

University Doctoral Thesis (PhD)

**EMPLOYABILITY OF YOUNG
GRADUATES IN HUNGARY**

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Debrecen, 2014.

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1. The background to the research and its motivation

My work was motivated by the fact that in the specialist literature there are numerous approaches to employability, and researchers in the field investigate the circumstances of the employment of young graduates from different perspectives. Social scientists and among them, economists, have long dealt with the subject of employability – considered by most as a synonym for success in the labour market (see, for example, Teichler 2002, Schomborg 2010, Veroszta 2010, Varga 2010, Vincze 2013). Over time, both the demand side and the supply side approaches have dominated (see, for more detail, Gazier 1998, McQuaid – Lindsay 2004). As the dates of the sources referred to indicate, nowadays it is rather the supply side approach which dominates the field. In addition to the distinction between the demand and the supply side, there are numerous other approaches, which can only be analysed within certain limits, but which all contribute something to the understanding of the concept. The main question of the educational policy approach is what we should teach students in higher education in order to ensure they are successful on the labour market. The employment policy approach is concerned with the success of the various government initiatives to stimulate employment. Researchers who emphasise the transition to the world of work focus on the period in which this transition occurs. Even at the beginning of my reading on the subject, I started to ask whether it is possible to synthesise these definitions in any way, to create a wider framework for understanding which would be able to filter the essence of the different approaches to employability and which, through these – sometimes contradictory – conceptions, would help those interested in the subject to understand the inter-relationships and processes present in the background. When conceptualising employability it can be noted that while researchers in the field approach it from different perspectives, the common element of employability is that it deals with the employability of the individual job-seeker and his/her likelihood of finding employment, which is affected by numerous factors.

According to various empirical surveys, work makes people happy, or at least the unemployed are less satisfied with their lives, and in many cases they declare they are less happy than those working. Income obviously plays a role in this, since, within a given country, those with a higher income are more satisfied (Frey – Stutzer 2002). On this basis it is possible to conclude that those with a higher level educational

qualification are more satisfied, since they have higher income levels. In the specialist literature, however, many authors have shown that this is not always the case. With the mass production of qualified graduates there is a parallel increase in incongruent employment, since the economy is not able to find work for such a high number of qualified graduates in a workplace that is appropriate for their specialisation and qualification (Polónyi 2007). Those graduates who are able to find work in workplaces that demand a lower level of qualification will be dissatisfied and disappointed, since they have not fulfilled the plans they had for their graduate career. This is also true in cases where their salaries are adjusted to their degree and are higher than they would have been when doing the same job with a secondary school qualification (Polónyi 2010, Kotsis 2011). In this way we can say that graduates working in jobs that do not require degrees are not only dissatisfied because of the lower salary they receive, but that their disappointment is increased by the fact that they do not feel appropriately valued, do not feel that the work is challenging, and perhaps only do the job on a temporary basis, considering it as a springboard to other things, and so are not sufficiently motivated. When we speak of incongruent employment, however, we are not only thinking of the appropriateness of the level of qualification. According to Galasi et al. (2001:80-84), we can distinguish between vertical and horizontal congruency. The specialist literature uses the conception of vertical congruence when speaking about over- or underqualification. If the employee has a higher level of qualification than is necessary for the job, then he or she is overqualified, if it is lower, he or she is underqualified. We may speak of horizontal congruence if the employee is doing work that fits his or her specialist field. There are two methods of examining congruence; either on the basis of the subjective judgement of the course and the appropriateness of the work, when the responder evaluates the strength of the link between the course and the work on some scale, or when the researcher evaluates the level of congruence on the basis of the area of work filled by the employee (Galasi et al. 2001:80-84).

The relationship between higher education and the labour market means, among other things, a well-trained work force. Those primarily affected by this relationship are recently graduates who are looking to find themselves a job that will meet their expectations. This study undertakes an analysis of the transition between education and starting work.

2. Structure of the doctoral thesis, methodology applied

Main sections of the thesis:

1. Introduction
2. Employability: the link between higher education and the labour market
3. International and Hungarian career-tracking analyses, and their empirical findings
4. Empirical analysis
5. Conclusion

After briefly discussing the structure of the thesis in the introduction, the second chapter attempts to provide a descriptive framework of the specialist literature. It considers the wide range of definitions of employability. According to the orthodox viewpoint, employability is considered by the majority of authors from a supply side perspective (McQuaid – Lindsay 2005). Focusing on the abilities and skills of individuals, it attempts to explain their success – and failure – in finding employment. In the specialist literature we can find demand side as well as supply side approaches (see, for example, Evans et al. 1999, Haughton et al. 2000, Lister 2001, Adams et al. 2002, Lindsay et al. 2003), although the thesis does not attempt a detailed explanation of these. Other attempts to define employability have produced three broad theoretical groups: employment policy approaches, educational policy approaches and approaches focussing on the temporary transition period into the workplace. Definitions of employability can also be grouped according to other criteria. Among these further conceptions, the focus of analyses conducted by researchers in the field can be divided into four groups: considering the role played by time in employability, employability on the basis of skills and competences, employability according to knowledge, and employability according to opportunities and status in the labour market.

To synthesise the various approaches, *employability – as labour market success – is the probability that the individual will find suitable work, which is affected by the following factors:*

- *employment policy measures* (see, for example, Schmid – Gazier 2002, Gazier 2007, Schmid 2008, Haughton et al. 2000)

- *knowledge acquired during education* (see, for example, Harvey 2001, Atkins 1999, Lees 2002, Lundvall 2002, Munkácsy 2004, Dosi et al. 2006, Magda et al. 2008, Csehné Papp 2012, Pusztai 2012, Csehné Papp 2013)
- *time* (Watts 2006)
- *abilities and skills* (see, for example, Dearing 1997, Hillage – Polard 1998, Harvey 2001, Knight – Yorke 2006, McQuaid – Lindsay 2005)
- *circumstances of the transition from school to work* (see, for example, FIDÉV Kutatócsoport 2001, Blaskó 2002, Teichler 2002, Galasi 2002, Laki 2002, Róbert 2002, Róbert 2004, Galasi et al. 2004, Galasi – Varga 2005, Róbert – Bukodi 2005, Schomborg – Teichler 2006, Allen – van der Velden 2007, Horváth 2008, Mihály 2009, Horváth – Kiss 2009, Csehné Papp 2010, Kun 2010, Varga 2010, Veroszta 2010, Kotsis 2011, MKIK GVI 2013, Vincze 2013)
- *types of knowledge required during work* (see, for example, Polányi 1978, Lundvall 2002, David – Foray 1995, Foray – Lundvall 1996, Moerel 2006, Lam 2006)
- *opportunities offered by the labour market* (see, for example, Thijssen 2000, Forier – Sels 2003, Thijssen et al. 2008).

Further consideration of the field of employability provides a detailed introduction to some models of employability frequently cited by the specialist literature: the employability-link model (Thijssen et al. 2008), the employability process model (Forier – Sels 2003), Knight – Yorke (2006) the USEM model, and the employability structure model (McQuaid – Lindsay 2005).

The thesis continues by considering the indicators used to measure employability. The success of graduates in the labour market is analysed by international surveys on the basis of objective and subjective indicators (see, for example, Schomborg 2010, Veroszta 2010). Veroszta (2010) categorises employability indicators in the following way: among the objective indicators are those which refer to the continuity of the transition; these include the time taken to find the first job after graduation; there are statistics which measure employability and income; those referring to the position filled and the size of the firm; further, there are indicators which combine the size of the firm with the management level. In the subjective indicator category are those which examine congruence, which try to establish whether the graduate is working in a field which is related to his or her qualification; mobility plans – i.e. does the employee

intend to change his or her workplace - belong to this category, indicators of prestige, which measure both the work and the extent to which it is recognised, as well as the level of satisfaction with the workplace. One of the important indicators of success in the labour market is the congruence between skills and employment. Here, we can distinguish between vertical and horizontal congruence. When speaking of vertical congruence, the specialist literature uses the terms over- and underqualified. If the employee has a higher level of qualification than is necessary for the job, then he or she is over qualified, if it is lower, he or she is underqualified. We may speak of horizontal congruence if the employee is doing work that fits his or her specialist field (see, for example Rumberger 1987, Galasi et al. 2001). Dóra Vámos (1989) has pointed out the difficulties caused by the enormous variety of syllabus material available in higher education. If students in higher education have syllabuses with too concrete, specialised material, in some cases this makes it easier to find work, while in other cases, when the work is not in the main field of the course, it makes it more difficult to find a narrower range of work opportunities. A too generalised course, however, makes it significantly harder to enter the labour market. One possibility to develop the ability to adapt to the labour market is if, during the course, attention is paid to and use is made of the differences arising from the natural convertibility of the types of work and to the level of substitutability of the different occupations within the specialist subject area. Research results have proved that individual graduate occupations or groups of occupations can be grouped into two characteristics and also four groups, depending on their characteristics:

- 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) (Vámos 1989).

Employability is closely linked to education and to the labour market, so in the following sub-chapter the basic concepts of the labour market and the models that describe its operation will also be introduced. After this, as a framework for the

subsequent analysis, there will be an introduction to the Hungarian labour market together with a short historical summary and a description of its key indicators.

Following this, the thesis briefly summarises the characteristics of the Hungarian education system, and within it the higher education sector in more detail, before turning to the link between education and the labour market and its harmonisation and possible methods to solve the problem of the market's dissatisfaction with the system. From among the economic theories of labour force integration into the economy, the thesis summarises the lessons to be learned from the neo-classical approach (see, for example, Freeman 1975, Rumberger 1981, Chevalier 2000), the sign and filter theories (see, for example, Spence 1973, Arrow 1973, Stiglitz 1975), the job competition theory (see, for example, Thurow 1975), and the assignment model (see, for example, Sattinger 1993). Since one of the key questions of empirical analysis is defining the key factors which influence the time taken to find a job, we also briefly summarise the lessons of job search theories. To define the possibilities of optimising job search, these job search theories start by describing the informational asymmetry and also deal with the process by which salaries are determined (see, for example, Mortensen 1970, McCall 1970, Gronau 1971, Tobin 1972, Granovetter 1981, Büchel 2001, Morvay 2012). They also provide an explanation for why it might happen that an individual can find him/herself in a job that does not fit his/her qualification.

In the third chapter the thesis briefly covers the surveys developed both in Hungary and abroad in the field of employability (CHEERS, REFLEX, FIDÉV, DPR), and the empirical experience they describe. During the summary of the results of earlier empirical surveys, the thesis focuses on research which is closely related to the later empirical analysis.

According to the main findings of Veroszta's (2010) analysis, in the context of the work of newly graduated employees, the role of the specialist field is the most significant, and the demographic background is also notable; however, the other three built into the model (social background, skill background and course surplus) only play a minimal role in helping the graduate to successfully reach the desired work field. Specialist knowledge and demographic factors are also the most important in achieving a successful career. In relation to the stability of success achieved, the three factors which elsewhere are not significant play their greatest role, and in this model demographic factors are the most important, with specialist knowledge being the least important. The

main characteristic of success based on specialist knowledge is that it is only very weakly related to those factors not dependent on the individual (i.e. demographic and social factors). In terms of specialisation the most important factors are factors related to individual choice, individual merit, the course completed, the characteristics of the institution, the special field chosen, as well as how much knowledge surplus the individual possesses (Veroszta 2010).

Júlia Varga (2010) examined the influence of the specialist field and the higher educational institution on success in the labour market. When examining the effect of the specialist field she asked the question of how successful would a graduate in a given field be in the labour market compared to how successful he or she would be with a degree in a different field. In the analysis of specialised fields, the propensity score pairing model showed that only a few specialist fields had a significant effect on the earnings and likelihood of employment for young graduates. Only graduates qualified in these fields earned more or less than they would have if they had done their studies in other fields; in other fields the difference in earnings can be related to the graduates' other characteristics and not to the field of degree research. With institutions, in 9 out of 29 cases there was an effect on the graduates' earnings, or on their likelihood of employment, or on both.

With the help of company questionnaires and interviews the MKIK GVI (2013) examined the role of training institutions in integrating students into the labour market. They examined the extent to which the varying reputations of the institutions helped or hindered recent graduates find a job. Conjoint analysis demonstrated that the most important criterion in selection was language ability (44%), the second being the practical work experience (23%) and the reputation of the training institution (23%), while the third was non-degree related work experience (10%). They came to the conclusion that a degree awarded from a low prestige institution moderately harmed (-0.49) the likelihood of finding a job, while one from an institution with average prestige slightly improved it (0.11), and one from a high prestige institution moderately improved it (0.38). The study did, however, reveal that in comparison to advanced level foreign language skills (1.18) the influence of the good name of the training institution is significantly less (0.38), while any lack of specialist work placement can completely negate any positive effect (-0.62).

In Imola Csehné Papp's (2013) study the experience of those leaving higher education in search of a job shows that 40% of graduates were working in an area which fitted their

studies, 25% in work which was not related to their studies but which did require a degree, as for example, a representative or in an administrative post and 16% were under-employed. The answers also revealed the extent to which Hungary is centred on its capital, because 58% of respondents were working in Budapest.

Ágnes Kotsis' (2011) doctoral thesis analyses vertical congruence and examines factors affecting over-qualification in the context of graduates from Debrecen University. Her conclusions show that work experience, time spent at work, the numbers of work places, the willingness to commute and regional unemployment play no role in the congruence of the level of qualification. The occurrence of over-qualification grows in parallel with the growth in the size of the firm, while the willingness to relocate and the innovative nature of the firm reduce the occurrence of over-qualification. The area of studies also play a role in the occurrence of over-qualification. Students graduating in engineering and agricultural subjects are typically congruent, while those in economics, humanities and teaching will be typically quasi-over-qualified.

In the fourth chapter of the thesis the database used for analysis is introduced in the empirical section, together with its characteristics in terms of data collection and methodology. After the hypotheses have been presented they are tested, the methodology used to accomplish this is described, the results are processed, and new scientific results are formulated.

The closing part of the thesis includes a summary, an evaluation of the new scientific results, possible ways in which they can be used, as well as further directions and proposals for research.

Methodology

Prior to the thesis' analysis I checked on the Debrecen University DPR 2010 database whether there was any link between the time taken for recent graduates to find a job and the congruence of their specialist field, with the help of the independent two sample *t*-test.¹ I found a significant difference in time taken to find a job between those working in their specialist field and those leaving their chosen field. I repeated the *t*-test with reference to the net salaries of the two groups, and found the same result as before (see Kiss 2014a). In September 2013 the Educatio Nonprofit company gave me access to the DPR Recent Graduates 2012 database. I repeated the analysis described above with the

¹ I published my results in the *Munkaügyi Szemle* (Employment Affairs Journal) 19, no 2. pp. 46-64

national data and obtained similar results to the ones above for the differences between graduates staying within and graduates leaving their chosen field in terms of job search time and salaries.² The question arose as to whether the difference between graduates in jobs congruent with their fields and those in incongruent jobs was also true in different fields? To discover the answer I carried out independent two sample *t*-tests on data from 11 subject fields and found that the relationship does not hold in all specialist areas (see Kiss 2014b).

Given that the *t*-tests also showed a significant difference in terms of objective indicators between the employability of graduates staying within their field and those outside it, I attempted to identify the factors which had a significant influence on the length of time recent graduates spent finding their first job and on their net salaries. By a quantitative analysis I carried out a linear regression estimate on the significant influencing factors.

The regression model for the estimate of the time spent searching for a job by recent graduates:

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

where T = time to first job (months)

β_0 = constant

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

X_{sz} = individual factors,

X_k = course factors,

X_{kt} = course surplus factors,

X_{hi} = horizontal congruence factors,

X_{ma} = labour market macro factors,

X_{mi} = labour market micro factors,

X_{fi} = reputation of the higher education institution,

ε = other factors, unknown to us.

The model used to estimate the net salary of recent graduates:

$$Y_W = \beta_0 + \beta_1 X_{sz} + \beta_2 X_k + \beta_3 X_{kt} + \beta_4 X_{hi} + \beta_5 X_{ma} + \beta_6 X_{mi} + \beta_7 X_{fi} + \varepsilon$$

where W = net salary (thousand HUF/month), the other variables are identical to the previous

² I published my results in the International Journal of Education and Research, Vol. 2. No. 2.

To discover the differences between specialist fields I conducted the analysis of the time spent on job search in the 11 subject fields investigated previously, and through an analysis of the similarities and differences I tried to throw some light on the various characteristics of the different subject areas.

I applied binary logistical regression analysis to estimate the factors which significantly influenced congruence in different fields. The independent functions in both models:

$\beta_0 = \text{constant}$

$\beta_{i>0} = \text{th variable (i>0) non-standardised regression coefficient}$

$X_{sz} = \text{individual factors,}$

$X_k = \text{course factors,}$

$X_{kt} = \text{course surplus factors,}$

$X_{ma} = \text{labour market macro factors,}$

$X_{mi} = \text{labour market micro factors,}$

$X_{fi} = \text{reputation of the higher education institution,}$

$X_e = \text{other factors, unknown to us.}$

The dependent variable of the first model is a dummy variable created for convertibility (Y_K) which takes a value of 1 if, during the graduate's work, what has been learnt in the education process can be well, or very well, used, and a value of 0 if what has been studied is either not used, or only slightly used at work. The convertibility regression model:

$$Y_K = \beta_0 + \beta_1 X_{sz} + \beta_2 X_k + \beta_3 X_{kt} + \beta_4 X_{ma} + \beta_5 X_{mi} + \beta_6 X_{fi} + \varepsilon$$

where

$$Y_K = \ln \frac{P\{K=1|u\}}{P\{K=0|u\}}$$

$u = \text{the independent variables container } u = (X_{kor}, X_{nem}, \dots X_{int}) \text{ vector,}$

$K = \text{the dummy variable of convertibility (0 = not convertible, 1 = convertible),}$

The dependent variable of the other model is a dummy variable created for substitutability (Y_H), which takes a value of 1 if, in order for the graduate to fill the job, his or her own, or a similar subject area degree, is necessary, and a value of 0 if any degree is sufficient to fill the job.

The first regression model of substitutability:

$$Y_H = \beta_0 + \beta_1 X_{sz} + \beta_2 X_k + \beta_3 X_{kt} + \beta_4 X_{hi} + \beta_5 X_{ma} + \beta_6 X_{mi} + \beta_7 X_{fi} + \varepsilon$$

where

$$Y_H = \ln \frac{P\{H=1|u\}}{P\{H=0|u\}}$$

u = the independent variables container $u=(X_{kor}, X_{nem}, \dots X_{int})$ vector,

H = the dummy variable of substitutability (0 = not substitutable, 1 = substitutable),

Following the empirical testing of my hypotheses, I collate the results, and then express the new scientific results in the form of theses.

3. Research questions of the doctoral thesis

The main questions of the thesis:

What factors affect the employability of young graduates in Hungary?

To answer this we need to consult the international and Hungarian literature on the labour market, higher education and employability, and to be familiar with the models used to measure the objective and subjective indicators of employability. After considering the literature, and supported by the results of Hungarian and international empirical research I will attempt to analyse the data from the Hungarian DPR Recent Graduates (Diplomás Pályakövető Rendszer) to discover which factors influence the employability of young graduates. During the analysis special attention will be given to the congruence of specialist subject areas.

In order to complete the research question there are four sub-questions we had to answer. Each sub-question is linked to a hypothesis.

The related sub-questions:

- 1. How is the length of time which elapses between the student receiving an absolutorium^{3*} and getting his/her first job – the job-search time after graduation – affected by individual, course, and course surplus factors, when the micro- and macro factors which affect the subject congruence and reputation of the higher education institution are controlled for?**

To answer the question I model the time taken to find a job using the empirical results from the specialist literature. With the help of a linear regression analysis on the DPR Recent Graduates database for 2012 I identify those factors which significantly influence the job search time. The effect of the factors are by introducing the examination of controlled factors.

³ An absolutorium is a certificate that shows the student has completed all his/her courses at the university, and which entitles the student to proceed to the final exam, or to defend a dissertation.

- 2. How is the net salary of new graduates affected by individual, course, and course surplus factors, affected by individual, course, and course surplus factors, when the micro- and macro factors which affect the subject congruence and reputation of the higher education institution are controlled for?**

With the help of a linear regression analysis on the DPR Recent Graduates database for 2012 I identify those factors which significantly influence the net salary.

- 3. What similarities and differences can be discovered in the employability indicators of graduates in different fields, in terms of job search time and congruence of specialist field?**

I attempt to answer the question by analysing the job search time with the help of the regression model in individual specialist fields, to reveal any similarities and differences.

- 4. What factors influence the two sides of congruence in specialist fields, substitutability and convertibility?**

I carry out binary logistic regression analysis on the DPR 2012 database to identify the factors influencing congruence in specialist fields.

My hypotheses are the following:

Hypothesis 1: the factors examined which influence the time taken for recent graduates to find a job:

- **individual factors** include: job search time is shorter if there is someone in the family with a degree in a similar field,
- **course factors**; the job search time is shorter if the young graduate had better grades than the average for the institution, if he/she attained a degree at the end of the course, and if he/she took part in the compulsory work placement,
- **factors indicating course surplus**: the graduate finds a job more quickly if he/she has worked abroad before the end of the course, or undertaken specialist field-related work before the end of the course, or has advanced level language skills,
- **specialist or horizontal congruence**: a graduate finds work more quickly if he/she is filling a post which only involves work in his/her specialist field, or is

filling a post which involves work in his/her specialist or a related field, and also if he/she can make better use of the knowledge acquired at university in the workplace.

I carried out the analysis of the effect of the variables above, taking account of the following variables using the data available on the databases at my disposal:

- among the individual factors: age, sex and family situation,
- among the course factors: year of graduation and the way the course was financed,
- labour market macro-factors: employment rate and unemployment rate in the county of the institution in the year of graduation,
- controlled variables among the labour market micro-factors: the level of over-qualification at the firm (expressed in the number of employees), among the firm ownership variables: the presence of private ownership and foreign ownership,
- the job search time for graduates of previous years at the institution (on the basis of the DPR 2011 database).

Hypothesis 2: recent graduates' net salaries are influenced by

- **individual factors:** there is a positive influence on net salaries if there is anyone in the family with a qualification in a similar field,
- **course factors:** the net salary is higher if the young graduate had better grades than the average for the institution, if he/she attained a degree at the end of the course, and if he/she took part in the compulsory work placement,
- **factors indicating course surplus:** the graduate has a higher salary if he/she has worked abroad before the end of the course, or has undertaken specialist field-related work before the end of the course, or has advanced level language skills,
- **factors indicating course surplus:** the graduate has a higher salary if he/she is filling a post which only involves work in his/her specialist field, or is filling a post which involves work in his/her specialist or a related field, and also if he/she can make better use in the workplace of the knowledge acquired at university,
- **labour market micro-factors:** if the search time for the first job is shorter, this also goes with a higher salary.

I carried out the analysis of the effect of the variables above, taking account of the following variables using the data available on the databases at my disposal:

- among the individual factors: age, sex and family situation,
- among the course factors: year of graduation and the way the course was financed,
- labour market macro-factors: employment rate and unemployment rate in the county of the institution in the year of graduation,
- controlled variables among the labour market micro-factors: the level of over-qualification at the firm (expressed in the number of employees), among the firm ownership variables: the presence of private ownership and foreign ownership, being employed in the public sector, whether there was a period of unemployment following graduation,
- the job search time for graduates of previous years at the institution (on the basis of the DPR 2011 database).

Hypothesis 3: in the case of subject fields which are difficult to substitute, there is a more significant role for horizontal congruence in job search time than in the case of easily substitutable fields. In the case of easily convertible fields, the specialist congruence required for the area of work (which we can consider as the measure of substitutability) does not significantly influence the time needed for finding a job; for fields which are difficult to convert, however, it does.

Hypothesis 4: two aspects of the congruence of the specialist field can be distinguished; convertibility, i.e. to what extent it is possible for someone to find a job in another field with his/her degree, and substitutability, i.e. to what extent the post can be filled by someone with a degree in another field. Both aspects of the specialist field can be influenced by the following:

- **individual factors:** there is a greater chance of a recent graduate finding a job in the specialist field if there is anyone in the family with a qualification in a similar field,
- **course factors:** there is a better chance of congruence if the young graduate had better grades than the average for the institution, if he/she attained a degree at the end of the course, and if he/she took part in the compulsory work placement,
- **factors indicating course surplus:** there is a better chance of congruence if he/she has worked abroad before the end of the course, or undertaken specialist field-related work before the end of the course, or has advanced level language skills,

- **labour market micro-factors:** if the job search time is shorter, this has a positive effect on specialist field congruence, and public sector employees are better able to find work congruent with their specialisation.

I carried out the analysis of the effect of the variables above, taking account of the following variables using the data available on the databases at my disposal:

- among the individual factors: age, sex
- among the course factors: year of graduation and the way the course was financed,
- labour market macro-factors: employment rate and unemployment rate in the county of the institution in the year of graduation,
- controlled variables among the labour market micro-factors: the level of over-qualification at the firm (expressed in the number of employees)
- the job search time for graduates of previous years at the institution.

4. Hypotheses of the doctoral thesis

Of the factors that influence the job search time related to Hypothesis 1 of Question 1 of the thesis, the individual factors, the course surplus factors and the congruence of the specialist field were all confirmed, while the course factors were only partly confirmed.

Thesis 1: *The following factors influence job search time in the case of recent graduates:*

- a, individual factors: there is a positive influence on job search time if there is anyone in the family with a qualification in a similar field,*
- b, course factors: if the young graduate had better grades than the average for the institution, and if he/she attained a degree at the end of the course, this positively affects job search time, the work placement has no significant effect,*
- c, factors indicating course surplus: job search is shorter - there is a positive effect on job search - if the graduate has worked abroad before the end of the course, or undertaken specialist field-related work before the end of the course, or has advanced level language skills,*
- d, with graduates who find a job in a shorter time, we can observe a closer specialist field congruence, i.e. if a graduate finds a job more quickly, he/she has a better chance of work in his/her own field, while those who take longer to find a job have a greater chance of leaving their career path.*

Of the factors that influence the job search time related to Hypothesis 2 of Question 2 of the thesis, the factors affecting net salaries were only partly confirmed.

Thesis 2: *The following factors influence net salaries in the case of recent graduates:*

- a, individual factors: there is no significant influence on net salaries if there is anyone in the family with a qualification in a similar field,*
- b, course factors: the net salary is higher if the young graduate had better grades than the average for the institution, if he/she took part in the compulsory work placement this has a negative effect on salary, while if he/she attained a degree at the end of the course this has no significant effect on salary,*
- c, factors indicating course surplus: the graduate has a significantly higher salary if he/she has worked abroad before the end of the course, or has advanced level language skills, lower salary if he/she has undertaken not specialist field-related*

- work before the end of course while there is no significant effect if he/she has undertaken specialist field-related work before the end of the course,*
- d, specialist field congruence: knowledge acquired during the course and the chance to use skills at the workplace positively effect salaries; however, the effect of the level of congruence of the specialist field required at the workplace is not significant,*
- e, labour market micro-factors: a longer job search period results in lower salaries.*

There was confirmation for hypothesis 3, related to question 3 of the thesis, according to which in the case of specialist fields which are difficult to substitute, horizontal congruence has a more significant role in job search time, than with easily substitutable fields. In the case of easily convertible fields the specialist field congruence demanded by the workplace (which we consider to be a measure of substitutability) does not have a significant influence on job search time, while in the case of fields which are more difficult to convert there is a significant influence.

Thesis 3: *The variable of the specialist field qualification demanded by the workplace is at the same time a yardstick of substitutability, expressing the necessity of having a degree in one's specialist field, or a field related to it. The knowledge acquired during the course and the use of the skills acquired are examples of good convertibility. In the case of specialist fields which are difficult to substitute (IT, engineering, law, medical and health studies) specialist congruence (a workplace which can be filled by someone qualified in the graduate's field, or a similar field) is a significant factor. In the case of these specialist fields the aspect of substitutability within specialist field congruence has more explanatory power than in other specialist fields. In the case of fields which are difficult to substitute (IT, engineering, law, medical and health studies) the specialist field congruence significantly influences job search time. Subject substitutability plays a markedly large role in these fields, while the effect of convertibility is not significantly present. Among the easily convertible specialist fields we can list humanities and economic sciences; in these cases the knowledge and acquired skills result in an averagely positive usefulness (convertibility) regardless of the particular workplace in question.*

Hypothesis 4, related to question 4 of the thesis – the factors which influence both sides of the congruence of the specialist field (convertibility and substitutability) received only partially confirmation.

Thesis 4: *The following factors influence the two sides – convertibility and substitutability – of horizontal workplace congruence:*

a, *Knowledge acquired and skills result in greater usefulness, i.e. are accompanied by greater congruence in terms of*

- *individual factors: if there is someone in the family with a similar degree,*
- *course factors: if the graduate has better than average course grades, attains a degree at the end of the course, or has taken part in the compulsory work placement,*
- *course surplus factors: if the graduate has done specialist work related to the field during the course, or has advanced level language skills; if the graduate has done non specialist work related to the field during the course results in a significantly worse convertibility, work abroad is non significant,*
- *labour market micro-factors: being a public sector worker, or a civil servant, those spending longer on job search, however, are characteristically less likely to find congruent work, i.e., a longer job search time makes a change of career more likely.*

b, *An individual is significantly less substitutable, i.e. they work in a field which is closely related to their qualification,*

- *if there is someone in the family who has a similar qualification,*
- *if their course grades were better than the average, or if they attained a degree at the same time as the absolutorium, if they took part in the compulsory work placement programme is non significant,*
- *if a graduate acquires work experience during the course; however, there is non significant if the graduate has done non specialist work related to the field during the course or worked abroad and have advanced level language skills,*
- *if the graduate works in the public sector or is a public servant, then the time devoted to job search for the first job is accompanied by a less close congruence.*

5. Conclusions and directions for further research

The new scientific results of the thesis, which help to answer the main questions of the study:

1. The summary of the various approaches encountered during the familiarisation with the specialist literature on employability.
2. A regression model was set up with the help of the empirical results in the specialist literature, which as a result succeeded in identifying the factors which influence the job search time of young graduates (see thesis 1).
3. With the help of the developed regression model the factors influencing the net salaries of young graduates were successfully identified (see thesis 2)
4. The differences among the subject fields was mapped along the lines of the dimensions of convertibility and substitutability drawn up by Vámos (1989). The significant differences among the specialist fields were illuminated by the use of convertibility and substitutability as the indicators of specialist field congruence. Finding a congruent job has a greater effect on the job search time in subjects which are difficult to convert and to substitute, than in other subject areas. In this way the study throws light on how graduates in these specialist subject areas who are forced to change their planned career suffer a greater disadvantage in integration into the labour market than graduates in other subject areas (see thesis 3).
5. By examining the two dimensions of specialist area congruence the study was able to identify those factors which significantly influence the convertibility and substitutability of the specialist subject (see thesis 4).
6. The comparison of the specialist subject areas contributed to the checking of the current viability of Vámos' (1989) grouping, and shows that two areas should also be transferred into another group in terms of the dimensions of substitutability and convertibility.

The results and inter-relationships discovered in the study contribute to the expansion of the literature relating to employability, to a better understanding of the transition between higher education and the labour market, and to a better understanding of employment policy and educational policy decisions. The analysis of the employability

indicators shows that good study grades, the surplus produced during studies, and advanced level language skills are useful in achieving success in the labour market. Employers value candidates who can show a surplus performance, which is accompanied by both a shorter job search time and a higher salary. The recognition of these results is perhaps helpful to young graduates in that at the point when graduates enter the labour market, they encourage decisions about taking on employment which are well thought through and lead to success and satisfaction in the long term.

The study was not able to identify the effect on labour market success (in terms of job search time and salaries) of the reputation of the higher education institution. To answer this question it would be helpful if we could evaluate the role of institutions in the long term. Another interesting direction for research is how the variables of the models described in the study change over time. Following basic analyses there may be a way to discover how the division of the dimensions of convertibility and substitutability of the specialist areas into two groups (Vámos 1989) has changed over the last 25 years, how the contents of individual specialist areas have changed, and to what extent individual specialist fields are able to meet the demands of the workplace. During the data collection process for the DPR the questionnaire could also include various questions which would allow a better basis for discovering the factors leading to success in the labour market, such as, for example, the willingness to move, the willingness to commute and the role of connections.

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7. The candidate's publications

Publications

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- Kiss Zsuzsanna (2012): Miért TOP-egyetemek? *Proceedings of “Challenges and Lessons in Management” International Conference on the Occasion of the 40th Anniversary of the Foundation of the Department of Management and Enterprise* ISBN 978-963-473-593-9

Conference lectures

- 2012, 1 June “Vezetés és hatékonyság Taylor után 101 évvel” 2. Vezetéstudományi Konferencia Szeged. Előadás címe: Esettanulmány egy technológiai innováció bevezetéséről.
- 2012, 11-12 October. Kihívások és tanulságok a műszaki menedzsment területén nemzetközi konferencia Debrecen. Előadás címe: Miért TOP-egyetemek?

- 2013, 31 May. “Vezetés és hatékonyság Taylor után 102 évvel” 3. Vezetéstudományi Konferencia Szeged. Előadás címe: A Debreceni Egyetemen végzett diplomások foglalkoztathatóságának vizsgálata.
- 2013, 13-14 June. Debrecen, HuCER2013 Hungarian Conference on Educational Research. Előadás címe: A foglalkoztathatóság kérdései a Debreceni Egyetemen végzettek esetében.
- 2013, 10-11 October. Debrecen, Kihívások és tanulságok a műszaki menedzsment területén nemzetközi konferencia. Előadás címe: Foglalkozások illeszkedése a Debreceni Egyetemen végzettek esetében.

The research was conducted in the framework of the TÁMOP-4.2.4.A/2-11/1-2012-0001 “National Excellence Programme – Developing and operating a support system for Hungarian students and researchers” project of special importance in the convergence programme. The project was implemented with the support of the European Union and received joint financing from the European Social Fund.

Notes