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Research Paper

Job search time: the indicator of employability

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ABSTRACT : *In this paper the employability of Hungarian graduates is analyzed. In the first part of this study we review various approaches to employability. We highlight some frequently quoted definitions to be found in the literature, and mention possible ways of measuring employability. Following the literature review we analyze empirically job search time for young graduates. We would like to answer the question of what kind of factors influence the time spent on job search among young Hungarian graduates. We also analyze the link between job search time and horizontal job congruence. The empirical analysis is based on the database of the Graduate Career Tracking System.*

Keywords:- *employability, job congruence, job search time*

I. INTRODUCTION

In this study we analyze the employability of young Hungarian graduates. In the second and third part we review various theoretical approaches to employability and mention possible ways of measuring employability. In the fourth part we empirically analyze the job search time among young Hungarian graduates. In our linear regression model we try to identify different factors which influence the time involved in job search. We also analyze the relationship between the time devoted to job seeking and congruence. We perform an analysis with the help of the Graduate Career Tracking System database (DPR, 2012). We conclude that the factors examined differently influence the job search time. This research was supported by the European Union and the Hungarian State, co-financed by the European Social Fund in the framework of the TÁMOP-4.2.4.A/ 2-11/1-2012-0001 'National Excellence Program'.

II. THEORETICAL APPROACHES AND MEASURING EMPLOYABILITY

The topic of employability has long been the subject of study by economists and sociologists. Employability is also linked to the concept of employment. At various times both demand- and supply side approaches have been dominant, although today supply side definitions are accepted by most researchers. There are several approaches taken to define employability, but so far no uniform definition has been agreed on.
Based on the literature, three major groups of theories can be distinguished. According to the orthodox approach, employability is interpreted from the supply side of the labor market. This approach focuses on individuals' abilities and skills when trying to explain the success and failure of attempts to find work.

The studies in the field of employment policies focus primarily on the supply side of the labor market and give major emphasis to employment policies. A significant proportion of authors consider the integration into the labor market of disadvantaged groups to be the most important task, although there are others who understand employability as extending to the whole population (see, for example[1], [2], [3], [4]). The efficiency of employment policies are measured first and foremost with the help of macroeconomic data.

2.1 Theoretical approaches to employability

The educational policy perspective focusing on the relationship between higher education institutes and the economic world is represented primarily by the concept of a well-trained labor force. Researchers in this field concentrate on which skills and abilities higher education institutes should provide their students with. Experts often argue about how deep higher education courses should be. One group believes that a thorough,

1

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specialized background should be taught, which can be used later in organizations, although there is often a lack of harmony between the knowledge demanded and the knowledge provided (see, for example, [5], [6], [7]). Another group see the question in a totally different light; according to Lundvall [8], in a learning economy, knowledge itself is not particularly important, what is vital is the ability to acquire knowledge. The main task of universities is to provide lifelong learning. Gabriella Pusztai [9], on the basis of research carried out at the University of Debrecen, Hungary, emphasized that from the perspective of successful integration into the labor market, the most important role of higher education institutes was integrating students into society and building social networks.

The period between the end of schooling and permanent integration into the labor market is considered to be fundamentally important in the employability research area. First, we focus on an analysis of micro-level data. The most significant studies have been made on students who have just graduated from higher education. Researchers have tried to establish which factors affect – negatively or positively – success in the labor market. Repeated examinations have also sought to discover what labor market characteristics are typical of higher education graduates 5 years after they have completed their courses. With the help of objective and subjective indicators numerous researchers have dealt with this question in both the Hungarian and international literature (see, for example, [10], [11], [12], [13], [14], [15], [16]).

Watts [17] classified the approaches to employability into three groups, taking account of the time factor: immediate employment, immediate employability, and sustainable employability. Immediate employment means graduates are employed within six months of graduation. The weakness of this definition is that it does not provide appropriate information about whether some individuals are hired in a later period, e.g. because of further studies or for other reasons; moreover, it does not provide information about whether graduates are employed congruently to their qualifications. Immediate employability analyzes whether graduates possess the abilities and skills necessary for a qualified job, without further studies. According to the definition of sustainable employability, it is important not only to get one's first qualified job, but also crucial to remain continuously employed, which necessitates a continuous renewal of abilities and skills.

Another group of authors try to define the concept from the perspective of abilities and skills. According to Harvey [5],two dimensions are important. The first is the student's ability after graduating to find a job which he or she is able to keep, and so develop; the second is how the student's abilities, skills and knowledge can be developed, and sustained through lifelong learning. Hillage and Pollard [18] provide a more detailed definition of employability. Employable graduates can get their first jobs, keep them, and, if necessary, can find a new job. For the individual employability means the following: advantages in terms of knowledge, skills and attitude; the application and development of these skills; the signaling of these benefits to potential employers; the context existing within a specific job, e.g. given the conditions of the labor market and the employee. The authors emphasize that this conception of employability can be extended to employability as perceived by society at large. Dearing [19] considers the following to be key competencies: communication skills, numerical skills, IT skills and learning competencies. One of the most detailed subdivisions is given by Knight and Yorke [20]. In their widely known model (the USEM model) employability consists of four major components. These are: specialist understanding, skills (including their application), self-awareness and self-confidence, and the ability and willingness to exercise strategic thinking. While specialist understanding means a sound theoretical background, skills and abilities are practical. Self-awareness and self-confidence refer to the extent to which the individual is able to apply theoretical and practical knowledge to a problem as it arises and to take advantage of opportunities as they present themselves. Willingness to apply strategic thinking is the ability to acquire the relevant knowledge and to put it into practice. McQuaid and Lindsay [21] offer what is perhaps the most comprehensive model of the factors of employability: they distinguish between individual factors, personal circumstances and external factors. Among the individual factors are essential skills from an employability perspective, abilities, demographic characteristics, health situation, efficiency in job search, adaptability and mobility. Personal circumstances include the home situation, work culture and access to funds. Among external factors they list the demand characteristics of the labor market and the existence of support services.

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All definitions emphasize the variety of (potential) employees, with particular significance given to physical and cognitive suitability, study, flexibility, adaptability and mobility, but all definitions consider employability as the end result [22].

As the synthesis of different approaches shows, employability means the probability that an individual can find a job, which is influenced by the following factors:

- employment policies (see e.g. [1], [2], [3], [4])..,
- knowledge acquired through education (see e.g. [5], [6], [7], [8], [23], [24], [25], [26], [9], [27],
- time [17],
- abilities and skills (see e.g. [19], [18], [5], [20], [21]),
- conditions of the transition from school to work (see e.g. [10], [12], [14], [28], [29], [30], [31], [15], [32], [33], [34], [16], [35], [36], [37], [38], [13], [39], [40], [41]),
- type of knowledge required in the work (see e.g. [42], [8], [43], [44], [45], [46]),
- labor market opportunities (see e.g. [22], [47], [48]).

2.2 Measuring employability

One possible way to measure employability is with the help of macroeconomic indicators: the number of people in employment; the number continuing studies; job-seekers, or those wishing to continue studies; the inactive [7].

The other approach is based on the collection of micro-level data: tracing employability, and measuring students' levels of satisfaction [7].

The system of indicators used to measure employability is very complex. The labor market success of graduating students is measured with the international CHEERS survey of objective and subjective indicators. Schomborg [49] lists the following among objective indicators the proportion in employment, the proportion in full time employment, those on open-ended contracts, the specialist position held, and income received; subjective indicators include the use of knowledge and skills, closeness to the specialized subject area, the suitability of the position, the congruence between the position and the level of the qualification, the fulfillment of expectations, high status, the independent nature of the work and satisfaction with the workplace.

In Veroszta's [13] study the indicators used in the international CHEERS survey are grouped in the following way: the objective indicators include those following the (job search) transition process; these indicators cover the period taken to find the first job after graduation; data measuring employment and income; data regarding the position filled and the size of the firm; there are also indicators combining the size of the firm and the leadership level. In the subjective indicator group are those which measure the congruence of the job which seek to discover whether the graduate is working in a field related to his/her degree; also included here are mobility plans, i.e. whether the employee is planning to change workplace, as well as indicators relating to prestige, which measure satisfaction with both the work and the workplace, and measurements related to the level of satisfaction with status in the workplace.

As the statistical indicators described above clearly show, one of the important indicators for success in the labor market is the congruence between the qualification obtained and employment. We can distinguish between vertical and horizontal congruence. In relation to vertical congruence the specialist literature uses the terms over-education and under-education (see, for example, Rumberger [50]). If the employee has a higher than necessary level of qualifications for the job, then he/she is over-qualified; if it is lower than necessary, then he/she is under-qualified. We can speak of horizontal congruence if the employee is working in a job which fits his/her specialist qualifications. We can examine congruence in two ways, either with a subjective assessment of the suitability of the work and the qualifications, when the respondent rates the strength of the connection between his/her qualifications and job on some kind of scale, or when the researcher evaluates the level of congruence on the basis of the position(s) the employees occupy [51].

Dóra Vámos [52] draws attention to the difficulties caused by the variety of study materials produced in higher education. If the students have a too concrete, specialized, curriculum this can, in some cases, facilitate the job search, but in other cases, when the work is not specifically centered on the area of specialized study, the chances of finding a job are reduced and the search becomes more difficult. A too generalized curriculum, however, significantly increases the difficulties of entering the job market. One way of developing adaptability to the labor market is if the course includes an awareness and use of the convertible differences which naturally

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arise between different professions and the substitutability of job types in different fields of employment. Research has indicated that individual graduate professions can be divided into four groups on the basis of two fundamental occupational characteristics [52]:

- Easily substitutable and convertible occupations, (e.g. management-, economic-, teaching-related)
- Easily substitutable but less easily convertible occupations, (e.g. librarian, adult education teacher, journalist)
- Not easily substitutable but easily convertible occupations, (e.g. law-, technical-, agriculture-related)
- Neither easily substitutable nor easily convertible occupations, (e.g. doctor, artist).

III. OVERVIEW OF EMPIRICAL RESULTS IN THE LITERATURE

Veroszta [13], in her multi-stage regression analysis, proves that among graduates the professionalism and demographic background significantly contribute to successful work. Professionalism and demographic characteristics also contribute to achieving a successful career. Professional success, in terms of individual choice and merit, depends mostly on the educational and institutional characteristics and on the chosen specialty and whether the individual will accumulate a surplus of knowledge

Julia Varga [38] examined how the impact of labor market success was reflected in the areas of training and higher education institutions. She asked how successful graduates are in a particular area of training in the labor market in relation to whether they would have been successful if they had acquired qualifications in other fields of study. The effect of the training area according to the results of the propensity score matching models showed that only a few areas of training had a significant effect on the earnings and probability of employment of young graduates.

The research of MKIK GVI [40] analyzed to what extent the reputation of the higher education institution helps or hinders the employment of new graduates. In conjoin analysis it was found that during the selection process the primary aspect is the knowledge of a foreign language (44%), secondary selection criteria include the professional practice (23%) and the institution's reputation (23%), and a tertiary consideration is the non-professional work experience (10%). They conclude that a degree acquired in a low-prestige institution is to moderate extent disadvantageous (-0.49), while a degree acquired in an institution with average prestige will, to a limited extent, improve the probability of employment (0.11); the degree awarded by a prestigious institution will greatly improve this probability(0 38).

Imola Csehné Papp [27], based on survey among young graduates, finds that 40% of graduates are working in a horizontally congruent job (in a job which fits their specialist qualifications), and 25% is working in a horizontally non-congruent but vertically congruent job (in a job which does not fit their specialist qualifications but for which higher education is necessary).

Kotsis [39] assesses the incidence of increases in over-qualification with increases in firm size, the propensity to mobility and the innovative nature of the company to reduce the incidence of over-qualification. The academic field also plays a role in the incidence of over-qualification. Technical and agricultural courses are typically congruent, while economics, liberal arts and teacher education are typically quasi-overqualified.

IV. DATA AND METHODOLOGY OF THE EMPIRICAL RESEARCH

In our previous research [53] a link between job search time and job congruence was analyzed. According to the results of the independent two-sample *t*-test we can reduce the hypothesis that the congruently and non-congruently employed spent an identical amount of time searching for jobs to a level of significance of 1%. On the basis of our analysis we can state that those working in congruent workplaces were able to find work more quickly. We also measured the relationship between the time devoted to job seeking and congruence for the different courses. We assumed that the relationship between congruence and job search varies according to specialist area. We found a significant difference between the two groups in the time taken for job search in economics, humanities, medical sciences, IT, law and engineering. Comparing our results with the groupings created by Vámos [52], we can state that with the exception of agricultural sciences in the subjects which are not easily substitutable there is a significant difference between job search time for those working in congruent and non-congruent positions. Those working in congruent positions find work more quickly in these specialist areas. The same result is found in the economics and humanities fields.

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After using *t*-tests, statistically significant differences were detected among objective indicators of employability. Knowing this relationship, we would like to answer the question, what factors influence the time taken by entrant graduates to find their first job.

4.1 Data

The regression analysis is based on the Graduate Career Tracking System database (DPR, 2012). The DPR data input for 2012 took place in the first half of 2011 (February to June). Data was collected via an online questionnaire. The research extended to the whole of the base population – to students given an absolutorium (in Hungary this is the certificate awarded to final year students showing they have completed the taught elements of their course) in 2007, 2009 and 2011, including those on traditional university and further education college courses, individual courses and unified courses, as well as those qualifying with bachelor's or master's degrees. Data collection was carried out in the DPR programmer by 32 participating higher education institutes, on the basis of the address lists of their own graduating students. The anonymous answers are collected and processed by the higher education institutes, and the results are unified, edited and weighted by the Educatio Nonprofit Kft. company from the combined databases of the various institutes. The questionnaire can be accessed via a link provided on the email sent to the students, and the questionnaire is completed on an online interface. The graduates' answers are handled anonymously by their institution. In addition to the unified block, which is structured in a uniform fashion with required questions, there is the option to add questions relating specifically to that particular institution; however, the national database only contains the answers to the questions on the common, uniformly structured block. The base population and the characteristics of the sample were the following: the online questionnaire was sent to all students graduating at participating institutions, receiving an absolutorium in 2007, 2009 and 2011, including the following course types: traditional university, further education college, individual courses and unified courses, as well as those qualifying with bachelor's or master's degrees. On the basis of statistics provided by the institutions the base population numbered 163,964 individuals, and the number of (voluntarily provided) answers on the database was 24,890, giving a participation rate of 15.18 % [54]

4.2 Methodology

Based on the empirical results in the literature, variables were defined by us which influence the dependent variable, the job search time (Y_T):

$$Y_T = f(X_p, X_e, X_t, X_h, X_{ma}, X_{mi}, X_{hi}, X_o \qquad (1)$$

where

X_p = personal factors,

X_e = educational factors,

X_t = training surplus factors,

X_h = horizontal job congruence,

X_{ma} = labor market macro factors,

X_{mi} = labor market micro factors

X_{hi} = assessment of higher education institution,

X_o = other factors not examined.

To identify the significant factors which influence the job search time of entrant graduates we use linear regression analysis by the backward method. Variables incorporated into the model are the following:

- personal factors: age (measured by birth year); sex, dummy variable (0 = woman, 1 = man); marital status (0, if not single, 1, if single), is there a family member who has a degree in the similar field? (0, if there is not, 1, if there is),
- training factors: year of ending studies; form of financing (0 = non fee-paying, 1 = fee-paying); difference from the average academic achievement ; obtaining a degree at the end of course (0 = no, 1 = yes), compulsory internship during the course (0 = no, 1 = yes),
- training surplus factors: foreign work experience (0 = no, 1 = yes); professional work experience (0= no, 1 = yes); non professional work experience (0= no, 1 = yes); foreign language (Grade 5 scale, growing),

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- horizontal job congruence factors: the job requires only their field of specialization (0 = no, 1 = yes); the job requires only their field or a linked field of specialization (0 = no, 1 = yes); utilization of the knowledge acquired during their studies (Grade 5 Likert scale),
- labor market macro factors: employment rate; unemployment rate,
- labor market micro factors: over-education (0 = not over-educated, 1n = over-educated); the company's ownership structure measured by two dummy variables, Hungarian ownership (0 = no, 1 = yes), private ownership (0 = no, 1 = yes), company size (number of employees),
- assessment of higher education institution (average job search time of graduates of the institution in the previous year).

Regression model of job search time:

$$Y_T = \beta_0 + \beta_1 X_{sz} + \beta_2 X_k + \beta_3 X_{kt} + \beta_4 X_{hi} + \beta_5 X_{ma} + \beta_6 X_{mi} + \beta_7 X_{fi} + \beta_8 X_e + \varepsilon \qquad (2)$$

where t = job search time (month)

β_0 = constant

$\beta_{i>0}$ = i'th variable (i>0) non standardized regression coefficient

X_{sz} = personal factors,

X_k = educational factors,

X_{kt} = training surplus factors,

X_{hi} = horizontal job congruence factors,

X_{ma} = labor market macro factors,

X_{mi} = labor market micro factors,

X_{fi} = assessment of higher education institution,

X_e = other, not known factors.

V. EMPIRICAL RESULTS

According to the regression analysis (results are shown in Table 1), the company's ownership structure does not significantly influence the job search time, neither does the Hungarian ownership, nor private ownership. The unemployment rate does not significantly affect the time needed for graduates to find a placement; the explanation for this, inter alia, may be that there is an increase in mobility, thereby enhancing the prospect of placement. Non professional work experience and compulsory internship during the courses do not significantly modify the job search time.

We can see the results in Table 1. The personal factors are significant, with those with a family member with a similar degree, men, and older graduates able to find a job faster, the single graduates spend more time on job search.

Among training factors, a fee paying education worsens while the positive difference from average academic achievement improves the job search time. The explanation can be that the employers consider these as a signal of good skills and competencies (see e.g. [55], [565, [57]). Obtaining a degree also improves the job search time, which can illustrate the sheepskin effect (see e.g. [58], [59]).

The training surplus factors shorten the job seeking time. Employers probably appreciate this kind of training surplus, because they assume higher productivity in the case of a worker who was able to perform more than the mandatory minimum during the training.

The horizontal job congruence factor, which included all three variables, shows that shorter job search time results in a tighter match with professional work. The reason for this may be that the horizontally non-congruent working graduates choose other careers because they could not find a job in their profession.

Among labor market macro and micro factors the higher employment rate improves, while the over-education worsens the job search time of young graduates.

Overall, despite the low explanatory power of the model (adjusted R^2 = 0,086), it is able to identify the factors that significantly affect the time of employment for young graduates. My goal was not to estimate the job search time for graduates with given parameters, but to identify major factors among the available data,

especially their sign, and to map the factors which can shorten or lengthen job search time. This low explanatory power also means that the job search time (may) be highly dependent on unexamined variables.

Table 1: The results of the regression of job search time[2]

Model (adj. R2=0,086) N=5883	β	St.error	BBeta	t	Sig.
Constant	272,409	29,188		9,333***	0,000
Sex	-0,365	0,113	-0,042	-3,215***	0,001
Birth year	-0,132	0,015	-0,122	-8,960***	0,000
Is there a family member, who has a graduation in the similar field ?	-0,583	0,133	-0,055	-4,400***	0,000
Single	0,337	0,107	0,040	3,139***	0,002
Fee-paying education	0,543	0,158	0,046	3,428***	0,001
Right from the average academic achievement	-0,210	0,074	-0,036	-2,842***	0,004
At the end of the education to obtain a diploma	-1,079	0,135	-0,104	-7,982***	0,000
Professional work experience	-0,547	0,109	-0,065	-5,040***	0,000
Non-professional work experience	-0,446	0,164	-0,035	-2,719***	0,007
Level of foreign language konwledge	-0,236	0,064	-0,050	-3,721***	0,000
Utilization of the knowledge acquired during their studies	-0,226	,055	-0,071	-4,076***	0,000
The job requires only their field of specialization	-0,445	0,141	-0,044	-3,157***	0,002
The job requires only their field or linked of specialization	-0,321	0,167	-0,031	-1,919*	0,055
Employment rate	-0,060	0,012	-0,065	-5,054***	0,000
Over-education	0,254	0,150	0,022	1,692*	0,091
Number of company's employees	0,000	0,000	-0,039	-3,089***	0,002
Average job search time of graduates of the institution in the previous year	-0,263	0,125	-0,027	-2,106**	0,035

Sources: DPR, 2012; DPR, 2011; CSO 2013

VI. CONCLUSION

In our study we have brought together various theoretical approaches to the question of employability, supplementing the results to be found previously in specialist literature. During our empirical analysis of employability we made it our aim to examine objective and subjective indicators. We conclude that among the examined factors what most affects job search time is if there is a family member who has a degree in the similar field, positive difference from average academic achievement, obtaining a diploma at the end of studies, professional and foreign work experience, and language knowledge all of which improve the job search time. We identify that graduates who can find a job faster work in a field which matches their degree.

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[2] Dependent variable in regression: length of job search time (month)

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