,54	24,82	14,29
Public sector official	12,50	12,28	02,92	28,57
Independant	4,81	5,26	5,11	57,15
An internship or apprenticeship agreement	22,6	21,05	21,17	14,29
Work in a micro-enterprise	35,87	57,78	56,80	42,86
PME : Work in a Small or Medium Company	47,87	33,33	33,60	27,25
PRIVE : Work in a private company	58,70	66,67	76,80	72,66

Table3: Access Modality to First Job and Job Obtained

In (%)			Only one mode	Two modes used
DCHOM : (months)	Unemployment	duration	10,63	9,38

	lonne	
DEMPL : Employment duration (months)	15,93	14,76
SAL : Salary (tunisien dinars)	437,650	443,29
Jendouba university	26,77	18,87
Monastir university	25,32	22,64
Gafsa university	24,26	43,40
Gabes university	23,67	15,09
Applied license	64,43	84,91
Fundamental licence	35,57	15,09
Letters : Have a degree in Letters	38,21	64,67
Sciences : Have a degree in Sciences	34,86	23,30
Engineering: Have a degree in	8,46	6,77
CDI : Have a permanent contract	5,26	6,67
CDD : Have a fixed-term contract	36,55	53,33
No contract	19,59	13,33
Public sector official	9,65	6,67
Independant	4,09	10,00
An internship or apprenticeship	23,98	10,00
Work in a micro-enterprise	46,63	43,33
PME: Work in a Small or Medium	40,17	36,67
PRIVE : Work in a private company	66,57	63,33

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Table 4: Number Of Mobilized Modes to Access in First Job and Jobs Obtained

Dependent variables	Explanatory variables	Coefficien	t	
		t	Student	P> t
Merchant procedures	Men			0.00
_		1.05481	3.66	0
	Single (others=0)			0.00
		.7690508	4.62	0
	Having an employed	l		0.84
	mother	.0884785	0.20	2
	Applied			0.00
		.9207546	3.49	0

					Benhame	d. 3399
	Letters					0.00
				.8412169	2.82	5
	Science					0.03
				.9125573	2.08	7
	Engineeri	nσ		17120070		0.89
	Engineeri			- 0316388	-0.13	0.02
Institutional	Man			0310300	-0.13	9
	Man			1 124750	2 01	0.00
intermediaries				1.124/59	3.81	U 0.01
	Single				• • •	0.01
				.4106635	2.36	8
	Having	an	employed			0.49
	mother			323419	-0.69	2
	Applied					0.00
				.7250891	2.67	8
	Letters					0.24
				.3478546	1.16	8
	Science					0.97
				.0169643	0.04	1
	Engineeri	ng				0.00
	Lingineeri			- 8994547	-3 31	1
Social notwork	Man			.0774247	5.51	0.00
Social network				0017022	2.06	0.00 7
	Single			.002/033	5.00	2 0 00
	Single			757(000	4 41	0.00
				./5/0008	4.41	0
	Having	an	employed	0000100	0.46	0.64
	mother			2090132	-0.46	3
	Applied					0.00
				.7573044	2.87	4
	Letters					0.00
				.9175145	3.07	2
	Science					0.02
				1.014391	2.31	1
	Engineeri	ng				0.29
	0	0		.2617852	1.05	5
Correlation coefficients					-	0.00
	$ ho_{12}$			-0.2275		0
	- 12			0.2270		0 00
	ρ_{12}			-0 2334		0.00
	/ 15			-0.2334		0 00
	<i>Q</i> ₁			0 0220		0.00
	P 23			-0.8338		U 0.00
	0					0.00
	P_{14}			-0.7125		0
						0.00
	$ ho_{24}$			-0.1154		0
						0.00
	$ ho_{ m 34}$			0.2074		0
Log. Likelihood	-2224.420	4				
	. = *					

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Explanatory variables: number of modes mobilized	Coefficient	t Student	P> t
Man	.4298693	2.51	0.012
Single	.277767	1.56	0.118
Father employed	.1503274	1.07	0.283
Applied	.487884	3.02	0.003
Letters	2178445	-1.10	0.270
Science	1234681	-0.46	0.646
Engineering	0687415	-0.32	0.747
Likelihood log	-479.0588		
Number of observations	902		

Table 5: Estimation of Trivariate Probit

Table 6: Estimation of Ordinate-Probit

Conditional marginal effects	dy/dx	t Student	P> t
Hom	0448855	-2.54	0.011
Single	0278161	-1.46	0.145
Father employed	0159751	-1.11	0.266
Applied	0483635	-2.81	0.005
Letters	.0248309	1.21	0.225
Number of			
observations	902		

Table7: Marginal Effects