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AlmaLaurea Working Papers - ISSN 2239-9453

ALMALAUREA WORKING PAPERS no. 7

September 2011

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Changes in Transition of Czech HE Graduates in the Context of Economic Crisis

by

Radim Ryška^{*}, Martin Zelenka^{**}

Abstract

As shown by the outcomes of REFLEX 2006, the behaviour of Czech graduates and the factors concerning their transition from school to work in the mid of the last decade have many similarities but also some differences when compared with graduates from other European countries. The paper describes how some factors previously different have changed within the last four years and what factors have been most affected by the crisis. The focus is mainly on the changes in the modes of teaching at higher education institutions and on factors that describe a professional success of graduates.

A new data collection called REFLEX 2010 was conducted in the Czech Republic in 2010. As many questions are identical and population of students is defined in the same way, i.e. 4 or 5 years after graduation it enables to compare what has changed between 2006 and 2010. More than 8.5 thousand of electronically completed questionnaires were collected in 2010. Thus it is possible to compare how situation of graduates who entered the labour market in 2005 or 2006 has changed in the first years after entering labour market to those graduates who entered labour market in 2001 or 2002 whose situation during their establishing at the labour market was not affected by the economic crisis.

1. Introduction

The employability of graduates and their transition to the labour market depend to a large degree on the overall economic situation. The economic downturn in the recent years has had a major impact on the entire economic system and, understandably, also affected the position of graduates at the labour market. In terms of macroeconomic indicators this development is apparent in the increased rate of unemployment both for the population as a whole and for young graduates. Transition to the labour market is a very complex process for young people, as there is a large number of interactions that are at play. The economic crisis has worked as an external factor to the employability of graduates in the labour market. Moreover, it has also had an impact on other links between education and the world of labour.

On the basis of two studies concerned with the transition of graduates to the labour market and their evaluation of the qualifications acquired, we shall assess the factors and links most affected by the economic crisis. The first study is the REFLEX international project implemented in 2006. As part of this project, tertiary education graduates of 2001 and 2002 assessed their transition to the labour market, their employment position and the education

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they had achieved. A similar sample of graduates 4-5 years after graduation is covered by another survey entitled REFLEX 2010 that was carried out in the Czech Republic in 2010. The graduates in the first study (i.e. those who completed education in 2001 and 2002) entered a relatively stable labour market where the economic effects and the overall situation did not change by 2006. Those who graduated in 2005 and 2006 entered a similar labour market that, however, was severely hit by the economic crisis a few years later. The initial years of their professional career were therefore different.

We shall assess the different labour market situations during the initial years in employment for both groups of graduates. For this purpose we shall consider selected characteristics of the study programme and modes of teaching in relation to the graduates' employment, as well as the changes in those factors that influence the graduates' professional success. By means of a regression analysis we shall assess the characteristics of the relevant study programmes and the modes of teaching, and we shall see how they affect employability. The breadth of focus shall be considered along with the focus on future career prospects, and the degree of prestige of the programme from an academic perspective. Modes of teaching shall be assessed based on various factors such as written assignments, oral presentations, project- or problem-based learning, group assignments, work placements and internships, facts and practical knowledge, participation in research projects, lectures, theories and paradigms and teacher as the main source of information. The calculations shall also cover the differences in the graduates' individual characteristics such as their efforts and study results. Attention shall also be paid to the difference between the fields of study and types of education. The calculations shall also include basic demographic characteristics such as age and gender. When assessing professional success, objective indicators (income and the International Socio-Economic Index of Occupational Status – ISEI) and subjective indicators (the graduates' own assessment of the appropriateness of their qualifications and job satisfaction) shall be used.

2. Background

According to Teichler (2009), the main focus areas of the current research into the employability of graduates, their transition from education to work and their evaluation of the education acquired include the study conditions, the modes of teaching, an improved understanding of career success and a better conceptual grasp of the relationship between tertiary education and the world of labour. At present, researchers must commit themselves to establishing consistent methods of measuring and identifying factors related to study conditions and modes of teaching, including the curricula, that are important in terms of transition from tertiary education to the labour market and in terms of career. While studying various systems researchers normally make use of the existing instabilities to which the systems must respond, thus making it possible to study the ways in which the systems behave and the mutual relationships between the system elements and processes. The economic crisis has brought about such instability in the system of graduates' employability. The nature of this instability and the ways in which will manifest itself in the transition of graduates to the labour market and their evaluation of the qualifications they acquired will be studied in the following years, as the relevant data become available.

The effects of the economic downturn have so far been reflected mainly in literature that concerns the economic aspects of the crisis, its influence on the theories and methodologies of academic research in the area of economic theories, or in literature concerning some aspects of relations of the crisis with labour market (e.g. Lawson 2009, Clegg 2010, Mendius 2010, Klos&Schafer 2010). However, too little time has elapsed so as to provide an appropriate database for detailed analyses of the impact of the crisis on graduates' employability. Although some new information is available (e.g. Flash Eurobarometr, "Employers'

perception of graduate employability”, 2010) it did not analysed the impact of the economic crisis. Of course, there is a base of knowledge that may be built upon, since, in general, the point is to evaluate various aspects of the education obtained, the factors affecting transition to the labour market and the factors that impact on graduates’ employability.

Over the previous decades, when the research into the employability of graduates has been developing, many links between education and the world of labour were identified. For example, as early as 1983 Wilson and Smith-Lovin identified, as part of their cross-sectional approach, a link between the employability of graduates and the reputation of the institution they studied. In 1999 Rosenbaum et. al published findings about the dependence between employability and the institution’s social network. Moreover, Reimer et. al., for example, revealed a relationship between employability and the field of study. Other authors such as Kerckhoff in 2001, Psacharopoulos & Patrinos in 2004 or Teichler in 2007 pointed to the effects of a study programme on individual employment opportunities, the professional status and earnings. Gradually, the very important concept of graduates’ professional success as a function of the education acquired has been developing. Within one group of approaches a reduced list of labour market characteristics is included into the concept, such as earnings, the professional status, the range of occupations available depending on the qualifications acquired, or employment security (e.g. Heijke, Meng 2006, van der Velden, Wolbers 2007). Other approaches attempt to capture, in addition to the aforementioned characteristics, the factors that point to the good prospects of an occupation and a possible further career development. This means that the relevant analyses also include variables characterising the stage of transition from education to work, the degree to which the knowledge and competencies acquired are used, the corresponding nature and range of the competencies, or perhaps also the work features such as work autonomy and satisfaction with the profession. Another important characteristic is the scope of continuing education (e.g. Teichler 1999, Schomburg 2007, Vermeulen and Schmidt 2008). When formulating the concept of professional success as part of our analysis, we also include other variables so as to make it possible to assess the impact of the crisis on a larger number of the characteristics under examination.

A major part of research focuses on the aforementioned relationship between graduates’ employability and education-related characteristics. This in part concerns the outputs of education that are reflected in how the graduates are “equipped” for the labour market (e.g. the competencies acquired). Moreover, this concerns the characteristics of the modes of education and conditions that affect employability. Attention was at first paid primarily to the level of educational attainment, which points to clear advantages for people with more advanced levels of education. Gradually, the influence of other characteristics was also examined: the field of study, study programme, the educational conditions and nature of teaching, and the competencies acquired. Formulations of concepts are gradually becoming more complex. However, when considering study and institutional characteristics it turns out that, in order to use them properly in the calculation models, it is necessary to consider other characteristics at the point of entry of fields of study, programmes or institutions such as their level of selectiveness. The reason is that some effects may be the result of a different composition of students who enter the given institution or study programmes (Teichler 2007, Ryška 2008). In addition to selectiveness at the point of entry to tertiary education, the characteristics of the labour market where the graduates are heading after graduation are also important. For example, many research studies have provided evidence that the nature of the regional labour market may be much more important than the differences between the features of the study programmes completed (van der Velden, Wolbers 2007).

One important area of research covers the curricular aspects of higher education studies and their link to the employability of graduates. In this way researchers attempt to present specific

findings to support discussion about the extent to which higher education should be general and to what extent it should be profession-specific. However, the outcomes of this debate and research are not clear-cut. The growing emphasis put on general competencies is associated with the fact that knowledge becomes outdated at an increasingly faster rate, which stresses the importance of lifelong learning, and with the fact that the interdisciplinary nature of most fields is increasingly more pronounced. The high number of tertiary education graduates leads to an increased accent put on flexibility and the capacity to address problems in other fields. At the same time, however, there is a continuing need for specific competencies, as the progressing specialisation of many disciplines requires profound expert knowledge. Tertiary education curricula are therefore studied, in relation to graduates' employability, in the following dimensions: the degree to which they prepare for the creation of new knowledge and to what extent the existing knowledge is merely passed on and used; the extent to which the curriculum is related to a specific profession and, if it is profession-oriented, what is the degree of this specialisation; is the curriculum focused on one discipline or a combination of a number of disciplines; are there efforts to influence the student's personality development; what is the breakdown of the content of study in terms of length and levels, or is there preference for division into short profession-oriented programme and long theory-based programmes (e.g. Teichler 2009). The same dimensions are considered as part of evaluation of the nature and aspects of teaching that attempts to cover the curricular aspects of education and their link to graduates' employability (e.g. Allen & van der Velden 2007, Zelenka 2008). The competencies that are subject to research are therefore most frequently divided into two categories: academic (general) and field-specific. The academic competencies include, for example, learning competencies, reflexive thinking and self-evaluation, problem solving, analytical competencies and the capacity to document ideas and information. Field-specific competencies include theoretical knowledge pertaining to a particular field and field-specific methodological knowledge and skills (Heijke, Meng 2006).

3. Data and methodology

The data on the employment situation of higher education graduates and on how they rate the education they acquired was obtained as part of two projects. In 2004-2007 the REFLEX project (The Flexible Professional in the Knowledge Society: New Demands on Higher Education in Europe) was implemented in 15 European countries, including the Czech Republic, and Japan. The targeted age cohort were individuals who completed tertiary education in 2001 and 2002. The sample set was selected by means of combining a quota and random selection. For each higher education (HE) institution and faculty the required number of respondents was determined, and they were selected on a random basis. The data was collected between March and June 2006. Questionnaires were sent by post with an envelope and the return address. Overall, nearly 6,800 filled-in questionnaires were received, making the rate of return 27.2%.

In 2010 a national project following upon the REFLEX project was implemented. It was entitled REFLEX 2010: The employability and labour market situation of higher education graduates and evaluation of the higher qualifications acquired. The project also made use of the most recent experience related to similar projects implemented in Germany and Austria, as well as findings from the Hedesco international project (8 countries of Southern and Eastern Europe) and the Proflex project (6 South American countries). The survey carried out as part of the REFLEX 2010 project concerned all tertiary education graduates of 2005-2006 – i.e. 4-5 years after graduation – which made the sample of respondents correspond to that in the previous survey. The sample was also selected in the same way – i.e. via combination of the quota and random selection – a targeted number of respondents was set for each HE institution and faculty and the respondents were then selected at random. The data was

collected between May and September 2010. Overall, 20 public, 1 state and 3 private HE institutions participated in the survey. The questioning took place with the use of a web-based application. More than 8,600 filled-in questionnaires were obtained. The rate of return was 19.6%.

The 2010 questionnaire consisted of ten main sections. In the first section concerning higher education studies the graduates stated all HE institutions, faculties and study programmes they completed. They marked one of the programmes to be the most important for their professional career and it was this programme there referred to when answering the following questions. In the second section dealing with education prior to entering an HE institution and work experience during studies the graduates mentioned all secondary, higher professional and other studies they completed before higher education. They evaluated their study achievements at secondary level, stated the length of their work experience before and during higher education, and commented on the way in which the work experience was related to their studies. The third section concerned evaluation of higher education studies. The graduates assessed various features of the study programme they underwent (vocational orientation, freedom in composing their own study programme, difficulty of the studies) and the methods of instruction (the proportion of lectures, group work, participation in research projects, etc.). They also provided information about the range of programmes offered and study conditions (coordination of courses, organisation of examinations and studies, communication and work with foreign language literature, professional standards of teaching, contact with teachers). Moreover, the respondents evaluated the teachers' quality, mentioned the amount of time they devoted to studies and other activities, and expressed their views on the links between their studies and practice and their expectations regarding employment opportunities (the relevance of the content of education, preparation for employment, support in job seeking or starting a business/self-employment, the proportion of experts from industry involved in teaching, the opportunities for acquiring key competencies). They also answered the question of whether or not they would embark on the same educational path again. There is extensive space (24 items) in the questionnaire for evaluation of the competencies the graduates acquired during higher education. The fourth section focused on transition from education to employment. The respondents stated how they obtained their first employment, when they began to seek it and how long it took them to find it, and what contributed to their success in this respect. The fifth section concerned the graduates' first employment and they filled in information about their first occupation (level 4 of ISCO) and economic sector (level 2 of NACE), the type of employment contract, and the average working hours and pay. They also mentioned what they thought was the most appropriate qualification and field of education for this job and assessed whether and how their knowledge and skills were used in their first employment. In the sixth section they provided brief information about the total period of work since graduation, the number of employers and, possibly, unemployment. The seventh section covered their current job: the respondents filled in data about their current occupation and about the economic sector, stated whether they had a business, how much time they spent at work and what their income was. Furthermore, they filled in information about the region where they worked, the size of the organisation and about whether they held a management position. The graduates also stated the most appropriate qualification and field of education for this work and evaluated the degree to which their knowledge and skills were used and how they were satisfied with their current job. In the eighth section of the questionnaire, similarly to their evaluation of higher education, the graduates mentioned their competencies (e.g. general, specialist theoretical and methodological knowledge and the capacity to use it in practice, language, mathematical and computer skills, problem solving, creative thinking and approaches to work, communication, decision-making, organisational and management skills, teamwork, the capacity to assume responsibility and to act and think

in economical terms, learning skills, the capacity to work in an international environment, etc.), and they compared these with the requirements of their current job. In the ninth section the respondents expressed their views on certain job features (independence, security, level of pay, working conditions, the use of their potential, relationships at the workplace, social status, sufficient amount of free time, etc.). They assessed the degree to which they were satisfied with their life, job, and economic and family situation. The final, tenth section comprised basic personal data such as sex, year of birth, citizenship, place of residence while in the first job and at present, the time spent abroad due to work and studies, number of children, and the parents' education and occupation.

The following analyses make use of the data acquired for the Czech Republic as part of the REFLEX AND REFLEX 2010 projects. The resulting data sets have been weighed, using standard statistical procedures, so as to be representative for higher education graduates in 2001/02 and 2005/06. The following characteristics were used as the weights: sex, the faculty that provided the studies (or HE institution if the institution has no faculties) and type of study programme (Bachelor, Master, Doctoral). Moreover, 14 groups of fields of education were set up for the purpose of analysing the differences among various fields¹.

4. Tertiary Education Graduates in the Czech Republic

The shift towards mass higher education and the economic downturn were two major factors that affected tertiary education graduates' transition to the labour market and their employment situation in the 2nd half of the last decade. While most developed countries launched the so-called "massification" of higher education more than 40 years ago, in the Czech Republic the number of higher education students began to increase significantly as late as after 1989. However, it was the introduction of so-called structured studies in 2001 that was the real turning point. The introduction of structured studies was the result of an amendment to the Higher Education Act that triggered the actual implementation of the Bologna Declaration signed by higher education authorities of 25 European countries in 1999. However, in view of the length of higher education studies major increases in the number of graduates have only been apparent for some 8 years now.

Over the last few years the Czech Republic has been among the countries that show the most rapid increases in the number of tertiary education graduates. For the sake of comparison, there is an apt indicator pointing to the proportion of tertiary education graduates in the relevant age cohort (where only the first higher education diploma is considered for each individual). The graduation rate measured in this way was only slightly over 15% in 2002, but by 2006 it increased to more than 29%. This increase continued and in 2008 the Czech Republic approached the average of developed countries (OECD, 2010) with nearly 36%, and this proportion has been growing since then.

Along with the increasing graduation rate there is also an increase in the absolute number of higher education graduates. In 2010 there were 2.5 times more graduates in the Czech Republic than 8 years ago when the figure was some 30,000. In 2006 it was as many as

¹ When setting up the groups account was taken, above all, of a sufficient level of representation of each group in both sample sets, while applying level 2 of the Classification of Basic Branches of Education comprising 43 groups of fields. The result is 13 groups: Natural sciences; Computer science; Engineering, mining and metallurgy; Electricity and electronics; Architecture and construction; Other technical sciences (Chemical and food engineering, transport and communications etc.); Agriculture, forestry and veterinary; Healthcare, medicine and pharmacy; Humanities; Economics; Law; Education and sport; Arts. The 14th group is entitled "Other" and contains data mostly from those respondents who were not able to choose from the groups offered. In most analyses we do not include this group for its lack of specification, but it is made good use of in the final regression analysis.

50,000. This was mainly due to the steep increase in the number of graduates of Bachelor programmes (from less than 8,000 in 2002 to over 23,000 in 2006). However, approximately 65% of these continued studying in 2002-2006. Therefore the number of those who entered the labour market grew somewhat more slowly than the total number of graduates. Even so, the number of graduates entering the labour market in 2006 was 35% higher compared to 2002, and in 2010 it was 95% more than in 2002 (SIMS, 2002 - 2010).

The full impact of the global economic crisis that broke out in the USA in December 2007 hit the Czech Republic particularly in 2009. One of its key manifestations was a major increase in the rate of unemployment that also concerned higher education graduates. The number of unemployed with HE degree in the Czech Republic went up from less than 11,000 in mid-2008 to 21,600 in mid-2010, while it peaked in the first quarter of 2010 (nearly 28,000). The unemployment rate for people with HE degree was 1.5% in mid-2008 and one year later it was 1.9%. In the first quarter of 2010 it was as high as over 3% and it dropped to 2.4% in the second quarter of 2010. This development is principally in line with the overall rate of unemployment in the CR and also in the European Union where in most countries the effects of the economic downturn on unemployment began to be felt in the course of 2009 and came to a head in the first quarter of 2010. On average, the overall rate of unemployment in the EU countries increased from 6.9% in mid-2008 to 9.0% in mid-2009, and in mid-2010 it was 9.7%. The rate of unemployment for people with HE degree increased from 3.7% to 4.9% and then to 5.2% over the respective periods (Koucký, Zelenka, 2010).

The rate of employment among recent graduates increased constantly until 2008. The economic crises halted this trend. In 2008 there were less than 2.4% unemployed graduates within 6-12 months of graduation, in 2009 it was more than 2.8% and in 2010 the figure reached as high as 4.2%. To an extent this development was the result of the overall labour market situation and changes in unemployment while the impact on HE graduates was not much different compared to school leavers at lower levels of education. The only difference was that the former felt the effects a little later. While between April 2008 and April 2009 there was a particularly large increase in the number of unemployed leavers of secondary schools without “maturita” (i.e. leaving examination), one year later there was a faster increase in the number of unemployed “maturita” certificate holders and HE graduates. As the files of labour offices showed at the end of April 2010, the number of recent graduates who joined the pool of jobseekers increased by over 97% over the previous two years, the figure for “maturita” holders was roughly 105% and the number of unemployed secondary school leavers without “maturita” increased by nearly 122%. This major increase in the number of recent graduates registered at labour offices as unemployed confirms, to a large degree, the general truth that, during economic crises, graduates are among those most at risk of unemployment (Koucký, Zelenka, 2010).

The unemployment of young higher education graduates in the Czech Republic in the mid-2000s was among the lowest in Europe. The graduates would take up professional jobs that corresponded, to a large degree, to their qualifications. The proportion of those who entered occupations in ISCO 1 and 2 categories was slightly above the average compared to other European countries. However, as the proportion of tertiary education graduates gradually increases, the same effect may be observed in the CR as in many developed countries – i.e. that there is also a major increase in the proportion of graduates entering ISCO 3 and ISCO 4 occupations. This is connected with the fulfilment of expectations the graduates have when entering the labour market. There is, of course, a connection to the decision to study that young people make before taking up higher education, knowing that studies pay off and having an idea concerning their future career. The individual returns to education measured in terms of the level of employability and pay are still very high in the Czech Republic compared to other developed countries. This rate of return will gradually decrease along with

an increasing number of individuals with tertiary qualifications. This is already being felt in that, for example, the difference between the pay levels for higher education graduates and those for people with lower qualifications is no longer enlarging (the contrary is actually the case), or that people with tertiary qualifications begin to enter occupations with a lower status. However, the cultural capital obtained through tertiary education will continue to be of high value, as education is valued by the Czech population in the same way as in other European countries where the advantage of tertiary degrees is far less significant as compared to the period before the massification process.

Various characteristics of REFLEX 2010 survey show that tertiary qualification holders are active in relation to their employment and that they pay attention to the developments both in education and at the labour market. They are more aware of the stiffening competition at the labour market and reflect on employability requirements. For example, work experience is valued by employers and it represents a comparable advantage in job seeking. 33% of graduates in the mid-2000s had work experience related to studies before entering higher education (68% had work experience unrelated to their studies), while at the beginning of the decade the figures were 27% and 63% respectively. The shift towards more effective behaviour as regards career prospects is also demonstrated by an increase in the proportion of students who had study-related work experience during their studies (from 50% to 59%). As distinct from this, the proportion of those who had a job during their studies that was not related to their education dropped from 68% to 64%.

One important dimension of graduates' employability is their flexibility. When entering the labour market they must cope with changes affecting employment in their job, in the relevant occupation and the economic sector. The changes are caused by their vertical or horizontal shift within the system of professions or economic sectors. The changes may concern employment contract terms and commencement or completion of self-employment. While in the early 2000s 12% of graduates entered the labour market as self-employed and after five years this proportion was 14%, in the mid-2000s 13% of graduates entered the labour market as self-employed (or employed and running their business at the same time), while at present this figure is 16%. 32% of graduates had a temporary employment contract when they entered the labour market at the beginning of the 2000s, and five years later this figure was 13%. For both these figures the Czech Republic ranks nearly the lowest in terms of international comparison. For graduates from the middle of the decade the situation did not change very much: 34% of them had a temporary contract in their first job and at present the figure is 17%. This points to a small increase in the number of temporary contracts. However, it is necessary to take account of legislative changes that have supported more flexible forms of employment.

The level of flexibility may also be assessed by means of comparing the proportions of graduates who change their occupation in the initial years of employment. This characteristic depends, to a degree, on the national situation and the traditions of individual countries. In the mid-2000s the Czech Republic ranked below the average, in terms of international comparison, as 29% of them have changed occupation in the first five years of employment. However, in France and Germany only 26% of graduates changed their occupation over this period, and in Austria the figure was 29%. On the other hand, the proportions were 43% in the UK and 37% in the Netherlands. Over the last five years the proportion of those who changed their occupation increased by roughly 3.5% in the Czech Republic, which may point to a moderately increasing level of flexibility at the labour market. Similarly, some 30% of Czech HE graduates changed their employment in another sector, which is slightly above the international average, and this figure has not changed over the previous years.

5. Modes of Teaching and Learning at Higher Education Institutions

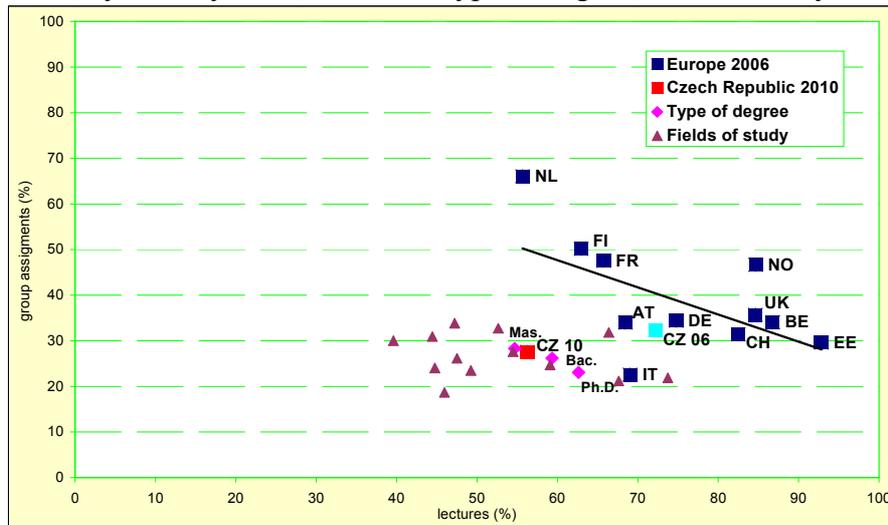
One of the main tasks of this text is to answer the question as to the way in which teaching modes at Czech HE institutions differ from those elsewhere in Europe, and what changes have taken place in this respect over the last four years. This chapter also prepares background for answering the question about the extent to which the modes of teaching and acquiring knowledge and competencies during studies influence further career success. The set of questions asked both as part of REFLEX AND REFLEX 2010 may well serve these purposes. The principal question was: “To what extent were different modes of teaching and learning stressed during higher education?”² The respondents could use a 5-point scale ranging from 1 (Not at all) to 5 (To a very high extent). While in 2006 there were 11 such questions, in 2010 there were 12. What is important is that ten of them were identical in both surveys and these were used for the analysis². The following text presents, as much in line with the final report on REFLEX as possible (Allen and van der Velden, 2007), the percentage of graduates who answered 4 or 5 on the 5-point scale in scatterplots of the related pairs of dimensions. The position of the selected countries that participated in REFLEX is always marked, and so is the position of the Czech Republic as derived from the answers of the graduates as part of REFLEX 2010. In order to show the variability of the modes of teaching at various types of institution the types of study programme (Bachelor, Master and Ph.D.) and fields of education are also stated.

The first graph illustrates the extent to which emphasis is placed on lectures and group assignments. We can see that there is a negative correlation between the two modes of teaching in that in the countries where lectures are more accentuated there is normally less emphasis put on work in groups and vice versa. As concerns the Czech Republic, in 2006 there was a roughly average level of accent put on lectures in terms of comparison with other countries. Relatively little preference was given to group assignments. Over the last four years there has been a relatively significant decrease in the emphasis put on lectures, which, however, has not resulted in an increased preference for work in groups. In other words, while the stress placed on lectures reached the level shown by the Netherlands in 2006, the emphasis on group assignments was far lower in the CR than it was in all countries examined in 2006 except for Italy. Moreover, we may expect that, in the meantime, there has been a further shift towards accentuating group-based teaching in these countries.

² The following ten modes of teaching/learning are concerned: lectures; group assignments; participation in research project; internships, work placement; theories and paradigms; facts and practical knowledge; teacher as the main source of information; project and/or problem-based learning; written assignments; oral presentations by students.

Figure 1

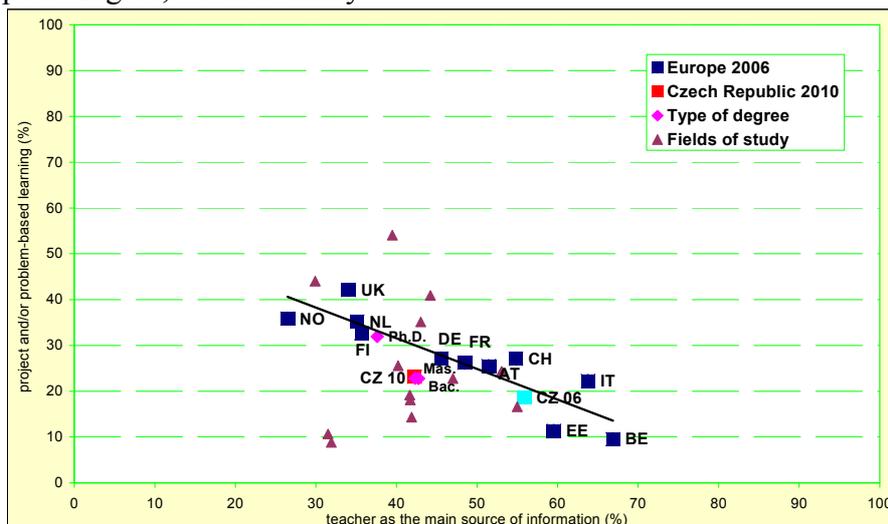
Mode of teaching: Extent to which lectures versus group assignments were emphasized in the study programme, by country 2006, CR 2010, type of degree, fields of study



A similar relationship as that between the lectures and group assignments in terms of emphasis may be observed between the ‘teacher as the main source of information’ mode and project and problem-based learning. In 2006 the Czech Republic was among the countries where the role of the teacher was far more important than the role of projects and problem-based learning. As with the previous correlation, there has also been a relatively large change – in this case the abandonment of the traditional mode (the teacher) has been offset, to a degree, by more advanced modes (projects and problem solving).

Figure 2

Teacher- or student-centred: Extent to which the teacher as main source of information versus project- or problem-based learning was emphasized in the study programme, by country 2006, CR 2010, type of degree, fields of study

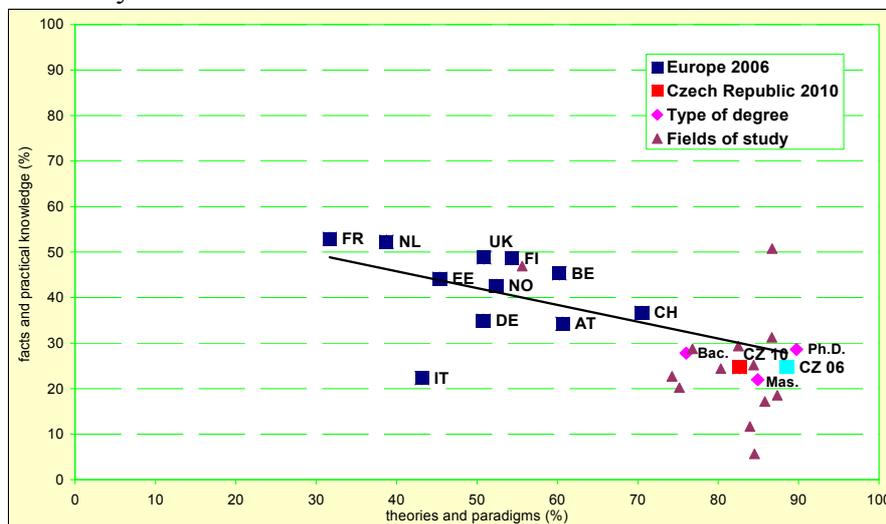


It is not only the mode of teaching but also its content that is important. The main dimensions in this respect are focus on acquisition of theoretical knowledge on the one hand, and emphasis on training and acquisition of practical knowledge and experience on the other

hand. The Czech Republic shows, over the long term, a significant preference for theories and paradigms, and the 2006 data confirm this more than clearly. In 2006 nearly 90% of graduates agreed that the emphasis placed on theories during their studies was significant (answers 4 and 5 on a 5-point scale). In other countries the average was less than 60%. On the other hand only some 25% of graduates agreed there had been stress placed on practical knowledge and skills – i.e. a far smaller proportion compared to other countries. Although this fact has been criticised in the Czech Republic for quite some time, the emphasis put on theoretical knowledge has only slightly decreased and the stress placed on practical knowledge has remained virtually the same. The difference between the CR and the rest of Europe is so large that only the fields that would hardly do without practical focus (Cultural sciences and arts; Healthcare, medicine and pharmacy) can compare with what is common in Europe in terms of emphasis placed on practical knowledge.

Figure 3

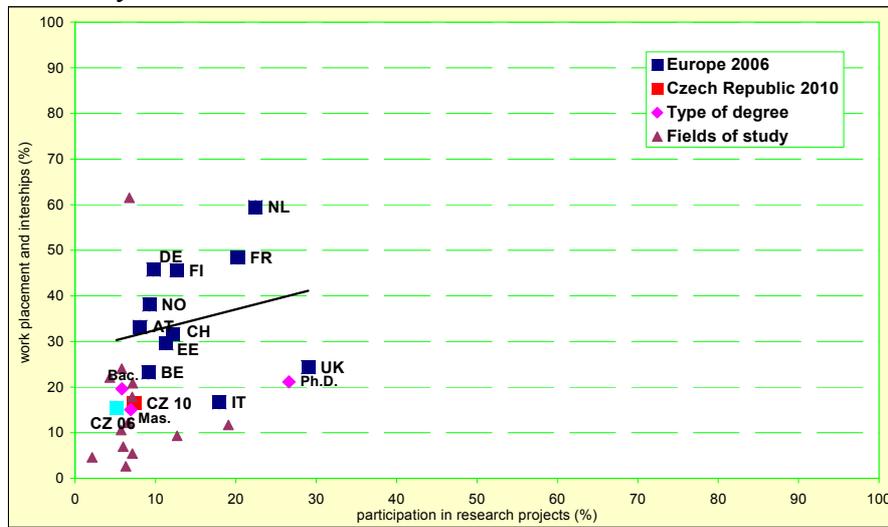
Knowledge focus: Extent to which the theories and paradigms versus facts and practical knowledge were emphasized in the study programme, by country 2006, CR 2010, type of degree, fields of study



There are several ways of acquiring practical knowledge and skills. The main approaches a higher education institution may use for this purpose are work placements/internships and participation in research projects. While the former approach to gaining practical knowledge is important particularly in practice-oriented fields of study, the latter is of major importance for future researchers and scientists. With regard to what the previous graph suggests, it is hardly surprising that the Czech Republic lags far behind other countries for the emphasis placed on both work placements/internships and participation in research projects. Moreover, there has been virtually no positive development over the last four years. Most students experience a larger degree of participation in research projects as late as during Ph.D. studies. It is only in healthcare, medicine and pharmacy that work placements and internships are more extensively used as a way of passing on practical skills and experience.

Figure 4

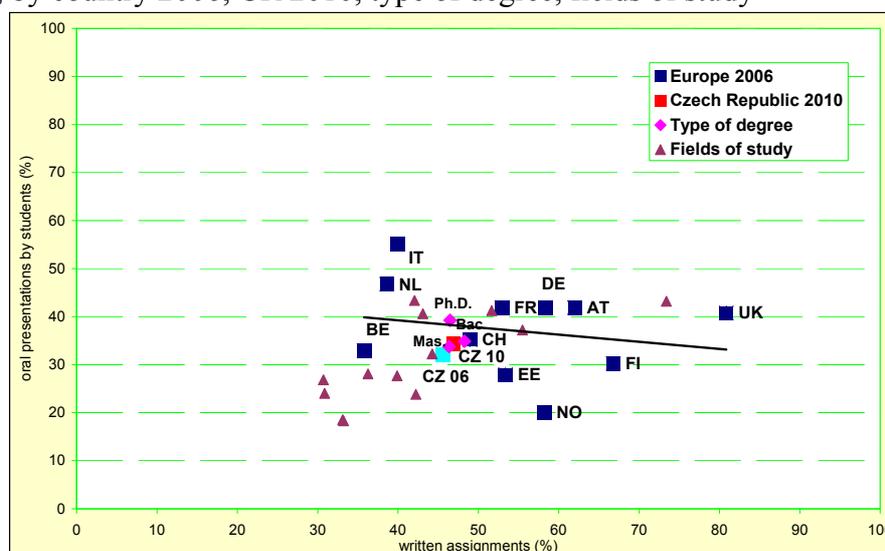
Experience focus: Extent to which participation in research projects versus work placements or internships were emphasized in the study programme, by country 2006, CR 2010, type of degree, fields of study



The last two comparable issues in REFLEX and REFLEX 2010 concerned the degree of emphasis placed on the development of students' own written materials as opposed to oral presentations. Despite the difference between these approaches the international comparison does not seem to prove there is any correlation between the level of accent put on written assignments and that placed on oral presentations. One interesting point is that this does not hold true for the Czech Republic, since the higher the emphasis there is on written assignments, the more stress is placed on oral presentations. Both these approaches are quite extensively used particularly in theory-oriented fields such as humanities, natural sciences and economics. As for comparison with other countries, in 2006 the Czech Republic was still characterised by a tendency to stress written assignments, whereas this emphasis has decreased quite significantly over the last four years and oral presentations are now given a little more preference. If we look at international comparisons, we see that in both of those aspects the Czech Republic is around the European average and there are no significant changes in the last four years.

Figure 5

Extent to which written assignments versus oral presentations were emphasized in the study programme, by country 2006, CR 2010, type of degree, fields of study



In view of the need for better coherence and reduction of this large number of modes of teaching a factor analysis was applied to both sample sets. A similar analysis was carried out using the CHEERS project data by Harald Schomburg (Schomburg 2007) who extracted 4 factors out of 12 very similar items – vocational orientation, individual learning, teacher centered and theory. As for the analysis of Czech data of 2006 and 2010, reduction to only 3 factors turned out to be more appropriate, but the results are similar to those obtained by Schomburg. The first two factors are the same – vocational orientation and individual learning. The third factor basically combines the other two Schomburg’s factors. A similar perception of the role of a higher education teacher and the teaching of theory points to the fact that the teacher, at least in the Czech environment, is seen mainly as a source of theoretical knowledge. The following table shows the results of the factor analysis of both sample sets of data.

Table 1 Modes of teaching and learning at higher education institutions, results of factor analysis, matrix of factor loadings, CR 2006 and 2010

	2006			2010		
	Individual learning	Vocational orientation	Theory	Individual learning	Vocational orientation	Theory
Written assignments	0,789	-0,120	0,104	0,788	-0,084	0,120
Oral presentations by students	0,708	0,143	0,107	0,746	0,125	0,092
Project and/or problem-based learning	0,661	0,252	-0,165	0,651	0,304	-0,186
Group assignments	0,455	0,335	-0,106	0,449	0,413	-0,085
Internships, workplacement	-0,001	0,821	0,086	-0,029	0,806	0,085
Facts and practical knowledge	0,126	0,804	-0,072	0,119	0,818	-0,056
Participation in research projec	0,362	0,552	-0,118	0,349	0,530	-0,069
Lectures	-0,084	0,033	0,713	-0,038	0,083	0,749
Theories and paradigms	-0,009	-0,077	0,735	0,069	-0,129	0,697
Teacher as the main source of information	0,071	-0,035	0,592	-0,006	-0,005	0,590
% of variance	19,3	18,4	14,9	19,4	19,1	14,7
% of cumulative variance	19,3	37,7	52,6	19,4	38,5	53,3

Note.: Principal component analysis, varimax rotation.

6. Professional Success

The professional success of higher education graduates may be described and assessed by means of a number of indicators. Many studies only take account of objective measures such as the employee status or income level. These approaches ignore, to a degree, the fact that graduates may have different ideas about their career as well as different values and preferences that are very much influenced by other factors such as the level of job autonomy, job security, further development opportunities, etc. In principle, we may distinguish two types of indicators for the purpose of identifying the level of professional success – objective and subjective. The objective indicators include, in addition to the employee status and income level, the time spent looking for the first job, the period between graduation and taking up this job, and various measures attempting to provide an objective picture of the job's qualification requirements and social status. The subjective indicators may include, apart from the three ones mentioned above (job autonomy and security and further development opportunities), the following: the use of knowledge and competencies in job, the appropriateness of the job in view of the individual's qualifications, the overall level of job satisfaction and further career prospects.

A total of four indicators (two objective and two subjective) were selected and calculated from the REFLEX and REFLEX 2010 data in order to assess the changes in the graduates' professional success level. The first objective indicator is the monthly income in the job the respondent had at the time of the survey³. The second objective indicator is the International Socio-Economic Index of Occupational Status (ISEI⁴) which, due to its nature (design) may well serve as a measure of qualification requirements of jobs. The first subjective indicator takes the form of the question about the most appropriate qualifications for the job⁵. The second subjective indicator is the level of job satisfaction⁶.

The average monthly income for the work graduates in the Czech Republic did 4-5 years after graduation was some 980 EUR (according to REFLEX 2006 data). Although this is much less compared to other countries under review, it corresponds to the far lower income levels in the Czech Republic in general. As other studies reveal (Koucký, Zelenka, 2010), the advantage of people with higher education qualifications in terms of pay as compared to people with lower educational attainment levels is far larger in the Czech Republic than in most developed European countries. The reason is, in particular, that the number of higher education graduates in the CR is still relatively small, the labour market is not yet saturated and therefore they are well remunerated.

³ The question about the income was as follows: "What is your total gross monthly income including bonuses and overtime pay in your main employment? If most of your activities fall within self-employment, derive your monthly income from your annual income." The respondent could choose one of 17 categories ranging from "up to 10,000 CZK" to "100,000 CZK and more".

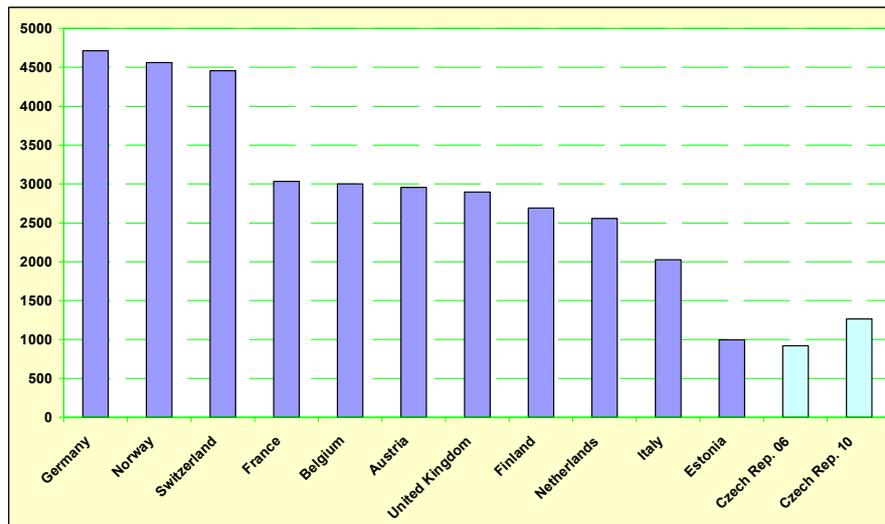
⁴ This is a continuous measure of the social status of an individual based on his/her occupation. The ISEI is designed based on the International Standard Classification of Occupations – ISCO (that includes a total of 271 categories) that covers the employment and qualifications factors. The ISEI does not capture job prestige, as it is only concerned with the relationship between the respondent's education, employment and the resulting income. ISEI scales range from 10 to 90.

⁵ In the REFLEX and REFLEX 2010 questionnaires the respondents could choose one of seven possible answers. For the purpose of our analysis the results were reduced to five categories – Doctoral (Ph.D.), Master (Ing., Mgr., etc.), Bachelor, higher professional qualifications and secondary (and lower) qualifications.

⁶ The question in both surveys was as follows: "What is your level of satisfaction in your current job?" The respondents could mark their answer on a 5-point scale ranging from "very unsatisfied" to "very satisfied".

Figure 6

Monthly income of higher education graduates in EUR, by country 2006, CR 2010



According to REFLEX 2010 data the graduates' average pay increased to over 1,260 EUR, which is an increase of approximately 29%. For the sake of comparison, the CSU (Czech Statistical Office) data show that the average wage in the CR increased by some 39% between the 2nd quarter of 2006 and the 3rd quarter of 2010⁷. This means that the income of higher education graduates grew somewhat more slowly, but it still remains considerably above the average wage.

From the financial perspective it certainly pays off to obtain at least a Master degree. However, the advantage of Master degree holders 4-5 years after graduate is not so significant as compared to individuals with a Bachelor degree (14% in 2006 and 17% in 2010). One of the reasons may be the fact that Bachelor studies are often chosen as a way of obtaining a higher education diploma by people who have been working for quite some time⁸.

In order to measure the degree of change in the occupations performed by higher education graduates (various fields and types of education) between the mid-2000s and the present, we shall use the International Socio-Economic Index of Occupational Status (ISEI). The analysis for the Czech Republic shows that, 4-5 years after graduation, individuals who completed their studies in 2001 and 2002 did jobs that had a far higher average socio-economic status than the occupations performed by 2005/2006 graduates. The difference on the ISEI scale is over 5 points. This means that while in 2006 the CR ranked among the countries with the highest socio-economic status of occupations performed by HE graduates, in 2010 only graduates in the UK and Norway would do worse in this respect than those in the CR (provided that no changes have occurred in other countries). This change may be partially explained by the increased proportion of Bachelor programme graduates, since, on average, they enter occupations with a lower socio-economic status than Master degree holders. However, the figures dropped for all higher education levels: for Bachelor level it was a decrease of nearly 5 points on the scale, for Master level it was over 4 points and for Doctoral level the decrease was nearly 2 points. It is therefore likely that massification of tertiary education and its implications are more to blame for the occupations' socio-economic status

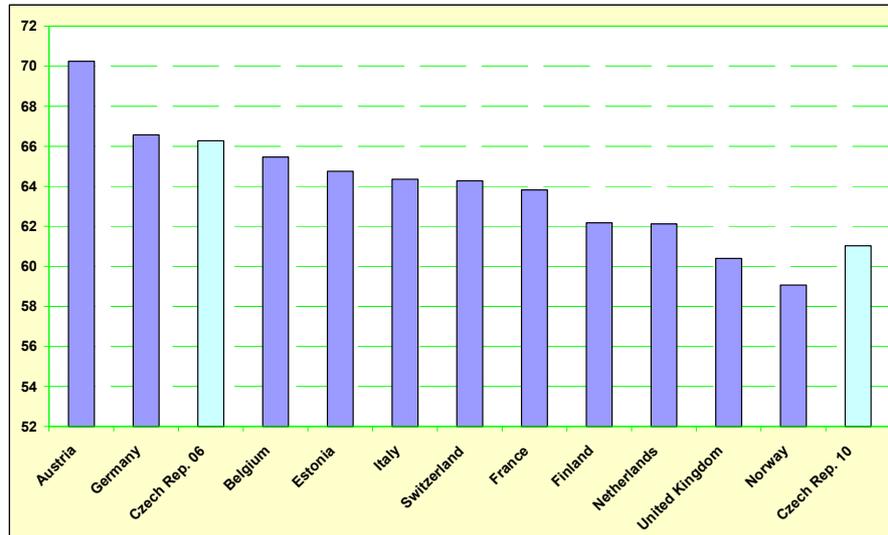
⁷ These three-month periods roughly coincide with the periods when REFLEX and REFLEX 2010 data were collected.

⁸ According to REFLEX 2010 data, the average age at graduation from Bachelor-level programmes was 28.0, whereas for graduates of Master degree programmes it was only 26.3.

decline. At present the occupations performed by Bachelor degree holders score 54.9 points on the ISEI scale, for individuals with Master degree education it is 62.7 and for Doctoral graduates it is 70.0. For the sake of comparison, the ISEI score for secondary school graduates with “maturita” is around 45.

Figure 7

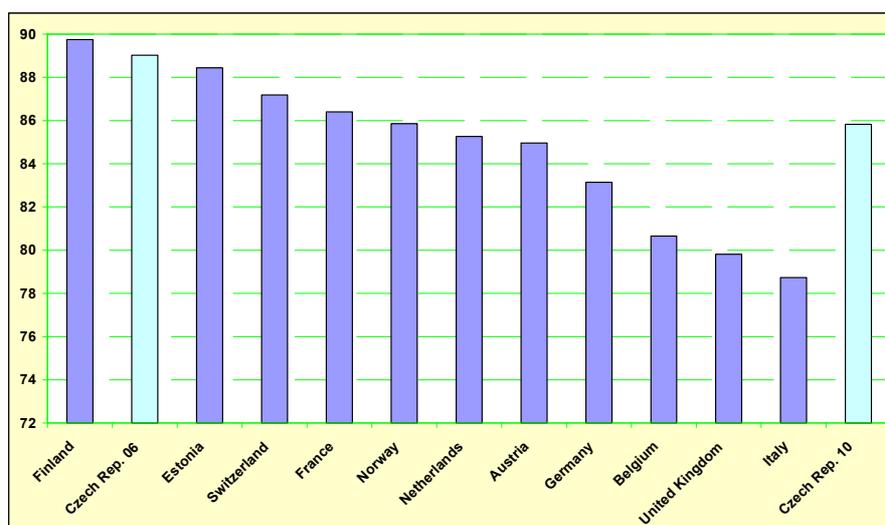
ISEI of higher education graduates, by country 2006, CR 2010



A similar assessment as that provided via the ISEI index may be presented as an answer to the question as to the most appropriate education for the given job. Of course, the difference is that in this case the respondent’s subjective evaluation is provided. The measure of success in this respect was whether the graduate performs an occupation for which the same or higher qualifications are the most appropriate. While in 2006 such jobs were done by roughly 89% of graduates, four years later the figure was less than 86%. Even this subjective evaluation confirms, to a degree, the moderate deterioration of the labour market position of HE graduates, who not so often find jobs that correspond to their level of education. This deterioration concerns both Bachelor and Master degree holders. Even so, most of them are still able to find an appropriate job. This is not so much true of Ph.D. holders for whom it is quite difficult to find an appropriate job. On the other hand, there has been a considerable improvement in this respect over the last four years. In terms of comparison with European countries, in 2006 the Czech Republic was among the countries where HE graduates worked in occupations that required their type of education most often. Despite the aforementioned deterioration in the last 4 years, Czech HE graduates still occupy above-average positions compared to other countries (again, provided that no changes have occurred in these countries).

Figure 8

Most appropriate level of education for the given job of higher education graduates, by country 2006, CR 2010

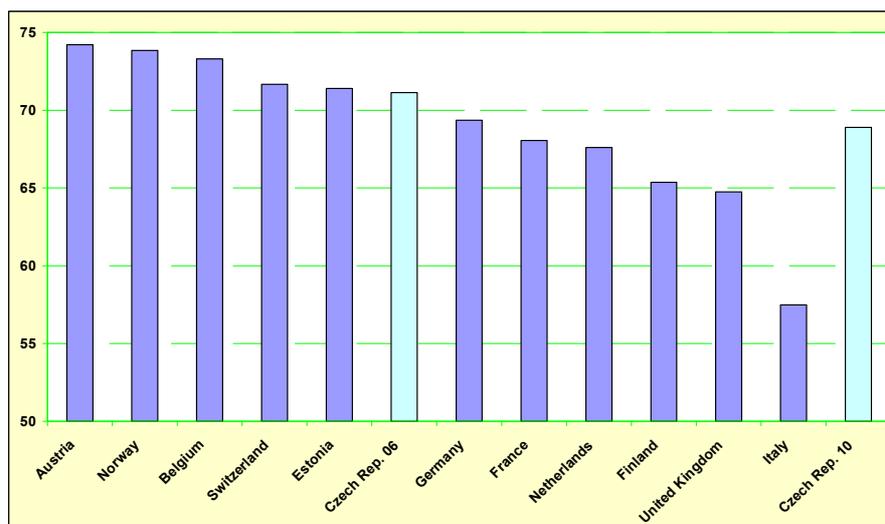


Note: The “Educational level of job” indicator is calculated as the proportion of individuals in occupations for which the same or higher qualifications are the most appropriate.

Another qualitative measure of professional success is the overall job satisfaction level. This indicator could be seen as the most important, as the overall satisfaction includes satisfaction with other sub-factors – for example, if the individual gets an appropriate pay, if the occupation corresponds to his/her education, if the job allows for the individual’s self-actualisation, etc. The problem is that most people tend to rate their overall satisfaction to be slightly above-average – i.e. they say they are, in principle, quite satisfied. However, this is more about the general tendency of the human mind than about an effort to judge the situation in an objective manner. This is why, most of the time, answers to these questions are quite difficult to differentiate, and the data from REFLEX and REFLEX 2010 are not exception in this respect. The following graph illustrates the proportions of people who marked 4 or 5 on the 5-point scale when answering the following question: “Are you satisfied with your current job?” (from 1 – very unsatisfied to 5 – very satisfied). The differences between individual countries, as derived from the REFLEX data, were not very significant. The Czech graduates ranked somewhere in the middle. As with the ISEI and the required level of education, the job satisfaction level as expressed by Czech HE graduates has decreased over the last 4 years. In this case, however, the decline was very slight.

Figure 9

Job Satisfaction of higher education graduates, by country 2006, CR 2010



Note: The “Job Satisfaction” indicator is obtained as the proportion of positive answers (i.e. 4-5 points on a 5-point scale) to the question of whether the graduate is satisfied with his/her current job.

7. What Factors Facilitate Professional Success?

Do the preferred modes of teaching or the overall focus of a study programme have a major influence on professional success even if the differences between fields, varying levels of education and personal or demographic characteristics are considered? Do the differences between fields of study, as outlined above, persist even if other variables are controlled for? What is the role of gender? This chapter attempts to answer these questions by making use of the findings and calculations made in the previous chapters.

In order to ascertain the impact of the focus of a study programme, the mode of teaching and the field and type of education, we shall use a linear regression analysis. For this purpose the 14-category variable concerning the field studied was converted into 14 binary variables, and the “Other fields” variable was chosen to be the reference variable. Similarly, the variable for the type of education was converted into 3 binary variables and “Ph.D. education” was chosen as the reference variable. In addition to these groups of variables, additional variables shall be included in the analysis: variable capturing the efforts made by the graduates during the studies and variable measuring the quality of students, and two demographic variables – gender and age. In both surveys the efforts were to be described by two questions: “Did you do an extra work above what was required to pass your exams?” and “Did you strive for the best possible marks?”⁹ The resulting index was calculated as an average of the two variables. Gender is an important control variable, as it is generally known that women are at a disadvantage at the labour market. The overall focus of the field of study or study programme may also have a decisive impact on the employment situation (Heijke, Meng 2006, Teichler 2009). In the REFLEX and REFLEX 2010 studies this issue was operationalised so that a set of six questions was established. Two of them turned out to be suitable for model calculation

⁹ In both cases the respondents could mark their answers on a 5-point scale ranging from “definitely not” to “definitely so”.

purposes. The first question concerned the degree to which the programme had a broad focus, the second question was about whether the programme was prestigious from an academic perspective. The respondents could mark their answers on a 5-point scale ranging from “not at all” to “to a very high extent”. Roughly one half of the respondents gave a positive answer to the first question in both studies. The second question scored around one third of positive answers.

Overall, 8 models of regression analysis were designed, always one for each indicator of professional success and for both surveys. The first two models were calculated to identify the relationship between the series of the variables mentioned above and the monthly income from gainful activities. The proportion of the variance in the monthly income explained by the regression model is nearly 19% (according to both 2006 and 2010 data). At first sight this is not a lot. However, in terms of comparison with other models it is a relatively high value. The fields that pay most include economics and computer science, and – as the 2010 data state – also law. Graduates of Bachelor programmes get a far lower pay than Master or Doctoral degree holders. There is no statistically important difference between these two. As for other variables, completion of a prestigious study programme and good study results contribute to a better income. The data confirm that women are at a significant disadvantage in terms of pay, even if structural differences between fields of study and type of education are considered. Income also increases with age. There is no statistically important positive correlation between the emphasis on a particular mode of teaching and income.

Models describing the impact on the level of socio-economic status, as expressed by the ISEI index, explain more than 18% of variance for 2006 and nearly 17% for 2010. These are similar values as in the case of income. In relation to the reference variable, completion of studies in law and computer science had a statistically significant and positive influence on the level of ISEI in both years when the surveys were carried out. The model also shows that the decline in ISEI levels in graduates of healthcare programmes is not caused only by the considerable increase in the number of Bachelor degree holders in this group. The correlation between the type of education and the socio-economic status is significant. Graduates of Bachelor programmes, even when other variables are controlled for, have a far lower ISEI index than Master degree holders who, in turn, have lower ISEI scores than Ph.D. graduates. Women work in occupations with a lower socio-economic status. Completion of a prestigious study programme has a relatively significant positive impact. On the other hand, there is no significant, and at the same time positive, impact of any of the modes of teaching, as was the case for the monthly income level model.

Table 2: Professional success, objective indicators – Income and ISEI; the results of a linear regression analysis; std. beta coefficients matrix

Dependent variable	Income		ISEI	
	2006	2010	2006	2010
Study program				
Broadly focused	0,000	-0,013	-0,006	0,015
Academically prestigious	0,060 **	0,068 **	0,076 **	0,150 **
Methods of teaching				
Individual learning	-0,025	-0,029 **	-0,048 **	-0,091 **
Vocational orientation	-0,019	-0,015	-0,007	0,002
Theory	-0,054 **	-0,043 **	-0,041 **	-0,039 **
Individual characteristics				
Study efforts	-0,031	-0,058 **	0,014	0,016
Study grades	0,084 **	0,096 **	0,026	0,023
Field of education (ref. Other fields)				
Natural sciences	-0,049 **	-0,003	0,046 *	0,036 *
Computer science	0,059 **	0,114 **	0,059 **	0,068 **
Engineering, Mining and Metallurgy	-0,050	0,038 *	-0,027	-0,005
Electricity and Electronics	0,039	0,068 *	0,044	-0,025
Architecture and Construction	-0,070 **	0,018	0,042	-0,003
Other Technical sciences	-0,067 **	0,029	0,001	-0,043 *
Agriculture, Forestry and Veterinary	-0,133 **	-0,044 **	0,008	-0,052 **
Healthcare, Medicine and Pharmacy	-0,011	0,044 *	0,268 **	0,033
Humanities	-0,097 **	-0,028	-0,053 *	-0,047 *
Economics	0,116 **	0,248 **	-0,011	-0,033
Law	0,004	0,094 **	0,118 **	0,141 **
Education and Sport	-0,181 **	-0,052 **	-0,048	0,005
Arts	-0,055 **	-0,041 **	-0,028	0,008
Type of education (ref. PhD)				
Bachelor	-0,102 **	-0,098 **	-0,286 **	-0,386 **
Master	-0,013	0,022	-0,109 **	-0,182 **
Demographic characteristics				
Female	-0,206 **	-0,219 **	-0,046 **	-0,091 **
Age	0,094 **	0,111 **	-0,037 **	-0,069 **
R ²	0,188	0,188	0,183	0,166

Significance: * P<0.05; ** P<0.01

The first subjective indicator of professional success that is explained is the most appropriate level of education for the given job¹⁰. The model designed to explain the variance of this indicator only covers less than 9% of the variance (according to the 2006 data). However, according to REFLEX 2010 data, it explains over 14% of the variance. According to the 2010 model there turn out to be larger differences between fields of study as compared to 2006. Work requiring the highest level of educational attainment is done by graduates in economics, law, natural sciences and humanities. It is logical that the most significant difference may be found between various types of education. Ph.D. graduates work in jobs designed Ph. D. graduates far more often than Master or Bachelor degree holders, irrespective of other characteristics. Even when this subjective measurement of professional success is concerned, women face major disadvantages. Completion of a prestigious study programme has a positive impact. As opposed to objective indicators, there is a positive effect of the emphasis on one particular mode of teaching – vocational orientation.

The models for the second subjective indicator of professional success - i.e. job satisfaction – explain only a little percentage (between 2 and 4%) of the variance of the relevant variable. This is mainly due to the very small (even statistically insignificant in 2010) impact of the type of education, and a similarly small impact of the difference between fields of study. The highest level of job satisfaction is among graduates of education and economics. Completion

¹⁰ As the model controls for the „type of education” variable, the “educational level of job” variable is not used in the model in the same form as it is presented in chapter 6. Instead, the variable is considered as a continual scale with equal difference between the categories (secondary education and lower, tertiary professional education, Bachelor, Master and Doctoral).

of a vocationally oriented programme has a statistically significant, positive effect on job satisfaction. The focus on future career prospects and the academic prestige of a programme have similar effects.

Table 3: Professional success, subjective indicators – Educational level of job, job satisfaction; the results of a linear regression analysis, std. beta coefficients matrix

Dependent variable	Educ. level of job		Job satisfaction	
	2006	2010	2006	2010
Study program				
Broadly focused	-0,007	-0,033 **	0,002	0,005
Academically prestigious	0,026	0,078 **	0,042 **	0,057 **
Methods of teaching				
Individual learning	0,008	-0,007	0,014	-0,012
Vocational orientation	0,029	0,065 **	0,068 **	0,082 **
Theory	-0,003	0,006	0,036 *	0,017
Individual characteristics				
Study efforts	0,020	0,014	-0,018	-0,024
Study grades	0,072 **	0,069 **	0,065 **	0,076 **
Field of education (ref. Other fields)				
Natural sciences	0,056 **	0,064 **	-0,035	0,023
Computer science	-0,008	0,026	-0,036	0,061 **
Engineering, Mining and Metallurgy	-0,047	0,022	-0,093 **	-0,018
Electricity and Electronics	0,015	0,031	-0,071 *	0,052 **
Architecture and Construction	-0,020	0,013	-0,083 **	0,027
Other Technical sciences	0,005	0,021	-0,093 **	0,055 **
Agriculture, Forestry and Veterinary	-0,057 **	-0,005	-0,057 **	0,041 *
Healthcare, Medicine and Pharmacy	0,057 *	-0,012	-0,076 **	0,016
Humanities	0,006	0,060 **	-0,056 *	0,029 *
Economics	-0,009	0,076 **	-0,081	0,114 **
Law	-0,002	0,068 **	-0,024	0,060 **
Education and Sport	0,014	0,062 **	-0,105 **	0,120 **
Arts	-0,027	0,043 **	-0,041 *	0,008
Type of education (ref. PhD)				
Bachelor	-0,396 **	-0,562 **	-0,128 **	0,004
Master	-0,223 **	-0,325 **	-0,091 **	-0,025
Demographic characteristics				
Female	-0,046 **	-0,131 **	0,000	0,012
Age	-0,007	0,047 **	0,011	0,061 **
R ²	0,084	0,142	0,022	0,035

Significance: * P<0.05; ** P<0.01

Summary

On the basis of the data sets from the REFLEX international study and the corresponding survey carried out in the Czech Republic in 2010, it is possible to assess the major effects of the economic crisis on the employment situation of higher education graduates. The data sets from both studies contain extensive information about the characteristics of the graduates' higher education studies, their transition to the labour market and the initial years of their professional career. We attempted to establish the impact of the crisis by means of comparing the initial periods at work for the two different groups of graduates that were subject to the surveys mentioned above (carried out in the mid-2000s and the end of the 2000s). We compared selected characteristics of study programmes and modes of teaching/learning in relation to the degree of their use, and the changes in the factors that affect the graduates' professional success. Moreover, the situation of Czech graduates was related to the international data from the middle of the previous decade.

The focus of a study programme was expressed in terms of its broadness, the degree to which it is concerned with future career aspects and its academic prestige. The modes of teaching/learning were assessed based on the following features: written assignments, oral presentations by students, project and/or problem-based learning, group assignments, internships and work placements, facts and practical knowledge, participation in research

projects, lectures, theories and paradigms and “teacher as the main source of information”. Using a factor analysis the modes of teaching/learning were reduced to three characteristics: the degree of individual learning, the extent of profession and practice-oriented teaching and the proportion of theory in the studies. In our calculations we also considered the differences in the graduates’ individual characteristics, such as their efforts and results achieved. Furthermore, we assessed the differences between fields and types of education and took account of the basic demographic characteristics such as age and gender.

The main findings concerning the changes in teaching/learning at Czech higher education institutions were as follows: there was not an increase in the emphasis placed on group assignments, although the accent put on lectures decreased; the teacher played a less dominant role and project and problem-based learning increased in importance; there was a slight decrease in the dominating theory-oriented teaching/learning and there was no increase in the proportion of teaching aimed at practical knowledge acquisition in any of the modes examined – work placements, internships, research projects; no change occurred in the use of oral presentations by students, but the proportion of written assignments increased. With regard to the graduates’ employment situation, the least positive finding is that there is no increase in focus on practical knowledge acquisition. On the other hand, there is a favourable shift in teaching towards modern approaches such as projects and problem-based learning.

For the purpose of measuring professional success four indicators were selected and calculated – two objective ones and two subjective ones. The first objective indicator is the monthly income in the job done at the time of the survey, and the second one is the International Socio-Economic Index of Occupational Status (ISEI). The first subjective indicator is the most appropriate education for the given job and the second one is the level of job satisfaction. A majority of these indicators confirm that the labour market situation of HE graduates has begun to deteriorate. The increase in the graduates’ average income was slower compared to the average for the Czech Republic as a whole. The socio-economic status of the occupations in which graduates work decreased considerably, and there was a smaller proportion of those who did jobs that correspond to their level of education. Moreover, the graduates were less satisfied with their jobs. These changes occurred in a large majority of fields across the system. In terms of comparison with European countries, as it was facilitated by REFLEX, Czech graduates were among those who did jobs with the highest level of qualification requirements – they showed a high socio-economic index of occupational status and often worked in occupations requiring at least their qualifications. However, those who graduated in 2005 and 2006 had to put up with jobs with lower qualification requirements. The reasons behind this may be seen in the growing level of massification of higher education in the Czech Republic and in the impact of the economic downturn.

In order to establish the influence of a) the focus of a study programme, b) the modes of teaching and c) the field and type of education on the graduates’ professional success, as expressed by the four indicators, a total of eight models were designed using a linear regression analysis. The analysis has produced several important findings. Firstly, the given characteristics much better explain the variance of the objective indicators, although this is also true, to a degree, for one subjective indicator (the most appropriate education for the given job). The type of education plays quite a significant role in these three indicators. All models show significant differences between fields of study. According to the objective indicators, professional success was rendered, above all, by the study of law, legal and public administration and informatics, and, in 2006, also economics and business and administration. According to the subjective indicators, the fields of study which pay most include, in particular, economics, business and administration and the fields in the education and sports group. As for the various modes of teaching/learning, it turns out that if approaches such as internships, work placements, acquisition of practical knowledge and skills and participation

in research projects are stressed during studies, this has a positive influence on the employment situation, as compared with the other modes of teaching. Moreover, the analysis reveals that the study of a programme that is prestigious from an academic perspective also plays a positive role¹¹. As for the demographic characteristics, the analysis confirms that women are at a disadvantage at the labour market. On average, they have a lower pay, do lower-level jobs and work in occupations that are less demanding in terms of qualification requirements. In spite of this, women view their work more positively as compared to men. It has also turned out that the differences in the quality of students, as expressed by study performance, are also reflected, to a degree, in their professional lives.

If we compare the changes between 2006 and 2010, which may involve the effects of the economic crisis, the models produce the following results: for all four indicators that were examined we may observe an increased level of professional success in graduates of programmes with academic focus. No model for 2006 shows any advantage resulting from broadly focused programmes, and there was no improvement in this respect in 2010. As concerns the modes of teaching, we already mentioned that a higher level of professional success, in terms of comparison with the other approaches, is rendered by vocational orientation. This advantage is relatively larger if we measure professional success using the indicator concerning the most appropriate education for the given job. Study results do influence professional success, as mentioned above. However, no change was traced over the given period in the extent of this impact. If we look at the impact of the fields of study, we may observe that a rather significant increase in income and the level of the socio-economic index of occupational status occurred in the informatics fields and in law, legal and public administration. The level of income increased in the economics and business and administration category. As for the types of education, an enlarged gap was observed in the level of the socio-economic status between graduates of Bachelor degree programmes and Master degree holders. Similar changes may also be seen in the model calculated for the appropriateness of the qualifications for the given job. On the contrary, the differences in the level of job satisfaction became smaller. The disadvantage faced by women was reinforced as concerns the socio-economic index of occupational status and the educational level of job, while this was not the case for income and job satisfaction.

Although the findings generated by our analysis are valuable, this text only partially covers the comprehensive relationship between higher education studies and professional success in the graduates' career. The following analyses will focus, above all, on the relationship between the competencies acquired during higher education studies and those required in employment, the ways in which the quality of teachers influences acquisition of these competencies, and the relationship between the field studied and the occupation entered. Discussion about the employment situation of higher education graduates will grow in importance along with their growing numbers. The steep increase in the number of HE graduates entering the labour market has already resulted in a situation where these graduates (most of them with a Master degree) constitute the largest group of school leavers, and their proportion is constantly enlarging. This entails a far stiffer competition in job seeking. It is becoming apparent that young HE graduates will have to soften their demands concerning the qualification requirements of the jobs they take up and the income they expect. They will gradually begin to fill jobs done, in most cases, by people with secondary qualifications. The latter, in turn, will begin to push the least skilled individuals out of the labour market.

¹¹ One explanation for this may be the fact that employers tend to fill higher-level jobs with graduates of better-known and more prestigious higher education institutions as compared to those less known. This was demonstrated, for example, in German analyses of graduates' employment situation (Teichler 2009).

References

- Allen, J., van der Velden, R. (Eds.) *The Flexible Professional in the Knowledge Society: General Results of the REFLEX Project*. Maastricht University. 2007.
- Barrie, S.C. Understanding what we mean by the generic attributes of graduates. *Higher Education*, 51, 215-241. 2006.
- Clegg, D. Labour market policy in the crisis: the UK in comparative perspective. *Journal of Poverty and Social Justice*, 18 (1), 5-17. 2010.
- Gangl, M. Changing labour markets and early career outcomes: labour market entry in Europe over the past decade. *Work, employment and society*, 16 (1), 67-90. 2002.
- Giesecke, J., Schindler, S. Field of Study and Flexible Work: A Comparison between Germany and the UK. *International Journal of Comparative Sociology*, 49 (4-5), 283-304. 2008.
- Heijke, H., Meng, Ch. The effects of higher education programme characteristics on allocation and performance of the graduates: an European view. ROA-RM-2006/4E. Maastricht. 2006.
- Kerckhoff, A.C., Raudenbush, S.W., Glennie, E. Education, cognitive skills and labor force outcomes. *Sociology of Education*, 74, 1-24. 2001.
- Klős, H-P., Holger, S. Krisenmanagement über Variationen des Arbeitsvolumens? Reichweite, Grenzen und Nebenfolgen. *Arbeit*, 19 (2/3), 132-146. 2010.
- Koucký, J., Zelenka, M. *Postavení vysokoškoláků a uplatnění absolventů vysokých škol na pracovním trhu 2010*. SVP Pedagogická fakulta UK v Praze. Praha: 2010.
- Lawson, T. The current economic crisis: its nature and the course of academic economics. *Cambridge Journal of Economics*, 33, 759-777. 2009.
- Lindberg, M.E. Connection between the differentiation of Higher Education Participation and the Distribution of Occupational Status. *European Societies*, 9 (4). 2007
- Lindberg, M.E. Higher Education-to-work Transitions in the Knowledge Society: The Initial Transition and Positional Competition Point of View. *Higher Education in Europe*, 33 (4). 2008.
- Luijckx, R., Wolbers, M.J.H. The Effects of Non-Employment in Early Work-Life on Subsequent Employment Chances of Individuals in the Netherlands. *European Sociological Review*, 25 (6), 647-660. 2009.
- Mendius, H. G. Zur Debate um Krise und Arbeitsmarkt im Rahmen des SAMF – Ergebnisse und weiterführende Überlegungen. *Arbeit*, 19 (2/3), 209-222. 2010.
- OECD. *Education at a Glance 2010: OECD Indicators*. OECD, Paris: 2010.
- Psacharopoulos, G., Patrinos, H.T. Returns to investment in education: a further update. *Education Economics*, 12, 111-134. 2004.
- Reimer, D., Noelke, C., Kucel, A. Labor Market Effects of Field of Study in Comparative Perspective. An Analysis of 22 European Countries. *Int. Journal of Comparative Sociology*, 49, 233-256. 2008.
- Rosenbaum, J.E., DeLuca, S. Miller, S.R., Roy, K. Pathways to Work: short- and long-term effects of personal and institutional ties. *Sociology of Education*, 72, 179-196. 1999.
- Ryška, R. *Evaluaace a přidaná hodnota ve vzdělání*. Pedagogická fakulta UK v Praze. Praha: 2009.
- Schomburg, H. The Professional Success of Higher Education Graduates. *European Journal of Education*, 42, 35-57. 2007.
- Teichler, U. Research on the relationship between higher education and the world of work: Past achievements, problems and new challenges. *Higher Education*, 38, 169-190. 1999.
- Teichler, U. Does Higher Education Matter? Lessons from a Comparative Graduate Survey. *European Journal of Education*, 42, 11-34. 2007.
- Teichler, U. *Higher Education and the World of Work*. Sense Publishers, 2009. ISBN 978-90-8790-754-9.
- van der Velden, R.K.W., Wolbers, M.H.J. How much does education matter and why? The effect of education on socio-economic outcomes among school-leavers in the Netherlands. *European Sociological Review*, Vol.23, N.1, 65-80, 2007.
- Vermeulen, L., Schmidt, H. G. Learning environment, learning process, academic outcomes and career Access of university graduates. *Studies in Higher Education*, 33 (4), 431-451. 2008.
- Wilson, K.L., Smith-Lovin, L. Scaling the prestige, authority and income potential of college curricula. *Social Science Research*, 12, 159-186. 1983.
- Wolbers, M.H.J. Patterns of Labour Market Entry A Comparative Perspective on School-to-Work Transitions in 11 European Countries. *Acta Sociologica*, 50 (3), 189-210. 2007.
- Zelenka, M. *Přechod absolventů škol ze vzdělání na pracovní trh*. Pedagogická fakulta UK v Praze. Praha: 2008.

Data Sources

CSU – Czech Statistical Office (<http://www.czso.cz/eng/redakce.nsf/i/home>)

The Ministry of Labour and Social Affairs – Data of Unemployment of School Graduates
(<http://portal.mpsv.cz/sz/stat/abs/polo>)

REFLEX 2006 - The Flexible Professional in the Knowledge Society

REFLEX 2010 - Employability of Higher Education Graduates in the Labour Market and Evaluation of Obtained Education

SIMS - The Register of Higher Education Students